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Irrigation Pump Panel with Solid State Overload, Class 81

Siemens introduces its new Class 81 Irrigation Pump Panel. This newest addition to the already extensive line of Siemens pump panels 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. Refer to page 8/56 for more details and selection.



ESP200™ Solid State Overload Relay

Building and improving on past successes, self-powered ESP200 overload relays are a revolution for both industrial and construction applications.

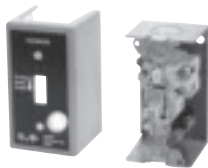
Ideal for oil pumping, agriculture, OEM operations and any other industrial applications where motor life is monitored and single-phase protection is important, NEMA starters equipped with ESP200 are both versatile and rugged.

Refer to page 8/47 for more details and information.

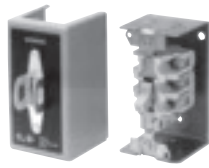
Control Products

NEMA & General Purpose Controls

Product Overview



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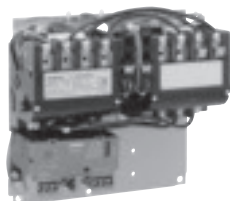
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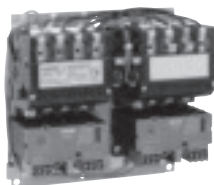
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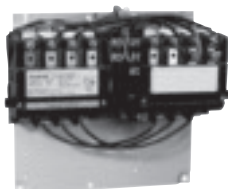
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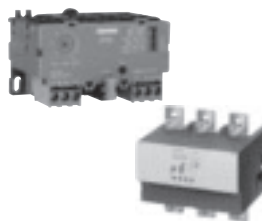
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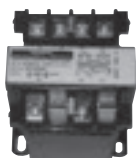
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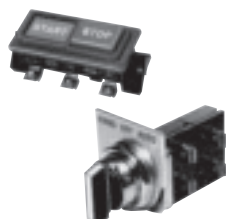
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Class SMF

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

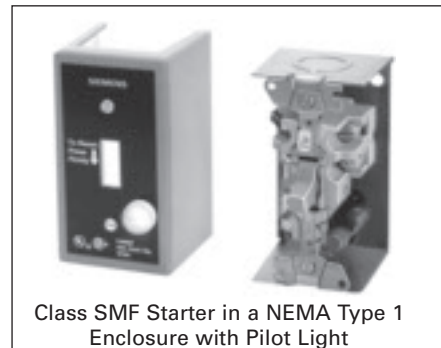
Binding head screw type terminals are suitable for #10 or smaller copper wire, and are accessible from the front. All terminals are clearly marked.

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.

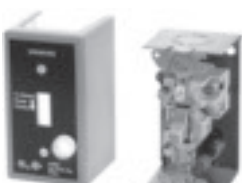
Handle Guard/Lock-Off

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.

Manual Control

Fractional HP Starters with Melting ALloy Overload, Class SMF

Selection

 Class SMF Starter in a NEMA Type 1 Enclosure with Pilot Light	Ordering Information		Horsepower Ratings		
	▶ Heater Elements see page 8/150. ▶ Field Modification Kits see page 8/80. ▶ Dimensions see page 8/100. ▶ Wiring Diagrams see page 8/130.	Maximum Horsepower			
		AC Single Phase		DC	
		Volts	1-Pole	2-Pole	2-Pole
		115–230	1	1	¾
		277	1	1	—

Starter—Class SMF, Single Phase^①

Type of Operator	No. of Poles	Starter Features ^⑤	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 \$	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	1	Standard	SMFF01	—	SMFF01	—	SMFFS1	—	—	—	SMFFG1	—	SMFFGJ1	—	SMFFWN1	—	—	—
		Red Pilot Light	SMFF01P	—	SMFF01P	—	SMFFS1P	—	SMFFSJ1P	—	SMFFG1P	—	SMFFGJ1P	—	SMFFWN1P	—	—	—
	2	Standard	SMFF02	—	SMFF02	—	SMFFS2	—	—	—	SMFFG2	—	SMFFGJ2	—	SMFFWN2	—	—	—
		Red Pilot Light	SMFF02P	—	SMFF02P	—	SMFFS2P	—	SMFFSJ2P	—	SMFFG2P	—	SMFFGJ2P	—	SMFFWN2P	—	—	—
Key	1	Standard	SMFF03	—	SMFF03	—	SMFFS3	—	—	—	SMFFG3	—	SMFFGJ3	—	SMFFWN3	—	—	—
		Red Pilot Light	SMFF03P	—	SMFF03P	—	SMFFS3P	—	SMFFSJ3P	—	SMFFG3P	—	SMFFGJ3P	—	SMFFWN3P	—	—	—
	2	Standard	SMFF04	—	SMFF04	—	SMFFS4	—	—	—	SMFFG4	—	SMFFGJ4	—	SMFFWN4	—	—	—
		Red Pilot Light	SMFF04P	—	SMFF04P	—	SMFFS4P	—	SMFFSJ4P	—	SMFFG4P	—	SMFFGJ4P	—	SMFFWN4P	—	—	—

Starter With Handle Guard/Lock-Off—Class SMF, Single Phase^①

Toggle	1	Standard	—	—	④	—	④	—	④	—	SMFFG5	—	SMFFGJ5	—	—	—	SMFFW1 ^②	—	SMFFR1 ^②	—
		Red Pilot Light	—	—	④	—	④	—	④	—	SMFFG5P	—	SMFFGJ5P	—	—	—	SMFFW1P ^②	—	—	—
		(2) ¾" NPT Outlets	—	—	④	—	④	—	④	—	—	—	—	—	—	—	SMFFW1H	—	SMFFR1H	—
		(2) ¾" NPT Outlets and Red Pilot Light	—	—	④	—	④	—	④	—	—	—	—	—	—	—	SMFFW1PH	—	—	—
	2	Standard	—	—	④	—	④	—	④	—	SMFFG6	—	SMFFGJ6	—	—	—	SMFFW2 ^②	—	SMFFR2 ^②	—
		Red Pilot Light	—	—	④	—	④	—	④	—	SMFFG6P	—	SMFFGJ6P	—	—	—	SMFFW2P ^②	—	—	—
		(2) ¾" NPT Outlets	—	—	④	—	④	—	④	—	—	—	—	—	—	—	SMFFW2H	—	SMFFR2H	—
		(2) ¾" NPT Outlets and Red Pilot Light	—	—	④	—	④	—	④	—	—	—	—	—	—	—	SMFFW2PH	—	—	—

One Starter in Duplex Enclosure—Class SMF, Single Phase^①

Type of Operator	Number of Poles	Starter Features ^⑤	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 \$	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^③

Toggle	2 Per Starter	Standard	SMFF022	—	—	—	SMFFG222	—	—	—
		Red Pilot Light on Each Starter	SMFF022P	—	—	SMFFS22P	—	SMFFG222P	—	—
Key	2 Per Starter	Red Pilot Light on Each Starter	SMFF044P	—	—	SMFFS44P	—	SMFFG44P	—	—

Starter And "Auto-Off-Hand" SPDT Selector Switch (AC Only)—Class SMF, Single Phase^①

Toggle	1	Standard	SMFF71	—	—	—	SMFFG71	—	—	—
		Red Pilot Light	SMFF71P	—	—	SMFFS71P	—	SMFFG71P	—	—
	2	Standard	SMFF72	—	—	—	SMFFG72	—	—	—
		Red Pilot Light	SMFF72P	—	—	SMFFS72P	—	SMFFG72P	—	—
Key	2	Red Pilot Light	SMFF74P	—	—	SMFFS74P	—	SMFFG74P	—	—

Two Speed Starters (AC Only)—Class SMF, Single Phase^③

Toggle	1	Mechanical Interlock	SMFF11	—	—	—	SMFFG11	—	—	SMFF01T
		Mechanical Interlock and (2) Red Pilot Lights	SMFF11P	—	—	—	SMFFG11P	—	—	SMFF01PT
		Mechanical Interlock, HIGH-OFF-LOW Selector Switch and (2) Red Pilot Lights	—	—	SMFFS101P	—	—	—	—	SMFF01PT
	2	Mechanical Interlock	SMFF22	—	—	—	SMFFG22	—	—	SMFF02T
		Mechanical Interlock and (2) Red Pilot Lights	SMFF22P	—	—	—	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.

Class MMS, MRS

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

Continuous Current Rating

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

Two Speed—Class MRS

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

Reversing—Class MRS

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

Enclosures

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

Pilot Lights

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

Terminals

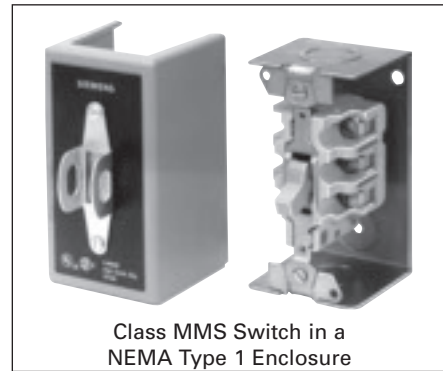
Binding head screw type terminals are suitable for #10 or smaller copper wire, and are accessible from the front. All terminals are clearly marked.

Mounting

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

Operation

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



Class MMS Switch in a NEMA Type 1 Enclosure

Emergency Off Actuator

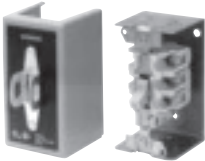
A toggle operator extender is available for Class MMS, MRS, NEMA Type 1 surface mounted units. The extender has a red vinyl button that provides a fast and easy method for locating and switching the device's toggle operator into the OFF position. The Emergency Off Actuator is available in kit form only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

Handle Guard/Lock-Off

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

Manual Control Switches^①, Class MMS, MRS

Selection

 Class MMS Switch in a NEMA Type 1 Enclosure	Ordering Information		Horsepower Ratings							
	▶ Heater Elements not Required. ▶ Field Modification Kits see page 8/80. ▶ Dimensions see page 8/100. ▶ Wiring Diagrams see page 8/130.	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	1½
			3	3-Phase	2	7½	10	1	2	1½
		Class MRS Reversing	2	Single Phase	2	2	3	1	2	1½
			3	3-Phase	2	7½	10	1	2	1½
		Class MMS Two Speed	2	Single Phase	2	2	3	1	2	1½
3	3-Phase, Constant or Variable Torque		2	7½	10	1	2	1½		
	3	3-Phase, Constant Horsepower	2	7½	10	1	2	1½		

Switch—Class MMS, Single Phase and 3-Phase

Type of Operator	No of Poles	Switch Features ^④	Open Type		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 Enclosures with Clear Cover		NEMA Type 4 ^⑤ Watertight, Dust-tight Metallic Enclosure		NEMA Type 7 & 9 ^⑥ Class I Groups B, C & D & Class II Groups E, F, G Enclosures	
					Gray Flush Plate		Standard Stainless Steel Flush Plate		Jumbo Stainless Steel Flush Plate											
			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\$
Toggle	2	Standard	MMSK01		MMSKF1		MMSKS1		—	—	MMSKG1		MMSKGJ1		MMSKWN1		MMSKW1		MMSKR1	
		Red Pilot Light 115V AC	MMSK01A ^③		MMSKF1A		MMSKS1A		MMSKSJ1A		MMSKG1A		MMSKGJ1A		MMSKWN1A		MMSKW1A		—	—
		Red Pilot Light 230V AC	MMSK01B ^③		MMSKF1B		MMSKS1B		MMSKSJ1B		MMSKG1B		MMSKGJ1B		MMSKWN1B		MMSKW1B		—	—
	3	Standard	MMSK02		MMSKF2		MMSKS2		—	—	MMSKG2		MMSKGJ2		MMSKWN2		MMSKW2		MMSKR2	
		Red Pilot Light 208-240V AC	MMSK02B ^③		MMSKF2B		MMSKS2B		MMSKSJ2B		MMSKG2B		MMSKGJ2B		MMSKWN2B		MMSKW2B		—	—
		Red Pilot Light 440-600V AC	MMSK02C ^③		MMSKF2C		MMSKS2C		MMSKSJ2C		MMSKG2C		MMSKGJ2C		MMSKWN2C		MMSKW2C		—	—
Key	2	Standard	MMSK03		MMSKF3		MMSKS3		—	—	MMSKG3		MMSKGJ3		MMSKWN3		—	—	—	—
		Red Pilot Light 115V AC	MMSK03A		MMSKF3A		MMSKS3A		MMSKSJ3A		MMSKG3A		MMSKGJ3A		MMSKWN3A		—	—	—	—
		Red Pilot Light 230V AC	MMSK03B		MMSKF3B		MMSKS3B		MMSKSJ3B		MMSKG3B		MMSKGJ3B		MMSKWN3B		—	—	—	—
	3	Standard	MMSK04		MMSKF4		MMSKS4		—	—	MMSKG4		MMSKGJ4		MMSKWN4		—	—	—	—
		Red Pilot Light 208–240V AC	MMSK04B		MMSKF4B		MMSKS4B		MMSKSJ4B		MMSKG4B		MMSKGJ4B		MMSKWN4B		—	—	—	—
		Red Pilot Light 440–600V AC	MMSK04C		MMSKF4C		MMSKS4C		MMSKSJ4C		MMSKG4C		MMSKGJ4C		MMSKWN4C		—	—	—	—

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

Type of Operator	Number of Poles	Suitable Motor Types	Switch Features ^④ (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 ^④ (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.

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

Manual Control

Starters and Switches, Class 11 - 3RV

Selection

	Ordering Information	Low Voltage Protection Coil Table	
	▶ No heaters required. ▶ Field modification kits see page 8/80. ▶ Dimensions see page 8/102. ▶ Wiring Diagrams see page 8/130. ▶ For applications requiring a low voltage protection coil see table at right.	60 Hz Voltage	Letter
		120V	*F
		208V	*D
		240V	*G
		460V	*H
		*Add corresponding letter to end of base Class 11 catalog number for low voltage protection coil with List Price adder.	
		Note: The LVP option for Open type 3RV is available from the factory, please order separately from the field modification kits on page 8/81.	
		The coil voltage should correspond with the line voltage.	

Manual Starter—Class 11 - 3RV

FLA Adjustment Range ^①	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 ^④ Watertight (Outdoor use) Class I Groups C & D Class II Groups E, F & G	
	115V	230V	200V	230V	460V	575V	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
0.11-0.16	—	—	—	—	—	—	3RV1021-0AA10 ^②		11AD3B		11AD3H		11AD3W	
0.14-0.2	—	—	—	—	—	—	3RV1021-0BA10 ^②		11BD3B		11BD3H		11BD3W	
0.18-0.25	—	—	—	—	—	—	3RV1021-0CA10 ^②		11CD3B		11CD3H		11CD3W	
0.22-0.32	—	—	—	—	—	—	3RV1021-0DA10 ^②		11DD3B		11DD3H		11DD3W	
0.28-0.4	—	—	—	—	—	—	3RV1021-0EA10 ^②		11ED3B		11ED3H		11ED3W	
0.35-0.5	—	—	—	—	—	—	3RV1021-0FA10 ^②		11FD3B		11FD3H		11FD3W	
0.45-0.63	—	—	—	—	—	—	3RV1021-0GA10 ^②		11GD3B		11GD3H		11GD3W	
0.55-0.8	—	—	—	—	—	½	3RV1021-0HA10 ^②		11HD3B		11HD3H		11HD3W	
0.7-1	—	—	—	—	½	½	3RV1021-0JA10 ^②		11JD3B		11JD3H		11JD3W	
0.9-1.25	—	—	—	—	¾	¾	3RV1021-0KA10 ^②		11KD3B		11KD3H		11KD3W	
1.1-1.6	—	⅓	—	—	¾	1	3RV1021-1AA10 ^②		11LD3B		11LD3H		11LD3W	
1.4-2	—	⅓	—	—	1	1 ½	3RV1021-1BA10 ^②		11MD3B		11MD3H		11MD3W	
1.8-2.5	—	⅓	½	½	1 ½	1 ½	3RV1021-1CA10 ^②		11ND3B		11ND3H		11ND3W	
2.2-3.2	⅓	⅓	¾	¾	1 ½	2	3RV1021-1DA10 ^②		11PD3B		11PD3H		11PD3W	
2.8-4	⅓	⅓	¾	1	2	3	3RV1021-1EA10 ^②		11QD3B		11QD3H		11QD3W	
3.5-5	⅓	½	1	1	3	3	3RV1021-1FA10 ^②		11RD3B		11RD3H		11RD3W	
4.5-6.3	⅓	¾	1 ½	1 ½	5	5	3RV1021-1GA10 ^②		11SD3B		11SD3H		11SD3W	
5.5-8	½	1	2	2	5	5	3RV1021-1HA10 ^②		11TD3B		11TD3H		11TD3W	
7-10	½	1 ½	3	3	7 ½	10	3RV1021-1JA10 ^②		11UD3B		11UD3H		11UD3W	
9-12.5	½	2	3	3	7 ½	10	3RV1021-1KA10 ^②		11VD3B		11VD3H		11VD3W	
11-16	1	3	5	5	10	15 ^③	3RV1021-4AA10 ^②		11WD3B		11WD3H		11WD3W	
14-20	1 ½	3	5	7 ½	15	20 ^③	3RV1021-4BA10 ^②		11XD3B		11XD3H		11XD3W	
17-22	2	3	7 ½	7 ½	15	20 ^③	3RV1021-4CA10 ^②		11YD3B		11YD3H		11YD3W	
20-25	2 ^③	5 ^③	7 ½ ^③	7 ½ ^③	15 ^③	20 ^③	3RV1021-4DA10 ^②		11ZD3B		11ZD3H		11ZD3W	

Manual Switch—Class 11 - 3RV

Rated Current ^①	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 Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1	—	—	—	—	⅓ ^③	⅓ ^③	3RV1321-0JC10 ^②		111D3B		111D3H		111D3W	
5	⅓ ^③	⅓ ^③	1 ^③	1 ^③	3 ^③	3 ^③	3RV1321-1FC10 ^②		112D3B		112D3H		112D3W	
10	⅓ ^③	1 ⅓ ^③	3 ^③	3 ^③	7 ⅓ ^③	10 ^③	3RV1321-1JC10 ^②		113D3B		113D3H		113D3W	
20	1 ⅓ ^③	3 ^③	5 ^③	7 ⅓ ^③	15 ^③	20 ^③	3RV1321-4BC10 ^②		114D3B		114D3H		114D3W	
25	2 ^③	5 ^③	7 ⅓ ^③	7 ⅓ ^③	15 ^③	20 ^③	3RV1321-4DC10 ^②		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 Starters

Features and Benefits

General



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

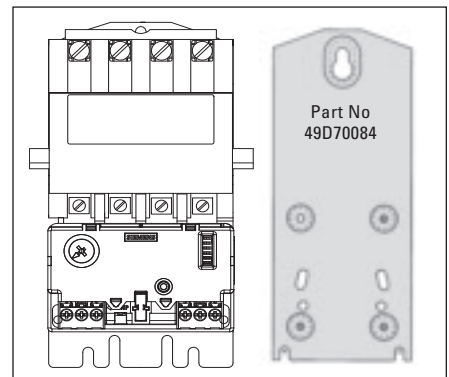
All starters can be modified in the field with a complete range of accessories. These include pushbuttons, selector switches, pilot lights, auxiliary contacts and surge suppressors.

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



Siemens Sizes 00–1¾ have as standard, universal mounting which fits the following:

Cutler Hammer—Citation Series
—Freedom Series

GE —300 Line

Square D —Type S

The Starter with its existing backplate mounts onto the piggyback mounting plate and is secured in place with three mounting screws. The piggyback mounting plate fits the following:

Allen-Bradley —Bulletin 509
—Bulletin 709

Westinghouse —Series A200

Size 5 & 6 Starters Additional Features

- Solid State Overload (3RB type) Standard
- Latest technology in arc quenching to extend contactor life
- Wide variety of enclosures in all starter configurations

Size 7 & 8 Starters Additional Features

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



ESP200™ Solid State Starter

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

ESP200™ Solid State Overload Relays

Standard features provide Improved Starter Performance:

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

Half Size Starters

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

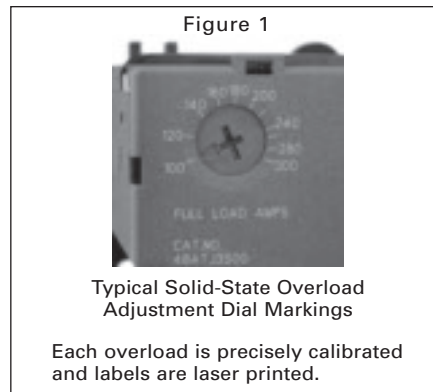
These additional starter sizes have the reserve capacity to handle occasional plugging and jogging applications without derating. Superior operating performance in heavy duty applications is assured by the large current carrying parts, not by derating the device.

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

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

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

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



Typical Solid-State Overload Adjustment Dial Markings

Each overload is precisely calibrated and labels are laser printed.



DIP Switch Settings

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

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

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

Motor Size		Starter Size	Half Size	List Price \$	“Half-Size” Savings Over Next Full Size
230V	460V				
7 ½	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 8/82.
- Factory Modifications see page 8/95.
- Dimensions see pages 8/103 open and 8/116 enclosed.
- Wiring Diagrams see page 8/131.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240 ^①	A
200–208	D
220–240	G
277	L
220–240/440–480 ^①	C
440–480	H
575–600	E
For other voltages and frequencies, see Factory Modifications page 8/95.	

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

Max Hp				NEMA Size	Half Size	Amp Range	Frame Size	Enclosure ^②		NEMA 1 General Purpose	NEMA 4/4X Stainless ^② Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional) ^③	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 ^② Industrial Use Weatherproof (Field Convertible to 3/3R)
200 Volts	230 Volts	460 Volts	575 Volts					Open Type Standard Auxiliary Contacts ^②	List Price \$					
1/4	1/4	1/4	1/4	00	—	0.25–1	A	14BUA32A*		14BUB32B*	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*	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*	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*		14CUB32B*	14CUA32W*	14CUB32F*	14CUA32H*	14CUB32H*
1/2	1/2	1 1/2	2	0	—	0.75–3.4	A	14CUC32A*		14CUC32B*	14CUC32W*	14CUC32F*	14CUC32H*	14CUC32H*
2	2	5	5	0	—	3–12	A1	14CUC32A*		14CUC32B*	14CUC32W*	14CUC32F*	14CUC32H*	14CUC32H*
3	3	—	—	0	—	5.5–22	A1	14CUD32A*		14CUD32B*	14CUD32W*	14CUD32F*	14CUD32H*	14CUD32H*
1/4	1/4	1/4	1/4	1	—	0.25–1	A	14DUA32A*		14DUB32B*	14DUA32W*	14DUB32F*	14DUA32H*	14DUB32H*
1/2	1/2	1 1/2	2	1	—	0.75–3.4	A	14DUC32A*		14DUC32B*	14DUC32W*	14DUC32F*	14DUC32H*	14DUC32H*
2	2	5	5	1	—	3–12	A1	14DUC32A*		14DUC32B*	14DUC32W*	14DUC32F*	14DUC32H*	14DUC32H*
3	3	10	10	1	—	5.5–22	A1	14DUD32A*		14DUD32B*	14DUD32W*	14DUD32F*	14DUD32H*	14DUD32H*
7 1/2	7 1/2	—	—	1	—	10–40	A1	14DUE32A*		14DUE32B*	14DUE32W*	14DUE32F*	14DUE32H*	14DUE32H*
10	10	15	15	—	1 1/2	10–40	A1	14EUE32A*		14EUE32B*	14EUE32W*	14EUE32F*	14EUE32H*	14EUE32H*
10	15	25	25	2	—	13–52	B	14FUF32A*		14FUF32B*	14FUF32W*	14FUF32F*	14FUF32H*	14FUF32H*
15	20	30	30	—	2 1/2	25–100	B	14GUG32A*		14GUG32B*	14GUG32W*	14GUG32F*	14GUG32H*	14GUG32H*
25	30	50	50	3	—	25–100	B	14HUG32A*		14HUG32B*	14HUG32W*	14HUG32F*	14HUG32H*	14HUG32H*
30	40	75	75	—	3 1/2	50–200	B	14IUH32A*		14IUH32B*	14IUH32W*	14IUH32F*	14IUH32H*	14IUH32H*
40	50	100	100	4	—	50–200	B	14JUH32A*		14JUH32B*	14JUH32W*	14JUH32F*	14JUH32H*	14JUH32H*
75	100	200	200	5	—	55–250	—	14LPU32A*		14LPU32B*	14LPU32E* ^④	—	14LPU32H*	14LPU32H*
150	200	400	400	6	—	160–630	—	14MPX32A*		14MPX32B*	14MPX32E* ^④	—	—	14MPX32H*
—	300	600	600	7 ^⑤	—	400–1220	A1+CT	14NUN32A*		14NUN32B*	14NUN32E* ^④	—	—	14NUN32H*
—	450	900	900	8 ^⑥	—	400–1220	A1+CT	14PUN32A*		14PUN32B*	14PUN32E* ^④	—	—	14PUN32H*

Open Type & Standard Width Enclosure, Single Phase, 2-Pole^③

Max Hp		NEMA Size	Amp Range	Frame Size	Enclosure ^②		NEMA 1 General Purpose	NEMA 4/4X Stainless ^② Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional)	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 ^② Industrial Use Weatherproof (Field Convertible to 3/3R)
115 Volts	208/230 Volts				Open Type Standard Auxiliary Contacts ^②	List Price \$					
1/4	1/4	0	0.75–3.4	A	14CUB12A*		14CUB12B*	14CUB12W*	14CUB12F*	14CUB12H*	14CUB12H*
1/2	1/2	0	3–12	A1	14CUC12A*		14CUC12B*	14CUC12W*	14CUC12F*	14CUC12H*	14CUC12H*
1	2	0	5.5–22	A1	14CUD12A*		14CUD12B*	14CUD12W*	14CUD12F*	14CUD12H*	14CUD12H*
1/4	1/4	1	0.75–3.4	A	14DUB12A*		14DUB12B*	14DUB12W*	14DUB12F*	14DUB12H*	14DUB12H*
1/2	1/2	1	3–12	A1	14DUC12A*		14DUC12B*	14DUC12W*	14DUC12F*	14DUC12H*	14DUC12H*
1	2	1	5.5–22	A1	14DUD12A*		14DUD12B*	14DUD12W*	14DUD12F*	14DUD12H*	14DUD12H*

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

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

② For conduit hubs and conversion instructions, see page 8/88.

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 Enclosure is NEMA Type 4 (painted steel).

⑤ F coil 100–250V AC 50/60Hz, or DC, H coil 150–500V AC 50/60Hz, or DC

⑥ Only available F coil 100–250V AC 50/60Hz, or DC

⑦ Standard Auxiliary Contacts, Same as Contactors, refer to page 8/13.

⑧ For 316 Stainless Steel option see page 8/98.

⑨ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Heavy Duty Motor Starters

Solid State Overload with Auto/Manual Reset, Class 14

Selection

 NEMA 1	Ordering Information	Coil Table																				
	▶ 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 8/82. ▶ Factory Modifications see page 8/95. ▶ Dimensions see page 8/116. ▶ Wiring Diagrams see page 8/131. ▶ Replacement Parts see page 8/157.	<table><tr><th>60Hz Voltage</th><th>Letter</th></tr><tr><td>24 Separate Control</td><td>J</td></tr><tr><td>120 Separate Control</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></table>	60Hz Voltage	Letter	24 Separate Control	J	120 Separate Control	F	110–120/220–240	A	200–208	D	220–240	G	277	L	220–240/440–480	C	440–480	H	575–600	E
	60Hz Voltage	Letter																				
24 Separate Control	J																					
120 Separate Control	F																					
110–120/220–240	A																					
200–208	D																					
220–240	G																					
277	L																					
220–240/440–480	C																					
440–480	H																					
575–600	E																					
	For other voltages and frequencies, see Factory Modifications page 8/95.																					

Extra Wide Enclosure, 3-Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Overload		Enclosure ^③							
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size	NEMA 1 General Purpose		NEMA 4/4X Stainless ^① Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional) ^②		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 ^① 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 \$
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*		14CUA82W*		14CUA82H*		14CUA820*	
1/2	1/2	1 1/2	2	0	—	0.75–3.4	A	14CUB82B*		14CUB82W*		14CUB82H*		14CUB820*	
2	2	5	5	0	—	3–12	A1	14CUC82B*		14CUC82W*		14CUC82H*		14CUC820*	
3	3	—	—	0	—	5.5–22	A1	14CUD82B*		14CUD82W*		14CUD82H*		14CUD820*	
1/4	1/4	1/4	1/4	1	—	0.25–1	A	14DUA82B*		14DUA82W*		14DUA82H*		14DUA820*	
1/2	1/2	1 1/2	2	1	—	0.75–3.4	A	14DUB82B*		14DUB82W*		14DUB82H*		14DUB820*	
2	2	5	5	1	—	3–12	A1	14DUC82B*		14DUC82W*		14DUC82H*		14DUC820*	
3	3	10	10	1	—	5.5–22	A1	14DUD82B*		14DUD82W*		14DUD82H*		14DUD820*	
7 1/2	7 1/2	—	—	1	—	10–40	A1	14DUE82B*		14DUE82W*		14DUE82H*		14DUE820*	
10	10	15	15	—	1 1/4	10–40	A1	14EUE82B*		14EUE82W*		14EUE82H*		14EUE820*	
10	15	25	25	2	—	13–52	B	14FUF82B*		14FUF82W*		14FUF82H*		14FUF820*	
15	20	30	30	—	2 1/2	25–100	B	14GUG82B*		14GUG82W*		14GUG82H*		14GUG820*	
25	30	50	50	3	—	25–100	B	14HUG82B*		14HUG82W*		14HUG82H*		14HUG820*	
30	40	75	75	—	3 1/2	50–200	B	14IUH82B*		14IUH82W*		14IUH82H*		14IUH820*	

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

① For conduit hubs and conversion instructions, see page 8/88.

② For 316 Stainless Steel option see page 8/98.

③ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Heavy Duty Motor Starters

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

Selection



Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Heater elements see page 8/150. Single phase starters require 1 heater element. 3-phase starters require 3 heater elements.
- Field Modification Kits page 8/82.
- Factory Modifications page 8/95.
- Dimensions see page 8/104 open and 8/116 enclosed.
- Wiring Diagrams see page 8/131.
- Replacement Parts see page 8/157.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240	A
200–208	D
220–240	G
277	L
220–240/440–480	C
440–480	H
575–600	E
For other voltages and frequencies, see Factory Modifications page 8/95.	

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 ^④	NEMA 1 General Purpose	NEMA 4/4X Stainless ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel ^③	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 ^② Industrial Use Weatherproof						
Catalog No	Catalog No	Catalog No	Catalog No				Catalog No	Price \$	Catalog No	Price \$	Catalog No	Price \$	Catalog No	Price \$	Catalog No	Price \$	Catalog No	Price \$
1 ½	1 ½	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	14CP32W*81		14CP32H*81		14CP32H*81		14CP32H*81		14CP32H*81
7 ½	7 ½	10	10	27	1	—	14DP32A*81		14DP32B*81	14DP32W*81		14DP32H*81		14DP32H*81		14DP32H*81		14DP32H*81
10	10	15	15	40	—	1 ¼	14EP32A*81		14EP32B*81	14EP32W*81		14EP32H*81		14EP32H*81		14EP32H*81		14EP32H*81
10	15	25	25	45	2	—	14FP32A*81		14FP32B*81	14FP32W*81		14FP32H*81		14FP32H*81		14FP32H*81		14FP32H*81
15	20	30	30	60	—	2 ½	14GP32A*81		14GP32B*81	14GP32W*81		14GP32H*81		14GP32H*81		14GP32H*81		14GP32H*81
25	30	50	50	90	3	—	14HP32A*81		14HP32B*81	14HP32W*81		14HP32H*81		14HP32H*81		14HP32H*81		14HP32H*81
30	40	75	75	115	—	3 ½	14IP32A*81		14IP32B*81	14IP32W*81		14IP32H*81		14IP32H*81		14IP32H*81		14IP32H*81
40	50	100	100	135	4	—	14JG32A*81		14JG32B*81	14JG32W*81		14JG32H*81		14JG32H*81		14JG32H*81		14JG32H*81

Open Type & Standard Width Enclosure, Single Phase, 2-Pole^③

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 ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel ^③	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 ^② Industrial Use Weatherproof						
Catalog No	Catalog No				Catalog No	Price \$	Catalog No	Price \$	Catalog No	Price \$	Catalog No	Price \$	Catalog No	Price \$	Catalog No	Price \$
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	14CP12W*81		14CP12H*81		14CP12H*81		14CP12H*81		14CP12H*81
2	3	27	1	—	14DP12A*81		14DP12B*81	14DP12W*81		14DP12H*81		14DP12H*81		14DP12H*81		14DP12H*81
3	5	35	1P	—	14EP12A*81		14EP12B*81	14EP12W*81		14EP12H*81		14EP12H*81		14EP12H*81		14EP12H*81
3	7 ½	45	2	—	14FP12A*81		14FP12B*81	14FP12W*81		14FP12H*81		14FP12H*81		14FP12H*81		14FP12H*81
5	10	60	—	2 ½	14GP12A*81		14GP12B*81	14GP12W*81		14GP12H*81		14GP12H*81		14GP12H*81		14GP12H*81

Extra Wide Enclosure, 3-Phase, 3-Pole^①

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 ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel ^③	NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use	NEMA 12 NEMA 3/3R ^② Industrial Use Weatherproof				
Catalog No	Catalog No	Catalog No	Catalog No				Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$
1 ½	1 ½	2	2	9	00	—	14BP82B*81		Use Size 0	—	Use Size 0	—	Use Size 0	—
3	3	5	5	18	0	—	14CP82B*81		14CP82W*81		14CP82H*81		14CP82H*81	
7 ½	7 ½	10	10	27	1	—	14DP82B*81		14DP82W*81		14DP82H*81		14DP82H*81	
10	10	15	15	40	—	1 ¼	14EP82B*81		14EP82W*81		14EP82H*81		14EP82H*81	
10	15	25	25	45	2	—	14FP82B*81		14FP82W*81		14FP82H*81		14FP82H*81	
15	20	30	30	60	—	2 ½	14GP82B*81		14GP82W*81		14GP82H*81		14GP82H*81	
25	30	50	50	90	3	—	14HP82B*81		14HP82W*81		14HP82H*81		14HP82H*81	
30	40	75	75	115	—	3 ½	14IP82B*81		14IP82W*81		14IP82H*81		14IP82H*81	
40	50	100	100	135	4	—	14JG82B*81		14JG82W*81		14JG82H*81		14JG82H*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 8/131.**

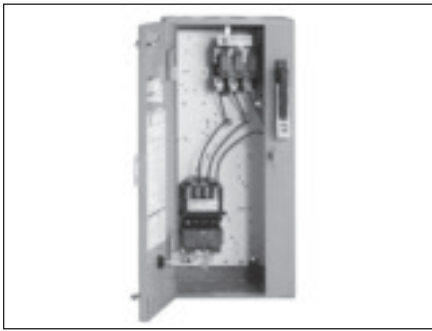
- ① To receive a single phase starter in an extra wide enclosure, order the enclosure kit from pg 8/91 and the open style starter from pg 8/14 or 8/16 as separate items.
- ② For conduit hubs and conversion instructions, see page 8/88.

- 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 8/44.
- ⑤ For 316 Stainless Steel option see page 8/98.

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 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.



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, your 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 8/93 for more details.

Siemens Type ETI Circuit Breaker

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

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



Heavy Duty Starters

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

Combination Heavy Duty Starters

Non-Fusible with Solid State Overload, Class 17

Selection

	Ordering Information	Coil Table	
	▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order. ▶ For Fusible Styles see page 8/21. ▶ Field Modification Kits see page 8/82. ▶ Factory Modifications see page 8/95. ▶ Dimensions see page 8/118. ▶ Wiring Diagrams see page 8/132. ▶ Replacement Parts see page 8/157.	60Hz Voltage	Letter
		24 Separate Control	J
		120 Separate Control	F
		110–120/220–240 ^①	A
		200–208	D
		220–240	G
		277	L
		220–240/440–480 ^①	C
		440–480	H
		575–600	E
		For other voltages and frequencies, see Factory Modifications page 8/95.	

Standard Width Enclosure, 3 Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Enclosure ^②							
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size		NEMA 1 General Purpose	NEMA 4/4X Stainless ^② Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional) ^③	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 12 NEMA 3/3R ^② 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	17CUA92B*		17CUA92W*		17CUA92F*		17CUA92N*	
1/2	3/4	1 1/2	2	0	—	0.75–3.4	A	30	17CUB92B*		17CUB92W*		17CUB92F*		17CUB92N*	
2	2	5	5	0	—	3–12	A1	30	17CUC92B*		17CUC92W*		17CUC92F*		17CUC92N*	
3	3	—	—	0	—	5.5–22	A1	30	17CUD92B*		17CUD92W*		17CUD92F*		17CUD92N*	
1/2	1/2	1/2	1/2	1	—	0.25–1	A	30	17DUA92B*		17DUA92W*		17DUA92F*		17DUA92N*	
1/2	3/4	1 1/2	2	1	—	0.75–3.4	A	30	17DUB92B*		17DUB92W*		17DUB92F*		17DUB92N*	
2	2	5	5	1	—	3–12	A1	30	17DUC92B*		17DUC92W*		17DUC92F*		17DUC92N*	
3	3	10	10	1	—	5.5–22	A1	30	17DUD92B*		17DUD92W*		17DUD92F*		17DUD92N*	
7 1/2	7 1/2	—	—	1	—	10–40	A1	60	17DUE92B*		17DUE92W*		17DUE92F*		17DUE92N*	
10	10	15	15	—	1 1/2	10–40	A1	60	17EUE92B*		17EUE92W*		17EUE92F*		17EUE92N*	
10	15	25	25	2	—	13–52	B	60	17FUF92B*		17FUF92W*		17FUF92F*		17FUF92N*	
15	20	30	30	—	2 1/2	25–100	B	100 ^④	17GUG92B*		17GUG92W*		17GUG92F*		17GUG92N*	
20 ^⑤	25 ^⑤	50	50	3	—	25–100	B	100	17HUG92B*		17HUG92W*		17HUG92F*		17HUG92N*	
30	40	75	75	—	3 1/2	50–200	B	200	17IUH92B*		17IUH92W*		17IUH92F*		17IUH92N*	
40	50	100	100	4	—	50–200	B	200	17JUH92B*		17JUH92W*		17JUH92F*		17JUH92N*	
75	100	200	200	5	—	55–250	—	400 ^⑥	17LPU92B*		17LPU92E* ^⑦		—	—	17LPU92N*	
150	200	400	400	6	—	160–630	—	800	17MPX92B*		17MPX92E* ^⑦		—	—	17MPX92N*	
—	300	600	600	7 ^⑧	—	400–1220	A1+CT	1200	17NUN92B*		—		—	—	17NUN92N*	
—	450	900	900	8 ^⑧	—	400–1220	A1+CT	1600	17PUN92B*		—		—	—	17PUN92N*	

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

Max Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Enclosure ^②							
115 Volts	208 230 Volts					Amp Range ^③	Frame Size		NEMA 1 General Purpose	NEMA 4/4X Stainless ^② Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional) ^③	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 12 NEMA 3/3R ^② 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	0	—	0.75–3.4	A	30			17CUB92B*		17CUB92W*		17CUB92F*		17CUB92N*	
1/2	3/4	0	—	3–12	A1	30			17CUC92B*		17CUC92W*		17CUC92F*		17CUC92N*	
1	2	0	—	5.5–22	A1	30			17CUD92B*		17CUD92W*		17CUD92F*		17CUD92N*	
1/2	3/4	1	—	0.75–3.4	A	30			17DUB92B*		17DUB92W*		17DUB92F*		17DUB92N*	
1/2	3/4	1	—	3–12	A1	30			17DUC92B*		17DUC92W*		17DUC92F*		17DUC92N*	
1	2	1	—	5.5–22	A1	30			17DUD92B*		17DUD92W*		17DUD92F*		17DUD92N*	

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

- ① Dual voltage coils not available in modified starters or in starter sizes 5–8.
- ② For conduit hubs and conversion instructions, see page 8/88.
- ③ For 60A disconnect, order fusible cat. no. page 8/21.

- ④ For 25 HP and 200A disconnect, order fusible cat. no. page 8/21.
- ⑤ For 30HP and 200A disconnect, order fusible cat. no. page 8/21.
- ⑥ For 600A disconnect, order fusible cat. no. page 8/21.
- ⑦ Enclosure is NEMA Type 4 (painted steel).
- ⑧ For a single phase motor, multiply the motor nameplate by 0.75 and set the OL dial to the resulting value.

- ⑨ F coil 100–250V AC 50/60Hz, or DC, H coil 150–500V AC 50/60Hz, or DC
- ⑩ Only available F coil 100–250V AC 50/60Hz, or DC
- ⑪ For 316 Stainless Steel option see page 8/98.
- ⑫ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Combination Heavy Duty Starters

Non-Fusible with Solid State Overload, Class 17

Selection



Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- For Fusible Styles see page 8/22.
- Field Modification Kits see page 8/82.
- Factory Modifications see page 8/95.
- Dimensions see page 8/118.
- Wiring Diagrams see page 8/132.
- Replacement Parts see page 8/157.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240 ^①	A
200–208	D
220–240	G
277	L
220–240/440–480 ^①	C
440–480	H
575–600	E

For other voltages and frequencies, see Factory Modifications page 8/95.

Extra Wide Enclosure, 3-Phase, 3-Pole

Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Enclosure ^②					
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size		NEMA 1 General Purpose		NEMA 4/4X Stainless ^③ Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional) ^④		NEMA 12 NEMA 3/3R ^⑤ Industrial Use Weatherproof (Field Convertible to 3/3R)	
									Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/4	1/4	1/4	1/4	0	—	0.25–1	A	30	17CUA82B*		17CUA82W*		17CUA82N*	
1/2	1/2	1 1/2	2	0	—	0.75–3.4	A	30	17CUB82B*		17CUB82W*		17CUB82N*	
2	2	5	5	0	—	3–12	A1	30	17CUC82B*		17CUC82W*		17CUC82N*	
3	3	—	—	0	—	5.5–22	A1	30	17CUD82B*		17CUD82W*		17CUD82N*	
1/4	1/4	1/4	1/4	1	—	0.25–1	A	30	17DUA82B*		17DUA82W*		17DUA82N*	
1/2	1/2	1 1/2	2	1	—	0.75–3.4	A	30	17DUB82B*		17DUB82W*		17DUB82N*	
2	2	5	5	1	—	3–12	A1	30	17DUC82B*		17DUC82W*		17DUC82N*	
3	3	10	10	1	—	5.5–22	A1	30	17DUD82B*		17DUD82W*		17DUD82N*	
7 1/2	7 1/2	—	—	1	—	10–40	A1	60	17DUE82B*		17DUE82W*		17DUE82N*	
10	10	15	15	—	1 1/4	10–40	A1	60	17EUE82B*		17EUE82W*		17EUE82N*	
10	15	25	25	2	—	13–52	B	60	17FUF82B*		17FUF82W*		17FUF82N*	
15	20	30	30	—	2 1/2	25–100	B	100 ^⑥	17GUG82B*		17GUG82W*		17GUG82N*	
20 ^⑦	25 ^⑧	50	50	3	—	25–100	B	100	17HUG82B*		17HUG82W*		17HUG82N*	

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 8/88.

^③ For 60A disconnect, order fusible cat. no. page 8/22.

^④ For 25 HP and 200A disconnect, order fusible cat. no. page 8/22.

^⑤ For 30HP and 200A disconnect, order fusible cat. no. page 8/22.

^⑥ For 316 Stainless Steel option see page 8/98.

^⑦ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Combination Heavy Duty Starters

Non-Fusible with Ambient Compensated Bimetal Overload, Class 17

Selection

	Ordering Information		Coil Table	
	▶ 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 8/150. (3 required) ▶ Field Modification Kits see page 8/82. ▶ Factory Modifications see page 8/95. ▶ Dimensions see page 8/118. ▶ Wiring Diagrams see page 8/132. ▶ Replacement Parts see page 8/157.		60Hz Voltage	Letter
			24 Separate Control 120 Separate Control 110–120/220–240 ^① 200–208 220–240 277 220–240/440–480 ^① 440–480 575–600	J F A D G L C H E

For other voltages and frequencies, see Factory Modifications page 8/95.

Standard Width Enclosure, 3-Phase, 3-Pole

Max Hp				Contactor Amp Rating	NEMA Size	Half Size	Disc Amp Rating	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts					NEMA 1 General Purpose		NEMA 4/4X Stainless ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (optional) ^③		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R, ^② 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	18	0	—	30	17CP92B*81		17CP92W*81		17CP92F*81		17CP92N*81	
7½ ^③	7½ ^③	10	10	27	1	—	30	17DP92B*81		17DP92W*81		17DP92F*81		17DP92N*81	
10	10	15	15	40	—	1¾	60	17EP92B*81		17EP92W*81		17EP92F*81		17EP92N*81	
10	15	25	25	45	2	—	60	17FP92B*81		17FP92W*81		17FP92F*81		17FP92N*81	
15	20	30	30	60	—	2½	100	17GP92B*81		17GP92W*81		17GP92F*81		17GP92N*81	
25 ^④	30 ^④	50	50	90	3	—	100	17HP92B*81		17HP92W*81		17HP92F*81		17HP92N*81	
30	40	75	75	115	—	3½	200	17IP92B*81		17IP92W*81		17IP92F*81		17IP92N*81	
40	50	100	100	135	4	—	200	17JP92B*81		17JP92W*81		17JP92F*81		17JP92N*81	

Extra Wide Enclosure, 3-Phase, 3-Pole

Max Hp				Contactor Amp Rating	NEMA Size	Half Size	Disc Amp Rating	Enclosure					
200 Volts	230 Volts	460 Volts	575 Volts					NEMA 1 General Purpose		NEMA 4/4X Stainless ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (optional) ^⑤		NEMA 12, NEMA 3/3R, ^② NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
								Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
3	3	5	5	18	0	—	30	17CP82B*81		17CP82W*81		17CP82N*81	
7½ ^③	7½ ^③	10	10	27	1	—	30	17DP82B*81		17DP82W*81		17DP82N*81	
10	10	15	15	40	—	1¾	60	17EP82B*81		17EP82W*81		17EP82N*81	
10	15	25	25	45	2	—	60	17FP82B*81		17FP82W*81		17FP82N*81	
15	20	30	30	60	—	2½	100	17GP82B*81		17GP82W*81		17GP82N*81	
25 ^④	30 ^④	50	50	90	3	—	100	17HP82B*81		17HP82W*81		17HP82N*81	

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

Max Hp		208/ 230 Volts	Contactor Amp Rating	NEMA Size	Half Size	Disc Amp Rating	Enclosure							
115 Volts	NEMA 1 General Purpose						NEMA 4/4X Stainless ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (optional) ^⑤		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R, ^② 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	18	0	—	30	17CP92B*81		17CP92W*81		17CP92F*81		17CP92N*81		
2	3	27	1	—	30	17DP92B*81		17DP92W*81		17DP92F*81		17DP92N*81		
3	5	35	1P	—	60	17EP92B*81		17EP92W*81		17EP92F*81		17EP92N*81		
3	7½	45	2	—	60	17FP92B*81		17FP92W*81		17FP92F*81		17FP92N*81		
5	10	60	—	2½	100	17GP92B*81		17GP92W*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.

① Dual voltage coils not available in modified starters.
② For conduit hubs and conversion instructions, see page 8/88.

③ For 60A disc, order fusible cat. no. page 8/23.
④ For 200A disc, order fusible cat. no. page 8/23.
⑤ For 316 Stainless Steel option see page 8/98.

Combination Heavy Duty Starters

Fusible with Solid State Overload, Class 17

Selection

	Ordering Information	Coil Table	
	▶ 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 8/82. ▶ Factory Modifications see page 8/95. ▶ Dimensions see page 8/118. ▶ Wiring Diagrams see page 8/132. ▶ Replacement Parts see page 8/157.	60Hz Voltage	Letter
		24 Separate Control	J
		120 Separate Control	F
		110–120/220–240 ^①	A
		200–208	D
		220–240	G
		277	L
		220–240/440–480 ^①	C
		440–480	H
575–600	E		
	For other voltages and frequencies, see Factory Modifications page 8/95.		

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

Max Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Fuse Clip Amp/Volts	Enclosure ^②			
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size			NEMA 1 General Purpose	NEMA 4/4X Stainless ^② Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional) ^②	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 12 NEMA 3/3R ^② 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	—	—	0	—	0.25–1	A	30	30A/250V	17CUA92B*10	17CUA92W*10	17CUA92F*10	17CUA92N*10
—	—	1/4	1/4	0	—	0.25–1	A	30	30A/600V	17CUA92B*11	17CUA92W*11	17CUA92F*11	17CUA92N*11
1/2	1/2	—	—	0	—	0.75–3.4	A	30	30A/250V	17CUB92B*10	17CUB92W*10	17CUB92F*10	17CUB92N*10
—	—	1 1/2	2	0	—	0.75–3.4	A	30	30A/600V	17CUB92B*11	17CUB92W*11	17CUB92F*11	17CUB92N*11
2	2	—	—	0	—	3–12	A1	30	30A/250V	17CUC92B*10	17CUC92W*10	17CUC92F*10	17CUC92N*10
—	—	5	5	0	—	3–12	A1	30	30A/600V	17CUC92B*11	17CUC92W*11	17CUC92F*11	17CUC92N*11
3	3	—	—	0	—	5.5–22	A1	30	30A/250V	17CUD92B*10	17CUD92W*10	17CUD92F*10	17CUD92N*10
—	—	10	10	0	—	5.5–22	A1	30	30A/600V	17CUD92B*11	17CUD92W*11	17CUD92F*11	17CUD92N*11
1/2	1/2	—	—	1	—	0.25–1	A	30	30A/250V	17DUA92B*10	17DUA92W*10	17DUA92F*10	17DUA92N*10
—	—	1/2	1/2	1	—	0.25–1	A	30	30A/600V	17DUA92B*11	17DUA92W*11	17DUA92F*11	17DUA92N*11
1/2	1/2	—	—	1	—	0.75–3.4	A	30	30A/250V	17DUB92B*10	17DUB92W*10	17DUB92F*10	17DUB92N*10
—	—	1 1/2	2	1	—	0.75–3.4	A	30	30A/600V	17DUB92B*11	17DUB92W*11	17DUB92F*11	17DUB92N*11
2	2	—	—	1	—	3–12	A1	30	30A/250V	17DUC92B*10	17DUC92W*10	17DUC92F*10	17DUC92N*10
—	—	5	5	1	—	3–12	A1	30	30A/600V	17DUC92B*11	17DUC92W*11	17DUC92F*11	17DUC92N*11
3	3	—	—	1	—	5.5–22	A1	30	30A/250V	17DUD92B*10	17DUD92W*10	17DUD92F*10	17DUD92N*10
—	—	10	10	1	—	5.5–22	A1	30	30A/600V	17DUD92B*11	17DUD92W*11	17DUD92F*11	17DUD92N*11
7 1/2	7 1/2	—	—	1	—	10–40	A1	60	60A/250V	17DUE92B*12	17DUE92W*12	17DUE92F*12	17DUE92N*12
—	—	15	15	—	1 1/2	10–40	A1	60	60A/600V	17EUE92B*13	17EUE92W*13	17EUE92F*13	17EUE92N*13
10	10	—	—	—	1 1/2	10–40	A1	60	60A/250V	17EUE92B*12	17EUE92W*12	17EUE92F*12	17EUE92N*12
10	15	—	—	2	—	13–52	B	60	60A/250V	17FUF92B*12	17FUF92W*12	17FUF92F*12	17FUF92N*12
—	—	25	25	2	—	13–52	B	60	60A/600V	17FUF92B*13	17FUF92W*13	17FUF92F*13	17FUF92N*13
—	—	30	—	—	2 1/2	13–52	B	60	60A/600V	17GUF92B*13	17GUF92W*13	17GUF92F*13	17GUF92N*13
—	—	30	—	—	2 1/2	13–52	B	100	100A/600V	17GUF92B*15	17GUF92W*15	17GUF92F*15	17GUF92N*15
15	20	—	—	—	2 1/2	25–100	B	100	100A/250V	17GUG92B*14	17GUG92W*14	17GUG92F*14	17GUG92N*14
20	25	—	—	3	—	25–100	B	100	100A/250V	17HUG92B*14	17HUG92W*14	17HUG92F*14	17HUG92N*14
—	—	50	50	3	—	25–100	B	100	100A/600V	17HUG92B*15	17HUG92W*15	17HUG92F*15	17HUG92N*15
25	30	—	—	3	—	25–100	B	200	200A/250V	17HUG92B*16	17HUG92W*16	17HUG92F*16	17HUG92N*16
30	40	—	—	—	3 1/2	50–200	B	200	200A/250V	17IUH92B*16	17IUH92W*16	17IUH92F*16	17IUH92N*16
—	—	75	75	—	3 1/2	50–200	B	200	200A/600V	17IUH92B*17	17IUH92W*17	17IUH92F*17	17IUH92N*17
40	50	—	—	4	—	50–200	B	200	200A/250V	17JUH92B*16	17JUH92W*16	17JUH92F*16	17JUH92N*16
—	—	100	100	4	—	50–200	B	200	200A/600V	17JUH92B*17	17JUH92W*17	17JUH92F*17	17JUH92N*17
75	100	—	—	5	—	55–250	—	400	400A/250V	17LPU92B*18	17LPU92E*18 ^④	—	17LPU92N*18
—	100	—	—	5	—	55–250	—	600	600A/250V ^③	17LPU92B*20	17LPU92E*20 ^④	—	17LPU92N*20
—	—	125	5	—	—	55–250	—	400	200A/600V	17LPU92B*17	17LPU92E*17 ^④	—	17LPU92N*17
—	—	200	200	5	—	55–250	—	400	400A/600V	17LPU92B*19	17LPU92E*19 ^④	—	17LPU92N*19
—	—	200	—	5	—	55–250	—	600	600A/600V ^③	17LPU92B*21	17LPU92E*21 ^④	—	17LPU92N*21
150	200	—	—	6	—	160–630	—	600	600A/250V	17MPX92B*20	17MPX92E*20 ^④	—	17MPX92N*20
—	—	400	400	6	—	160–630	—	600	600A/600V	17MPX92B*21	17MPX92E*21 ^④	—	17MPX92N*21
—	—	400	400	6	—	160–630	—	800	800A/600V	17MPX92B*23	17MPX92E*23 ^④	—	17MPX92N*23
—	—	600	600	7 ^⑤	—	400–1220	A1+CT	1200	1200A/600V	17NUN92B*23	—	—	17NUN92N*23
—	—	900	900	8 ^⑤	—	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).

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

② For conduit hubs and conversion instructions, see page 8/88.

③ Use Class J fuses only.

④ Enclosure is NEMA Type 4 (painted steel).

⑤ Single phase wiring page 8/131.

⑥ F coil 100–250V AC 50/60Hz, or DC, H coil 150–500V AC 50/60Hz, or DC

⑦ Only available

F coil 100–250V AC 50/60Hz, or DC

⑧ For 316 Stainless Steel option see page 8/98.

⑨ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Combination Heavy Duty Starters

Fusible with Solid State Overload, Class 17

Selection

	Ordering Information	Coil Table	
		60Hz Voltage	Letter
	► 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 8/82. ► Factory Modifications see page 8/95. ► Dimensions see page 8/118. ► Wiring Diagrams see page 8/132. ► Replacement Parts see page 8/157.	24 Separate Control	J
		120 Separate Control	F
		110–120/220–240 ^①	A
		200–208	D
		220–240	G
		277	L
		220–240/440–480 ^①	C
		440–480	H
		575–600	E
		For other voltages and frequencies, see Factory Modifications page 8/95.	

Extra Wide Enclosure, 3-Phase, 3-Pole

Max Hp						Overload				Enclosure ^④					
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size			NEMA 1 General Purpose	NEMA 4/4X Stainless ^② Watertight, Dust-tight, 304 Stainless Steel 316 Stainless Steel (Optional) ^③		NEMA 12 NEMA 3/3R ^② Industrial Use Weatherproof (Field Convertible to 3/3R)		
				NEMA Size	Half Size			Disc. Amp Range	Fuse Clip Amp/Volts	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/8	1/8	—	—	0	—	0.25–1	A	30	30A/250V	17CUA82B*10		17CUA82W*10		17CUA82N*10	
—	—	1/8	1/8	0	—	0.25–1	A	30	30A/600V	17CUA82B*11		17CUA82W*11		17CUA82N*11	
1/4	1/4	—	—	0	—	0.75–3.4	A	30	30A/250V	17CUB82B*10		17CUB82W*10		17CUB82N*10	
—	—	1 1/2	2	0	—	0.75–3.4	A	30	30A/600V	17CUB82B*11		17CUB82W*11		17CUB82N*11	
2	2	—	—	0	—	3–12	A1	30	30A/250V	17CUC82B*10		17CUC82W*10		17CUC82N*10	
—	—	5	5	0	—	3–12	A1	30	30A/600V	17CUC82B*11		17CUC82W*11		17CUC82N*11	
3	3	—	—	0	—	5.5–22	A1	30	30A/250V	17CUD82B*10		17CUD82W*10		17CUD82N*10	
—	—	10	10	0	—	5.5–22	A1	30	30A/600V	17CUD82B*11		17CUD82W*11		17CUD82N*11	
1/2	1/2	—	—	1	—	0.25–1	A	30	30A/250V	17DUA82B*10		17DUA82W*10		17DUA82N*10	
—	—	1/2	1/2	1	—	0.25–1	A	30	30A/600V	17DUA82B*11		17DUA82W*11		17DUA82N*11	
1/2	1/2	—	—	1	—	0.75–3.4	A	30	30A/250V	17DUB82B*10		17DUB82W*10		17DUB82N*10	
—	—	1 1/2	2	1	—	0.75–3.4	A	30	30A/600V	17DUB82B*11		17DUB82W*11		17DUB82N*11	
2	2	—	—	1	—	3–12	A1	30	30A/250V	17DUC82B*10		17DUC82W*10		17DUC82N*10	
—	—	5	5	1	—	3–12	A1	30	30A/600V	17DUC82B*11		17DUC82W*11		17DUC82N*11	
3	3	—	—	1	—	5.5–22	A1	30	30A/250V	17DUD82B*10		17DUD82W*10		17DUD82N*10	
—	—	10	10	1	—	5.5–22	A1	30	30A/600V	17DUD82B*11		17DUD82W*11		17DUD82N*11	
7 1/2	7 1/2	—	—	1	—	10–40	A1	60	60A/250V	17DUE82B*12		17DUE82W*12		17DUE82N*12	
—	—	15	15	—	1 1/4	10–40	A1	60	60A/600V	17EUE82B*13		17EUE82W*13		17EUE82N*13	
10	10	—	—	—	1 1/4	10–40	A1	60	60A/250V	17EUE82B*12		17EUE82W*12		17EUE82N*12	
10	15	—	—	2	—	13–52	B	60	60A/250V	17FUF82B*12		17FUF82W*12		17FUF82N*12	
—	—	25	25	2	—	13–52	B	60	60A/600V	17FUF82B*13		17FUF82W*13		17FUF82N*13	
—	—	—	30	—	2 1/2	13–52	B	60	60A/600V	17GUF82B*13		17GUF82W*13		17GUF82N*13	
—	—	30	—	—	2 1/2	13–52	B	100	100A/600V	17GUF82B*15		17GUF82W*15		17GUF82N*15	
15	20	—	—	—	2 1/2	25–100	B	100	100A/250V	17GUG82B*14		17GUG82W*14		17GUG82N*14	
20	25	—	—	3	—	25–100	B	100	100A/250V	17HUG82B*14		17HUG82W*14		17HUG82N*14	
—	—	50	50	3	—	25–100	B	100	100A/600V	17HUG82B*15		17HUG82W*15		17HUG82N*15	
25	30	—	—	3	—	25–100	B	200	200A/250V	17HUG82B*16		17HUG82W*16		17HUG82N*16	

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 8/88.

③ For 316 Stainless Steel option see page 8/98.

④ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Combination Heavy Duty Starters

Fusible with Ambient Compensated Bimetal Overload, Class 17

Selection



Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Heater elements see page 8/150. (3 required)
- Field Modification Kits see page 8/82.
- Factory Modifications see page 8/95.
- Dimensions see page 8/118.
- Wiring Diagrams see page 8/132.
- Replacement Parts see page 8/157.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240 ^①	A
200–208	D
220–240	G
277	L
220–240/440–480 ^①	C
440–480	H
575–600	E
For other voltages and frequencies, see Factory Modifications page 8/95.	

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

Max Hp				Con- tactor Amp Rating	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 ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (optional) ^④		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R, ^② 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	18 18	0 0	— —	30 30	30A/250V 30A/600V	17CP92B*1081 17CP92B*1181		17CP92W*1081 17CP92W*1181		17CP92F*1081 17CP92F*1181		17CP92N*1081 17CP92N*1181	
5 —	5 —	— 10	— 10	27 27	1 1	— —	30 30	30A/250V 30A/600V	17DP92B*1081 17DP92B*1181		17DP92W*1081 17DP92W*1181		17DP92F*1081 17DP92F*1181		17DP92N*1081 17DP92N*1181	
7½	7½	—	—	27	1	—	60	60A/250V	17DP92B*1281		17DP92W*1281		17DP92F*1281		17DP92N*1281	
10 —	10 —	— 15	— 15	40 40	— —	1¾ 1¾	60 60	60A/250V 60A/600V	17EP92B*1281 17EP92B*1381		17EP92W*1281 17EP92W*1381		17EP92F*1281 17EP92F*1381		17EP92N*1281 17EP92N*1381	
10 —	15 —	— 25	— 25	45 45	2 2	— —	60 60	60A/250V 60A/600V	17FP92B*1281 17FP92B*1381		17FP92W*1281 17FP92W*1381		17FP92F*1281 17FP92F*1381		17FP92N*1281 17FP92N*1381	
— —	— —	— 30	30 60	60 60	— —	2½ 2½	60 100	60A/600V 100A/600V	17GP92B*1381 17GP92B*1581		17GP92W*1381 17GP92W*1581		17GP92F*1381 17GP92F*1581		17GP92N*1381 17GP92N*1581	
15	20	—	—	60	—	2½	100	100A/250V	17GP92B*1481		17GP92W*1481		17GP92F*1481		17GP92N*1481	
20 —	25 —	— 50	— 50	90 90	3 3	— —	100 100	100A/250V 100A/600V	17HP92B*1481 17HP92B*1581		17HP92W*1481 17HP92W*1581		17HP92F*1481 17HP92F*1581		17HP92N*1481 17HP92N*1581	
25	30	—	—	90	3	—	200	200A/250V	17HP92B*1681		17HP92W*1681		17HP92F*1681		17HP92N*1681	
30 —	40 —	— 75	— 75	115 115	— —	3½ 3½	200 200	200A/250V 200A/600V	17IP92B*1681 17IP92B*1781		17IP92W*1681 17IP92W*1781		17IP92F*1681 17IP92F*1781		17IP92N*1681 17IP92N*1781	
40 —	50 —	— 100	— 100	135 135	4 4	— —	200 200	200A/250V 200A/600V	17JP92B*1681 17JP92B*1781		17JP92W*1681 17JP92W*1781		17JP92F*1681 17JP92F*1781		17JP92N*1681 17JP92N*1781	

Extra Wide Enclosure, 3-Phase, 3-Pole

Max Hp				Con- tactor Amp Rating	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 ^② Watertight, Dust-tight Industrial Use Weatherproof 304 Stainless Steel 316 Stainless Steel (optional) ^④		NEMA 12, NEMA 3/3R, ^② NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
									Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
3 —	3 —	— 5	— 5	18 18	0 0	— —	30 30	30A/250V 30A/600V	17CP82B*1081 17CP82B*1181		17CP82W*1081 17CP82W*1181		17CP82N*1081 17CP82N*1181	
5 —	5 —	— 10	— 10	27 27	1 1	— —	30 30	30A/250V 30A/600V	17DP82B*1081 17DP82B*1181		17DP82W*1081 17DP82W*1181		17DP82N*1081 17DP82N*1181	
7½ —	7½ —	— 15	— 15	27 40	1 —	— 1¼	60 60	60A/250V 60A/600V	17DP82B*1281 17EP82B*1381		17DP82W*1281 17EP82W*1381		17DP82N*1281 17EP82N*1381	
10 —	10 —	— 25	— 25	40 45	— 2	1¼ —	60 60	60A/250V 60A/600V	17EP82B*1281 17FP82B*1381		17EP82W*1281 17FP82W*1381		17EP82N*1281 17FP82N*1381	
— —	— —	— 30	— —	45 60	2 —	— 2½	60 100	60A/250V 100A/600V	17FP82B*1281 17GP82B*1381		17FP82W*1281 17GP82W*1381		17FP82N*1281 17GP82N*1381	
— —	— —	— 50	— —	60 90	2 3	— —	100 100	60A/600V 100A/250V	17GP82B*1581 17GP82B*1481		17GP82W*1581 17GP82W*1481		17GP82N*1581 17GP82N*1481	
15 —	20 —	— 50	— 90	60 90	— 3	2½ —	100 100	100A/250V 100A/600V	17HP82B*1481 17HP82B*1581		17HP82W*1481 17HP82W*1581		17HP82N*1481 17HP82N*1581	
20 —	25 30	— —	— —	90 90	3 3	— —	100 200	100A/250V 200A/250V	17HP82B*1681 17HP92B*1681		17HP82W*1681 17HP92W*1681		17HP82N*1681 17HP92N*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.

① Dual voltage coils not available in modified starters.

② For conduit hubs and conversion instructions, see page 8/88.

③ Single phase wiring page 8/131.

④ For 316 Stainless Steel option see page 8/98.

Combination Heavy Duty Starters

MCP Type with Solid State Overload, Class 18

Selection

	Ordering Information	Coil Table	
		60Hz Voltage	Letter
	► 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 8/82. ► Factory Modifications see page 8/95. ► Dimensions see page 8/118. ► Wiring Diagrams see page 8/132. ► Replacement Parts see page 8/157.	24 Separate Control	J
		120 Separate Control	F
		110–120/220–240 ^①	A
		200–208	D
		220–240	G
		277	L
		220–240/440–480 ^①	C
		440–480	H
		575–600	E
		For other voltages and frequencies, see Factory Modifications page 8/95.	

Standard Width Enclosure, 3-Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Overload		Enclosure ^②									
200 Volts	230 Volts	460 Volts	575 Volts				Amp Range	Frame Size	NEMA 1 General Purpose		NEMA 4/4X Stainless ^② Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional) ^③		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 ^② 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 \$
1/2	1/2	1	1	0	—	3	0.75–3.4	A	18CUB92B*		18CUB92W*		18CUB92F*		18CUB92H*		18CUB92N*	
2	2	5	5	0	—	10	3–12	A1	18CUC92B*		18CUC92W*		18CUC92F*		18CUC92H*		18CUC92N*	
3	3	—	—	0	—	25	5.5–22	A1	18CUD92B*		18CUD92W*		18CUD92F*		18CUD92H*		18CUD92N*	
1/2	1/2	1	1	1	—	3	0.75–3.4	A	18DUB92B*		18DUB92W*		18DUB92F*		18DUB92H*		18DUB92N*	
2	2	5	5	1	—	10	3–12	A1	18DUC92B*		18DUC92W*		18DUC92F*		18DUC92H*		18DUC92N*	
3	3	7 1/2	10	1	—	25	5.5–22	A1	18DUD92B*		18DUD92W*		18DUD92F*		18DUD92H*		18DUD92N*	
7 1/2	7 1/2	10	—	1	—	30	10–40	A1	18DUE92B*		18DUE92W*		18DUE92F*		18DUE92H*		18DUE92N*	
—	—	15	15	—	1 1/4	40	10–40	A1	18EUE92B*		18EUE92W*		18EUE92F*		18EUE92H*		18EUE92N*	
10	15	25	25	2	—	50	13–52	B	18FUF92B*		18FUF92W*		18FUF92F*		18FUF92H*		18FUF92N*	
15	20	30	30	—	2 1/2	100	25–100	B	18GUG92B*		18GUG92W*		18GUG92F*		18GUG92H*		18GUG92N*	
25	30	50	50	3	—	100	25–100	B	18HUG92B*		18HUG92W*		18HUG92F*		18HUG92H*		18HUG92N*	
30	40	75	75	—	3 1/2	125	50–200	B	18IUH92B*		18IUH92W*		18IUH92F*		18IUH92H*		18IUH92N*	
40	50	100	100	4	—	150	50–200	B	18JUH92B*		18JUH92W*		18JUH92F*		18JUH92H*		18JUH92N*	
50	75	150	200	5	—	250	55–250	—	18LPT92B*		18LPT92E* ^③		—	—	18LPT92H*		18LPT92N*	
75	100	200	—	5	—	400	55–250	—	18LPU92B*		18LPU92E* ^③		—	—	18LPU92H*		18LPU92N*	
100	125	250	300	6	—	400	160–630	—	18MPW92B*		18MPW92E* ^③		—	—	—	—	18MPW92N*	
150	200	400	400	6	—	600	160–630	—	18MPX92B*		18MPX92E* ^③		—	—	—	—	18MPX92N*	
—	250	500	500	7 ^④	—	800	400–1220	A1+CT	18NUV92B*		—	—	—	—	—	—	18NUV92N*	
—	300	600	600	7 ^④	—	1000	400–1220	A1+CT	18NUY92B*		—	—	—	—	—	—	18NUY92N*	
—	400	800	800	8 ^⑤	—	1200	400–1220	A1+CT	18PUW92B*		—	—	—	—	—	—	18PUW92N*	
—	450	900	900	8 ^⑤	—	1600	400–1220	A1+CT	18PUZ92B*		—	—	—	—	—	—	18PUZ92N*	

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

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

② For conduit hubs and conversion instructions, see page 8/88.

③ Enclosure is NEMA Type 4 (painted steel).

④ F coil 100–250V AC 50/60Hz, or DC, H coil 150–500V AC 50/60Hz, or DC

⑤ Only available

F coil 100–250V AC 50/60Hz, or DC

⑥ For 316 Stainless Steel option see page 8/98.

⑦ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

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 8/82.
- Factory Modifications see page 8/95.
- Dimensions see page 8/118.
- Wiring Diagrams see page 8/132.
- Replacement Parts see page 8/157.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240 ^①	A
200–208	D
220–240	G
277	L
220–240/440–480 ^①	C
440–480	H
575–600	E

For other voltages and frequencies, see Factory Modifications page 8/95.

Extra Wide Enclosure, 3-Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Overload		Enclosure ^④					
200 Volts	230 Volts	460 Volts	575 Volts				Amp Range	Frame Size	NEMA 1 General Purpose		NEMA 4/4X Stainless ^② Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional) ^③		NEMA 12 Industrial Use Weatherproof (Field Convertible to 3/3R)	
									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*		18CUB82W*		18CUB82N*	
2	2	5	5	0	—	10	3–12	A1	18CUC82B*		18CUC82W*		18CUC82N*	
3	3	—	—	0	—	25	5.5–22	A1	18CUD82B*		18CUD82W*		18CUD82N*	
1/2	1/2	1	1	1	—	3	0.75–3.4	A	18DUB82B*		18DUB82W*		18DUB82N*	
2	2	5	5	1	—	10	3–12	A1	18DUC82B*		18DUC82W*		18DUC82N*	
3	3	7 1/2	10	1	—	25	5.5–22	A1	18DUD82B*		18DUD82W*		18DUD82N*	
7 1/2	7 1/2	10	—	1	—	30	10–40	A1	18DUE82B*		18DUE82W*		18DUE82N*	
—	—	15	15	—	1 1/4	40	10–40	A1	18EUE82B*		18EUE82W*		18EUE82N*	
10	15	25	25	2	—	50	13–52	B	18FUF82B*		18FUF82W*		18FUF82N*	
15	20	30	30	—	2 1/2	100	25–100	B	18GUG82B*		18GUG82W*		18GUG82N*	
25	30	50	50	3	—	100	25–100	B	18HUG82B*		18HUG82W*		18HUG82N*	

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 8/88.

^③ For 316 Stainless Steel option see page 8/98.

^④ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Combination Heavy Duty Starters

MCP Type with Ambient Compensated Bimetal Overload, Class 18

Selection

	Ordering Information	Coil Table	
	▶ 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 8/150. (3 required) ▶ Field Modification Kits see page 8/82. ▶ Factory Modifications see page 8/95. ▶ Dimensions see page 8/118. ▶ Wiring Diagrams see page 8/132. ▶ Replacement Parts see page 8/157.	60Hz Voltage	Letter
		24 Separate Control	J
		120 Separate Control	F
		110–120/220–240 ^①	A
		200–208	D
		220–240	G
		277	L
		220–240/440–480 ^①	C
		440–480	H
		575–600	E
		For other voltages and frequencies, see Factory Modifications page 8/95.	

Standard Width Enclosure, 3-Phase, 3-Pole

Max Hp				Contactor Amp Rating	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 ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (optional) ^③		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, ^② 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 \$	Catalog Number	List Price \$
½	½	1	1	18	0	—	3	18CP92BA*81		18CP92WA*81		18CP92FA*81		18CP92HA*81	18CP92NA*81		
1	1	3	3	18	0	—	10	18CP92BB*81		18CP92WB*81		18CP92FB*81		18CP92HB*81	18CP92NB*81		
3	3	5	5	18	0	—	25	18CP92BC*81		18CP92WC*81		18CP92FC*81		18CP92HC*81	18CP92NC*81		
½	½	1	1	27	1	—	3	18DP92BA*81		18DP92WA*81		18DP92FA*81		18DP92HA*81	18DP92NA*81		
1	1	3	3	27	1	—	10	18DP92BB*81		18DP92WB*81		18DP92FB*81		18DP92HB*81	18DP92NB*81		
3	3	7½	7½	27	1	—	25	18DP92BD*81		18DP92WD*81		18DP92FD*81		18DP92HD*81	18DP92ND*81		
7½	7½	10	10	27	1	—	30	18DP92BE*81		18DP92WE*81		18DP92FE*81		18DP92HE*81	18DP92NE*81		
—	—	15	15	40	—	1¼	40	18EP92BF*81		18EP92WF*81		18EP92FF*81		18EP92HF*81	18EP92NF*81		
10	10	—	—	40	—	1½	50	18EP92BG*81		18EP92WG*81		18EP92FG*81		18EP92HG*81	18EP92NG*81		
—	—	20	20	45	2	—	40	18FP92BH*81		18FP92WH*81		18FP92FH*81		18FP92HH*81	18FP92NH*81		
10	15	25	25	45	2	—	50	18FP92BJ*81		18FP92WJ*81		18FP92FJ*81		18FP92HJ*81	18FP92NJ*81		
10	15	30	30	60	—	2½	50	18GP92BK*81		18GP92WK*81		18GP92FK*81		18GP92HK*81	18GP92NK*81		
15	20	—	—	60	—	2½	100	18GP92BL*81		18GP92WL*81		18GP92FL*81		18GP92HL*81	18GP92NL*81		
—	—	30	30	90	3	—	50	18HP92BM*81		18HP92WM*81		18HP92FM*81		18HP92HM*81	18HP92NM*81		
25	30	50	50	90	3	—	100	18HP92BN*81		18HP92WN*81		18HP92FN*81		18HP92HN*81	18HP92NN*81		
30	40	75	75	115	—	3½	125	18IP92BP*81		18IP92WP*81		18IP92FP*81		18IP92HP*81	18IP92NP*81		
40	50	100	100	135	4	—	150	18JP92BR*81		18JP92WR*81		18JP92FR*81		18JP92HR*81	18JP92NR*81		

Extra Wide Enclosure, 3-Phase, 3-Pole

Max Hp				Contactor Amp Rating	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 ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (optional) ^③		NEMA 12, NEMA 3/3R, ^② NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
								Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
½	½	1	1	18	0	—	3	18CP82BA*81		18CP82WA*81		18CP82NA*81	
1	1	3	3	18	0	—	10	18CP82BB*81		18CP82WB*81		18CP82NB*81	
3	3	5	5	18	0	—	25	18CP82BC*81		18CP82WC*81		18CP82NC*81	
½	½	1	1	27	1	—	3	18DP82BA*81		18DP82WA*81		18DP82NA*81	
1	1	3	3	27	1	—	10	18DP82BB*81		18DP82WB*81		18DP82NB*81	
3	3	7½	7½	27	1	—	25	18DP82BD*81		18DP82WD*81		18DP82ND*81	
7½	7½	10	10	27	1	—	30	18DP82BE*81		18DP82WE*81		18DP82NE*81	
—	—	15	15	40	—	1¼	40	18EP82BF*81		18EP82WF*81		18EP82NF*81	
10	10	—	—	40	—	1¼	50	18EP82BG*81		18EP82WG*81		18EP82NG*81	
—	—	20	20	45	2	—	40	18FP82BH*81		18FP82WH*81		18FP82NH*81	
10	15	25	25	45	2	—	50	18FP82BJ*81		18FP82WJ*81		18FP82NJ*81	
10	15	30	30	60	—	2½	50	18GP82BK*81		18GP82WK*81		18GP82NK*81	
15	20	—	—	60	—	2½	100	18GP82BL*81		18GP82WL*81		18GP82NL*81	
—	—	30	30	90	3	—	50	18HP82BM*81		18HP82WM*81		18HP82NM*81	
25	30	50	50	90	3	—	100	18HP82BN*81		18HP82WN*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.

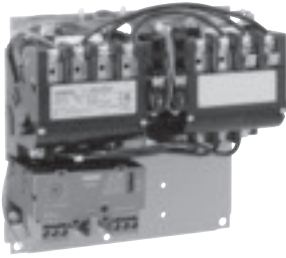
① Dual voltage coils not available in modified starters.
② For conduit hubs and conversion instructions, see page 8/88.

③ For 316 Stainless Steel option see page 8/98.

Reversing Heavy Duty Starters

Solid State Overload, Class 22

Selection

	Ordering Information	Coil Table	
	▶ 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 8/82. ▶ Factory Modifications see page 8/95. ▶ Dimensions see page 8/105 open and 8/121 enclosed. ▶ Wiring Diagrams see page 8/134.	60Hz Voltage	Letter
		24 Separate Control	J
		120 Separate Control	F
		110–120/220–240 ^①	A
	200–208	D	
	220–240	G	
	277	L	
	220–240/440–480 ^①	C	
	440–480	H	
	575–600	E	
	For other voltages and frequencies, see Factory Modifications page 8/95.		

Standard Width Enclosure, 3-Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Overload		Enclosure ^②		NEMA 1		NEMA 4/4X Stainless ^③		NEMA 4X Fiberglass		NEMA 7 & 9 NEMA 3 & 4		NEMA 12 NEMA 3/3R ^④	
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size	Open Type Standard Auxiliary Contacts ^④	Frame Size	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	22BUA32A*		22BUA32B*		Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—
1/2	1/2	1/2	1/2	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	—
1/4	1/4	1/4	1/2	0	—	0.25–1	A	22CUA32A*		22CUA32B*		22CUA32W*		22CUA32F*		22CUA32H*		22CUA320*	
1/2	1/2	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*	
1/4	1/4	1/4	1/2	1	—	0.25–1	A	22DUA32A*		22DUA32B*		22DUA32W*		22DUA32F*		22DUA32H*		22DUA320*	
1/2	1/2	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* ^③		—	—	—	—	22LPU320*	
150	200	400	400	6	—	160–630	—	22MPX32A*		22MPX32B*		22MPX32E* ^③		—	—	—	—	22MPX320*	
—	300	600	600	7 ^④	—	400–1220	A1+CT	22NUN32A*		22NUN32B*		—	—	—	—	—	—	22NUN320*	
—	450	900	900	8 ^⑤	—	400–1220	A1+CT	22PUN32A*		22PUN32B*		—	—	—	—	—	—	22PUN320*	

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

① Dual voltage coils not available in size 5–8 starters.
② For conduit hubs and conversion instructions, see page 8/88.

③ Enclosure is rated only NEMA 4 (painted steel).

④ Only available
F coil 100–250V AC 50/60Hz, or DC
H coil 150–500V AC 50/60Hz, or DC

⑤ Only available
F coil 100–250V AC 50/60Hz, or DC

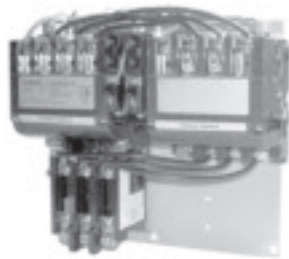
⑥ Auxiliary contacts
22B–22E 4th pole built-in
22F–22J 2 NO & 2 NC

⑦ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Reversing Heavy Duty Starters

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

Selection

	Ordering Information	Coil Table																		
	▶ 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 8/150. Single phase starters require 1 heater element. 3-phase starters require 3 heater elements. ▶ Field Modification Kits see page 8/82. ▶ Factory Modifications see page 8/95. ▶ Dimensions see pages 8/105 open and 8/121 enclosed. ▶ Wiring Diagrams see page 8/133. ▶ Replacement Parts see page 8/157.	60Hz Voltage	Letter																	
	<table><tr><td>24 Separate Control</td><td>J</td></tr><tr><td>120 Separate Control</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></table> For other voltages and frequencies, see Factory Modifications page 8/95.	24 Separate Control	J	120 Separate Control	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	
24 Separate Control	J																			
120 Separate Control	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																			

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

Max Hp				Contactor Amp Rating	NEMA Size	Half Size	Enclosure											
							Open Type ^③		NEMA 1 General Purpose		NEMA 4/4X Stainless ^① 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 ^① NEMA 3/3R Industrial Use Weatherproof	
200 Volts	230 Volts	460 Volts	575 Volts				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 ½	1 ½	2	2	9	00	—	22BP32A*81		22BP32B*81		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	
7 ½	7 ½	10	10	27	1	—	22DP32A*81		22DP32B*81		22DP32W*81		22DP32F*81		22DP32H*81		22DP320*81	
10	10	15	15	40	—	1 ¼	22EP32A*81		22EP32B*81		22EP32W*81		22EP32F*81		22EP32H*81		22EP320*81	
10	15	25	25	45	2	—	22FP32A*81		22FP32B*81		22FP32W*81		22FP32F*81		22FP32H*81		22FP320*81	
15	20	30	30	60	—	2 ½	22GP32A*81		22GP32B*81		22GP32W*81		22GP32F*81		22GP32H*81		22GP320*81	
25	30	50	50	90	3	—	22HP32A*81		22HP32B*81		22HP32W*81		22HP32F*81		22HP32H*81		22HP320*81	
30	40	75	75	115	—	3 ½	22IP32A*81		22IP32B*81		22IP32W*81		22IP32F*81		22IP32H*81		22IP320*81	
40	50	100	100	135	4	—	22JG32A*81		22JG32B*81		22JG32W*81		22JG32F*81		22JG32H*81		22JG320*81	

Open Type & Standard Width Enclosure, Single Phase, 3-Wire, 2-Pole^②

Max Hp		Contactor Amp Rating	NEMA Size	Enclosure													
115 Volts	208/ 230 Volts			Open Type		NEMA 1 General Purpose		NEMA 4/4X Stainless ^① 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 ^① 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	—		
1	2	18	0	22CP12A*81		22CP12B*81		22CP12W*81		22CP12F*81		22CP12H*81		22CP120*81			
2	3	27	1	22DP12A*81		22DP12B*81		22DP12W*81		22DP12F*81		22DP12H*81		22DP120*81			
3	5	35	1P	22EP12A*81		22EP12B*81		22EP12W*81		22EP12F*81		22EP12H*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 8/88.
 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

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 8/150.
- Fuse clips see page 8/96.
- Field Modification Kits see page 8/82.
- Factory Modifications see page 8/95.
- Dimensions see page 8/123.
- Wiring Diagrams see page 8/135.
- Replacement Parts see page 8/157.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240 ^①	A
200–208	D
220–240	G
277	L
220–240/440–480 ^①	C
440–480	H
575–600	E
For other voltages and frequencies, see Factory Modifications page 8/95.	

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

Max Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Enclosure ^④							
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size		NEMA 1 General Purpose	NEMA 4/4X Stainless ^② Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional)	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12 NEMA 3/3R ^② Industrial Use Weatherproof (Field Convertible to 3/3R)			
											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	25CUA92B*		25CUA92W*		25CUA92F*		25CUA92N*	
1/4	1/4	1 1/2	2	0	—	0.75–3.4	A	30	25CUB92B*		25CUB92W*		25CUB92F*		25CUB92N*	
2	2	5	5	0	—	3–12	A1	30	25CUC92B*		25CUC92W*		25CUC92F*		25CUC92N*	
3	3	—	—	0	—	5.5–22	A1	30	25CUD92B*		25CUD92W*		25CUD92F*		25CUD92N*	
1/8	1/8	1/8	1/8	1	—	0.25–1	A	30	25DUA92B*		25DUA92W*		25DUA92F*		25DUA92N*	
1/4	1/4	1 1/2	2	1	—	0.75–3.4	A	30	25DUB92B*		25DUB92W*		25DUB92F*		25DUB92N*	
2	2	5	5	1	—	3–12	A1	30	25DUC92B*		25DUC92W*		25DUC92F*		25DUC92N*	
3	3	10	10	1	—	5.5–22	A1	30	25DUD92B*		25DUD92W*		25DUD92F*		25DUD92N*	
7 1/2	7 1/2	—	—	1	—	10–40	A1	60	25DUE92B*		25DUE92W*		25DUE92F*		25DUE92N*	
10	10	15	15	—	1 1/4	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* ^③		—	—	25LPU92N*	
150	200	400	400	6	—	160–630	—	800	25MPX92B*		25MPX92E* ^③		—	—	25MPX92N*	
—	300	600	600	7 ^⑤	—	400–1220	A1+CT	1200	25NUN92B*		—	—	—	—	25NUN92N*	
—	450	900	900	8 ^⑤	—	400–1220	A1+CT	1600	25PUN92B*		—	—	—	—	25PUN92N*	

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

Max Hp				Contactor Amp Rating	NEMA Size	Half Size	Disc Amp Rating	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 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12® NEMA 3/3R 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	18	0	—	30	25CP92B*81		25CP92W*81		25CP92F*81		25CP92N*81	
7½	7½	10	10	27	1	—	30	25DP92B*81		25DP92W*81		25DP92F*81		25DP92N*81	
10	10	15	15	40	—	1¼	60	25EP92B*81		25EP92W*81		25EP92F*81		25EP92N*81	
10	15	25	25	45	2	—	60	25FP92B*81		25FP92W*81		25FP92F*81		25FP92N*81	
15	20	30	30	60	—	2½	100	25GP92B*81		25GP92W*81		25GP92F*81		25GP92N*81	
25	30	50	50	90	3	—	100	25HP92B*81		25HP92W*81		25HP92F*81		25HP92N*81	
30	40	75	75	115	—	3½	200	25IP92B*81		25IP92W*81		25IP92F*81		25IP92N*81	
40	50	100	100	135	4	—	200	25JP92B*81		25JP92W*81		25JP92F*81		25JP92N*81	

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

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

② For conduit hubs and conversion instructions, see page 8/88.

③ Enclosure is NEMA Type 4 (painted steel).

④ F coil 100–250V AC 50/60Hz, or DC, H coil 150–500V AC 50/60Hz, or DC

⑤ Only available F coil 100–250V AC 50/60Hz, or DC

⑥ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Combination Reversing Heavy Duty Starters

MCP Type, Class 26

Selection



Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Field Modification Kits see page 8/82.
- Factory Modifications see page 8/95.
- Dimensions see page 8/123.
- Wiring Diagrams see page 8/135.
- Replacement Parts see page 8/157.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240 ^①	A
200–208	D
220–240	G
277	L
220–240/440–480 ^①	C
440–480	H
575–600	E
For other voltages and frequencies, see Factory Modifications page 8/95.	

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

Max Hp								Overload		Enclosure ^②									
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Amp Range	Frame Size		NEMA 1 General Purpose	NEMA 4/4X Stainless ^③ Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional)	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 ^④ Industrial Use Weatherproof (Field Convertible to 3/3R)					
Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number
1/4	1/4	1	1	0	—	3	0.75–3.4	A	26CUB92B*		26CUB92W*		26CUB92F*		26CUB92H*		26CUB92N*		26CUB92N*
2	2	5	5	0	—	10	3–12	A1	26CUC92B*		26CUC92W*		26CUC92F*		26CUC92H*		26CUC92N*		26CUC92N*
3	3	—	—	0	—	25	5.5–22	A1	26CUD92B*		26CUD92W*		26CUD92F*		26CUD92H*		26CUD92N*		26CUD92N*
1/2	1/2	1	1	1	—	3	0.75–3.4	A	26DUB92B*		26DUB92W*		26DUB92F*		26DUB92H*		26DUB92N*		26DUB92N*
2	2	5	5	1	—	10	3–12	A1	26DUC92B*		26DUC92W*		26DUC92F*		26DUC92H*		26DUC92N*		26DUC92N*
3	3	7 1/2	10	1	—	25	5.5–22	A1	26DUD92B*		26DUD92W*		26DUD92F*		26DUD92H*		26DUD92N*		26DUD92N*
7 1/2	7 1/2	10	—	1	—	30	10–40	A1	26DUE92B*		26DUE92W*		26DUE92F*		26DUE92H*		26DUE92N*		26DUE92N*
—	—	15	15	—	1 1/4	40	10–40	A1	26EUE92B*		26EUE92W*		26EUE92F*		26EUE92H*		26EUE92N*		26EUE92N*
10	15	25	25	2	—	50	13–52	B	26FUF92B*		26FUF92W*		26FUF92F*		26FUF92H*		26FUF92N*		26FUF92N*
15	20	30	30	—	2 1/2	100	25–100	B	26GUG92B*		26GUG92W*		26GUG92F*		26GUG92H*		26GUG92N*		26GUG92N*
25	30	50	50	3	—	100	25–100	B	26HUG92B*		26HUG92W*		26HUG92F*		26HUG92H*		26HUG92N*		26HUG92N*
30	40	75	75	—	3 1/2	125	50–200	B	26IUH92B*		26IUH92W*		26IUH92F*		26IUH92H*		26IUH92N*		26IUH92N*
40	50	100	100	4	—	150	50–200	B	26JUH92B*		26JUH92W*		26JUH92F*		26JUH92H*		26JUH92N*		26JUH92N*
50	75	150	200	5	—	250	55–250	—	26LPT92B*		26LPT92E* ^⑤		—	—	—	—	26LPT92N*		26LPT92N*
75	100	200	—	5	—	400	55–250	—	26LP92B*		26LP92E* ^⑤		—	—	—	—	26LP92N*		26LP92N*
100	125	250	300	6	—	400	160–630	—	26MPW92B*		26MPW92E* ^⑤		—	—	—	—	26MPW92N*		26MPW92N*
150	200	400	400	6	—	600	160–630	—	26MPX92B*		26MPX92E* ^⑤		—	—	—	—	26MPX92N*		26MPX92N*
—	250	500	500	7 ^⑥	—	800	400–1220	A1+CT	26NUV92B*		—	—	—	—	—	—	26NUV92N*		26NUV92N*
—	300	600	600	7 ^⑥	—	1000	400–1220	A1+CT	26NUY92B*		—	—	—	—	—	—	26NUY92N*		26NUY92N*
—	400	800	800	8 ^⑥	—	1200	400–1220	A1+CT	26PUW92B*		—	—	—	—	—	—	26PUW92N*		26PUW92N*
—	450	900	900	8 ^⑥	—	1600	400–1220	A1+CT	26PUZ92B*		—	—	—	—	—	—	26PUZ92N*		26PUZ92N*

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

1/2	1/2	1	1	0	—	3	18		26CP92BA*81		26CP92WA*81		26CP92FA*81		26CP92HA*81		26CP92NA*81		26CP92NA*81
1	1	3	3	0	—	10	18		26CP92BB*81		26CP92WB*81		26CP92FB*81		26CP92HB*81		26CP92NB*81		26CP92NB*81
3	3	5	5	0	—	25	18		26CP92BC*81		26CP92WC*81		26CP92FC*81		26CP92HC*81		26CP92NC*81		26CP92NC*81
1/2	1/2	1	1	1	—	3	27		26DP92BA*81		26DP92WA*81		26DP92FA*81		26DP92HA*81		26DP92NA*81		26DP92NA*81
1	1	3	3	1	—	10	27		26DP92BB*81		26DP92WB*81		26DP92FB*81		26DP92HB*81		26DP92NB*81		26DP92NB*81
3	3	7 1/2	7 1/2	1	—	25	27		26DP92BD*81		26DP92WD*81		26DP92FD*81		26DP92HD*81		26DP92ND*81		26DP92ND*81
7 1/2	7 1/2	10	10	1	—	30	27		26DP92BE*81		26DP92WE*81		26DP92FE*81		26DP92HE*81		26DP92NE*81		26DP92NE*81
—	—	15	15	—	1 1/4	40	40		26EP92BF*81		26EP92WF*81		26EP92FF*81		26EP92HF*81		26EP92NF*81		26EP92NF*81
10	10	—	—	—	1 1/4	50	40		26EP92BG*81		26EP92WG*81		26EP92FG*81		26EP92HG*81		26EP92NG*81		26EP92NG*81
—	—	20	20	2	—	40	45		26FP92BH*81		26FP92WH*81		26FP92FH*81		26FP92HH*81		26FP92NH*81		26FP92NH*81
10	15	25	25	2	—	50	45		26FP92BJ*81		26FP92WJ*81		26FP92FJ*81		26FP92HJ*81		26FP92NJ*81		26FP92NJ*81
10	15	30	30	—	2 1/2	50	60		26GP92BK*81		26GP92WK*81		26GP92FK*81		26GP92HK*81		26GP92NK*81		26GP92NK*81
15	20	—	—	—	2 1/2	100	60		26GP92BL*81		26GP92WL*81		26GP92FL*81		26GP92HL*81		26GP92NL*81		26GP92NL*81
—	—	30	30	3	—	50	90		26HP92BM*81		26HP92WM*81		26HP92FM*81		26HP92HM*81		26HP92NM*81		26HP92NM*81
25	30	50	50	3	—	100	90		26HP92BN*81		26HP92WN*81		26HP92FN*81		26HP92HN*81		26HP92NN*81		26HP92NN*81
30	40	75	75	—	3 1/2	125	115		26IP92BP*81		26IP92WP*81		26IP92FP*81		26IP92HP*81		26IP92NP*81		26IP92NP*81
40	50	100	100	4	—	150	135		26JP92BR*81		26JP92WR*81		26JP92FR*81		26JP92HR*81		26JP92NR*81		26JP92NR*81

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

^① Dual voltage coils not available in modified starters or in starter sizes 5–8.

^② For conduit hubs and conversion instructions, see page 8/88.

^③ Enclosure is NEMA Type 4 (painted steel).

^④ F coil 100–250V AC 50/60Hz, or DC, H coil 150–500V AC 50/60Hz, or DC

^⑤ Only available

F coil 100–250V AC 50/60Hz, or DC

^⑥ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

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.

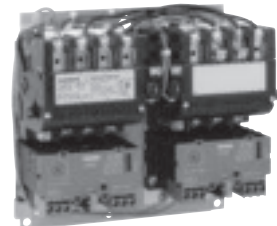
These controls may be modified for compelling or acceleration pilot control.

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.

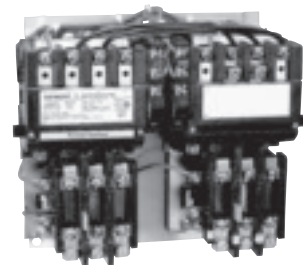
Compelling Control requires that the motor always be started at the lower speed and that the push buttons be operated in speed sequence to go to the next higher speed. To change to a lower speed, the stop button must be depressed and then the push buttons operated in speed sequence until the desired speed is reached. Compelling control can be added from the factory modification section page 8/98.

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 8/98.

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 8/98.



Open Style Two Speed Starter
(ESP100 Overload)

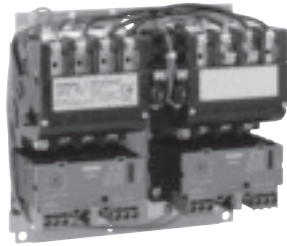


Open Style Two Speed Starter
(Ambient Compensated Overload)

Two Speed Heavy Duty Starters

Constant or Variable Torque with Solid Overload, Class 30

Selection



2S2W Starter
(ESP200 Overload)

Ordering Information	Coil Table		Low Speed FLA Table			
► 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 8/82. ► Factory Modifications see page 8/95. ► Dimensions see page 8/124. ► Wiring Diagrams see page 8/136. ► Replacement Parts see page 8/157.	60Hz Voltage	Letter	Size	FLA	OLR Frame Size	†
	24 Separate Control	J	0,1	0.25–1	A	A
	120 Separate Control	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 ³ / ₄	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	2 ¹ / ₂ -4	50–200	B	H
	575–600	E				
	For other voltages and frequencies, see Factory Modifications page 8/95.					

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

Max Hp						Overload		Enclosure ^④		NEMA 1		NEMA 4/4X Stainless ^①		NEMA 4X Fiberglass		NEMA 12	
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Open Type ^③ Standard Auxiliary Contacts ^③	List Price \$	General Purpose	List Price \$	Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional)	List Price \$	Watertight, Dust-tight Corrosion Resistant	List Price \$	Industrial Use Weatherproof (Field Convertible to 3/3R)	List Price \$
1/2	3/4	1 1/2	2	0	—	0.75–3.4	A	30CUB132A2V*		30CUB132B2V*		30CUB132W2V*		30CUB132F2V*		30CUB13202V*	
2	2	5	5	0	—	3–12	A1	30CUC132A2V*		30CUC132B2V*		30CUC132W2V*		30CUC132F2V*		30CUC13202V*	
3	3	—	—	0	—	5.5–22	A1	30CUD132A2V*		30CUD132B2V*		30CUD132W2V*		30CUD132F2V*		30CUD13202V*	
1/2	3/4	1 1/2	1 1/2	1	—	0.75–3.4	A	30DUB132A2V*		30DUB132B2V*		30DUB132W2V*		30DUB132F2V*		30DUB13202V*	
2	2	5	5	1	—	3–12	A1	30DUC132A2V*		30DUC132B2V*		30DUC132W2V*		30DUC132F2V*		30DUC13202V*	
3	3	10	10	1	—	5.5–22	A1	30DUD132A2V*		30DUD132B2V*		30DUD132W2V*		30DUD132F2V*		30DUD13202V*	
7 1/2	7 1/2	—	—	1	—	10–40	A1	30DUE132A2V*		30DUE132B2V*		30DUE132W2V*		30DUE132F2V*		30DUE13202V*	
10	10	15	15	—	1 1/2	10–40	A1	30EUE132A2V*		30EUE132B2V*		30EUE132W2V*		30EUE132F2V*		30EUE13202V*	
10	15	25	25	2	—	13–52	B	30FUF132A2V*		30FUF132B2V*		30FUF132W2V*		30FUF132F2V*		30FUF13202V*	
15	20	30	30	—	2 1/2	25–100	B	30GUG132A2V*		30GUG132B2V*		30GUG132W2V*		30GUG132F2V*		30GUG13202V*	
25	30	50	50	3	—	25–100	B	30HUG132A2V*		30HUG132B2V*		30HUG132W2V*		30HUG132F2V*		30HUG13202V*	
30	40	75	75	—	3 1/2	50–200	B	30IUH132A2V*		30IUH132B2V*		30IUH132W2V*		30IUH132F2V*		30IUH13202V*	
40	50	100	100	4	—	50–200	B	30JUH132A2V*		30JUH132B2V*		30JUH132W2V*		30JUH132F2V*		30JUH13202V*	

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

Max Hp						Overload		Enclosure ^④		NEMA 1		NEMA 4/4X Stainless ^①		NEMA 4X Fiberglass		NEMA 12	
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Open Type ^③ Standard Auxiliary Contacts ^③	List Price \$	General Purpose	List Price \$	Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional)	List Price \$	Watertight, Dust-tight Corrosion Resistant	List Price \$	Industrial Use Weatherproof (Field Convertible to 3/3R)	List Price \$
1/2	3/4	1 1/2	2	0	—	0.75–3.4	A	30CUB132A1V*		30CUB132B1V*		30CUB132W1V*		30CUB132F1V*		30CUB13201V*	
2	2	5	5	0	—	3–12	A1	30CUC132A1V*		30CUC132B1V*		30CUC132W1V*		30CUC132F1V*		30CUC13201V*	
3	3	—	—	0	—	5.5–22	A1	30CUD132A1V*		30CUD132B1V*		30CUD132W1V*		30CUD132F1V*		30CUD13201V*	
1/2	3/4	1 1/2	1 1/2	1	—	0.75–3.4	A	30DUB132A1V*		30DUB132B1V*		30DUB132W1V*		30DUB132F1V*		30DUB13201V*	
2	2	5	5	1	—	3–12	A1	30DUC132A1V*		30DUC132B1V*		30DUC132W1V*		30DUC132F1V*		30DUC13201V*	
3	3	10	10	1	—	5.5–22	A1	30DUD132A1V*		30DUD132B1V*		30DUD132W1V*		30DUD132F1V*		30DUD13201V*	
7 1/2	7 1/2	—	—	1	—	10–40	A1	30DUE132A1V*		30DUE132B1V*		30DUE132W1V*		30DUE132F1V*		30DUE13201V*	
10	10	15	15	—	1 1/2	10–40	A1	30EUE132A1V*		30EUE132B1V*		30EUE132W1V*		30EUE132F1V*		30EUE13201V*	
10	15	25	25	2	—	13–52	B	30FUF132A1V*		30FUF132B1V*		30FUF132W1V*		30FUF132F1V*		30FUF13201V*	
15	20	30	30	—	2 1/2	25–100	B	30GUG132A1V*		30GUG132B1V*		30GUG132W1V*		30GUG132F1V*		30GUG13201V*	
25	30	50	50	3	—	25–100	B	30HUG132A1V*		30HUG132B1V*		30HUG132W1V*		30HUG132F1V*		30HUG13201V*	
30	40	75	75	—	3 1/2	50–200	B	30IUH132A1V*		30IUH132B1V*		30IUH132W1V*		30IUH132F1V*		30IUH13201V*	
40	50	100	100	4	—	50–200	B	30JUH132A1V*		30JUH132B1V*		30JUH132W1V*		30JUH132F1V*		30JUH13201V*	

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

① For conduit hubs and conversion instructions, see page 8/88.

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

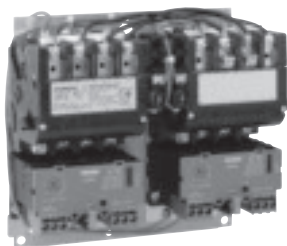
③ Auxiliary contacts 30C-30E 4th pole built-in 30F-30J 2 NO & 2 NC

④ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Two Speed Heavy Duty Starters

Constant HP with Solid Overload, Class 30

Selection



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 (t) with the letter that corresponds to the correct FLA in High/Low Speed FLA Table.^②
- Field Modification Kits see page 8/82.
- Factory Modifications see page 8/95.
- Dimensions see page 8/124.
- Wiring Diagrams see page 8/136.
- Replacement Parts see page 8/157.

Coil Table

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

For other voltages and frequencies, see Factory Modifications page 8/95.

High/Low Speed FLA Table^②

Size	FLA	OLR	Frame Size	t
0,1	0.25–1	A	A	A
0,1	0.75–3.4	A	B	B
0,1	3–12	A1	C	C
0,1	5.5–22	A1	D	D
0-1 ³ / ₄	10–40	A1	E	E
2-3	13–52	B	F	F
2-3	25–100	B	G	G
2 ¹ / ₂ -4	50–200	B	H	H

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

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

Max Hp				NEMA Size	Half Size	Enclosure ^④									
200 Volts	230 Volts	460 Volts	575 Volts			Open Type Standard Auxiliary Contacts ^③		NEMA 1 General Purpose		NEMA 4/4X Stainless ^① Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional)		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12 NEMA 3/3R ^② 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 \$
2	2	3	3	0	—	30CU††32A2H*		30CU††32B2H*		30CU††32W2H*		30CU††32F2H*		30CU††3202H*	
5	5	7½	7½	1	—	30DU††32A2H*		30DU††32B2H*		30DU††32W2H*		30DU††32F2H*		30DU††3202H*	
7½	7½	10	10	—	1½	30EU††32A2H*		30EU††32B2H*		30EU††32W2H*		30EU††32F2H*		30EU††3202H*	
7½	10	20	20	2	—	30FU††32A2H*		30FU††32B2H*		30FU††32W2H*		30FU††32F2H*		30FU††3202H*	
10	15	25	25	—	2½	30GU††32A2H*		30GU††32B2H*		30GU††32W2H*		30GU††32F2H*		30GU††3202H*	
20	25	40	40	3	—	30HU††32A2H*		30HU††32B2H*		30HU††32W2H*		30HU††32F2H*		30HU††3202H*	
25	30	50	50	—	3½	30IU††32A2H*		30IU††32B2H*		30IU††32W2H*		30IU††32F2H*		30IU††3202H*	
30	40	75	75	4	—	30JU††32A2H*		30JU††32B2H*		30JU††32W2H*		30JU††32F2H*		30JU††3202H*	

Two Separate Windings, 3-Phase (Constant Horsepower)

Max Hp				NEMA Size	Half Size	Enclosure ^④									
200 Volts	230 Volts	460 Volts	575 Volts			Open Type Standard Auxiliary Contacts ^③		NEMA 1 General Purpose		NEMA 4/4X Stainless ^① Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional)		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12 NEMA 3/3R ^② 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 \$
2	2	3	3	0	—	30CU††32A1H*		30CU††32B1H*		30CU††32W1H*		30CU††32F1H*		30CU††3201H*	
5	5	7½	7½	1	—	30DU††32A1H*		30DU††32B1H*		30DU††32W1H*		30DU††32F1H*		30DU††3201H*	
7½	7½	10	10	—	1¾	30EU††32A1H*		30EU††32B1H*		30EU††32W1H*		30EU††32F1H*		30EU††3201H*	
7½	10	20	20	2	—	30FU††32A1H*		30FU††32B1H*		30FU††32W1H*		30FU††32F1H*		30FU††3201H*	
10	15	25	25	—	2½	30GU††32A1H*		30GU††32B1H*		30GU††32W1H*		30GU††32F1H*		30GU††3201H*	
20	25	40	40	3	—	30HU††32A1H*		30HU††32B1H*		30HU††32W1H*		30HU††32F1H*		30HU††3201H*	
25	30	50	50	—	3½	30IU††32A1H*		30IU††32B1H*		30IU††32W1H*		30IU††32F1H*		30IU††3201H*	
30	40	75	75	4	—	30JU††32A1H*		30JU††32B1H*		30JU††32W1H*		30JU††32F1H*		30JU††3201H*	

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

① For conduit hubs and conversion instructions, see page 8/88.

② First (t) for high speed, second (t) for low speed. Use motor nameplate information to select FLA. If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

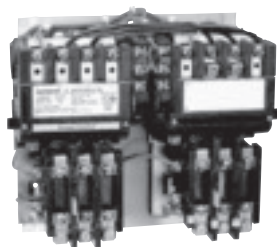
③ Auxiliary contacts
30C-30E 4th pole built-in
30F-30J 2 NO & 2 NC

④ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

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 8/150 (6 required)^②
- Field Modification Kits see page 8/82.
- Factory Modifications see page 8/95.
- Dimensions see pages 8/106 open and 8/124 enclosed.
- Wiring Diagrams see page 8/136.
- Replacement Parts see page 8/157.

Coil Table

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

For other voltages and frequencies, see Factory Modifications page 8/95.

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

Max Hp				Con- tactor Amp Rating	NEMA Size	Half Size	Enclosure									
200 Volts	230 Volts	460 Volts	575 Volts				Open Type ^③		NEMA 1 General Purpose		NEMA 4/4X Stainless ^① Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12 ^① 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\$
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				Contact- actor Amp Rating	NEMA Size	Half Size	Enclosure									
200 Volts	230 Volts	460 Volts	575 Volts				Open Type ^③		NEMA 1 General Purpose		NEMA 4/4X Stainless ^① Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12 ^① 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\$
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 8/88.

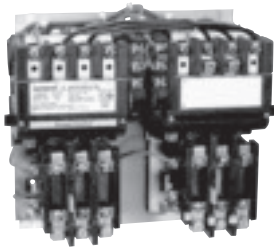
② If motor FLA are unknown, select heater elements on the basis that low speed FLA will be no greater than 50% of high speed FLA.

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		Coil Table	
	▶ 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 8/150 (6 required)^② ▶ Field Modification Kits see page 8/82. ▶ Factory Modifications see page 8/95. ▶ Dimensions see pages 8/106 open and 8/124 enclosed. ▶ Wiring Diagrams see page 8/136. ▶ Replacement Parts see page 8/157.		60Hz Voltage	Letter
			24 Separate Control	J

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

Max Hp				Contact Amp Rating	NEMA Size	Half Size	Enclosure									
200 Volts	230 Volts	460 Volts	575 Volts				Open Type ^①		NEMA 1 General Purpose		NEMA 4/4X Stainless ^① Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12 ^② 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	—	1¼	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				Contact Amp Rating	NEMA Size	Half Size	Enclosure									
200 Volts	230 Volts	460 Volts	575 Volts				Open Type®		NEMA 1 General Purpose		NEMA 4/4X Stainless® Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12® 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.

^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

^① For conduit hubs and conversion instructions, see page 8/88.

Combination Two Speed Heavy Duty Starters

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

Selection

	Ordering Information	Coil Table	Low Speed FLA Table				
	▶ 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.® ▶ Fuse clips see page 8/96. ▶ Field Modification Kits see page 8/82. ▶ Factory Modifications see page 8/95. ▶ Dimensions see page 8/125. ▶ Wiring Diagrams see page 8/136. ▶ Replacement Parts see page 8/157.	60Hz Voltage	Letter	Size	FLA	OLR Frame Size	†
		24 Separate Control	J	0,1	0.25–1	A	A
		120 Separate Control	F	0,1	0.75–3.4	A	B
		110–120/220–240 ^①	A	0,1	3–12	A1	C
		200–208	D	0,1	5.5–22	A1	D
		220–240	G	0-1 ³ / ₄	10–40	A1	E
		277	L	2-3	13–52	B	F
		220–240/440–480 ^①	C	2-3	25–100	B	G
		440–480	H	2 ¹ / ₂ -4	50–200	B	H
		575–600	E				
		For other voltages and frequencies, see Factory Modifications page 8/95.					

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®	NEMA 4X Fiberglass	NEMA 12 NEMA 3/3R®
									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®	NEMA 4X Fiberglass	NEMA 12 NEMA 3/3R®
									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 8/88.

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

® Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Combination Two Speed Heavy Duty Starters

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

Selection

	Ordering Information	Coil Table	High/Low Speed FLA Table®																																																																
	► 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 FLA in the High/Low Speed FLA Table.® ► Fuse clips see page 8/96. ► Field Modification Kits see page 8/82. ► Factory Modifications see page 8/95. ► Dimensions see page 8/125. ► Wiring Diagrams see page 8/136. ► Replacement Parts see page 8/157.	<table><tr><th>60Hz Voltage</th><th>Letter</th><th>Size</th><th>FLA</th><th>OLR Frame Size</th><th>†</th></tr><tr><td>24 Separate Control</td><td>J</td><td>0,1</td><td>0.25–1</td><td>A</td><td>A</td></tr><tr><td>120 Separate Control</td><td>F</td><td>0,1</td><td>0.75–3.4</td><td>A</td><td>B</td></tr><tr><td>110–120/220–240^①</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>0-1³/₄</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>220–240/440–480^①</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>2¹/₂-4</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></table>	60Hz Voltage	Letter	Size	FLA	OLR Frame Size	†	24 Separate Control	J	0,1	0.25–1	A	A	120 Separate Control	F	0,1	0.75–3.4	A	B	110–120/220–240 ^①	A	0,1	3–12	A1	C	200–208	D	0,1	5.5–22	A1	D	220–240	G	0-1 ³ / ₄	10–40	A1	E	277	L	2-3	13–52	B	F	220–240/440–480 ^①	C	2-3	25–100	B	G	440–480	H	2 ¹ / ₂ -4	50–200	B	H	575–600	E									
		60Hz Voltage	Letter	Size	FLA	OLR Frame Size	†																																																												
		24 Separate Control	J	0,1	0.25–1	A	A																																																												
		120 Separate Control	F	0,1	0.75–3.4	A	B																																																												
		110–120/220–240 ^①	A	0,1	3–12	A1	C																																																												
		200–208	D	0,1	5.5–22	A1	D																																																												
		220–240	G	0-1 ³ / ₄	10–40	A1	E																																																												
		277	L	2-3	13–52	B	F																																																												
		220–240/440–480 ^①	C	2-3	25–100	B	G																																																												
440–480	H	2 ¹ / ₂ -4	50–200	B	H																																																														
575–600	E																																																																		
For other voltages and frequencies see Factory Modifications page 8/95.	* 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				NEMA Size	Half Size	Overload		Disc. Amp Range	Enclosure ^④							
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size		NEMA 1 General Purpose		NEMA 4/4X Stainless ^② Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional)		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12 NEMA 3/3R ^② Industrial Use Weatherproof (Field Convertible to 3/3R)	
									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*		32CU††92F2H2*		32CU††92N2H2*	
5	5	7½	7½	1	—	—	—	30	32DU††92B2H2*		32DU††92W2H2*		32DU††92F2H2*		32DU††92N2H2*	
7½	7½	10	10	—	1½	—	—	60	32EU††92B2H2*		32EU††92W2H2*		32EU††92F2H2*		32EU††92N2H2*	
7½	10	20	20	2	—	—	—	60	32FU††92B2H2*		32FU††92W2H2*		32FU††92F2H2*		32FU††92N2H2*	
10	15	25	25	—	2½	—	—	100	32GU††92B2H2*		32GU††92W2H2*		32GU††92F2H2*		32GU††92N2H2*	
20	25	40	40	3	—	—	—	100	32HU††92B2H2*		32HU††92W2H2*		32HU††92F2H2*		32HU††92N2H2*	
25	30	50	50	—	3½	—	—	200	32IU††92B2H2*		32IU††92W2H2*		32IU††92F2H2*		32IU††92N2H2*	
30	40	75	75	4	—	—	—	200	32JU††92B2H2*		32JU††92W2H2*		32JU††92F2H2*		32JU††92N2H2*	

Two Separate Windings, 3-Phase (Constant Horsepower)

Max Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Enclosure ^④							
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size		NEMA 1 General Purpose		NEMA 4/4X Stainless ^② Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional)		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12 NEMA 3/3R ^② Industrial Use Weatherproof (Field Convertible to 3/3R)	
									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 8/88.

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.

④ Enclosed starters with the ESP200 OLR will not be

available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Combination Two Speed Heavy Duty Starters

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

Selection

	Ordering Information	Coil Table	
		60Hz Voltage	Letter
	▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.	24 Separate Control	J
	▶ Heater elements see page 8/150. (6 required)	120 Separate Control	F
	▶ Fuse clips see page 8/96.	110–120/220–240 ^①	A
	▶ Field Modification Kits see page 8/82.	200–208	D
	▶ Factory Modifications see page 8/95.	220–240	G
	▶ Dimensions see page 8/125.	277	L
	▶ Wiring Diagrams see page 8/136.	220–240/440–480 ^①	C
	▶ Replacement Parts see page 8/157.	440–480	H
		575–600	E
		For other voltages and frequencies, see Factory Modifications page 8/95.	

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

Max Hp				Cont-actor Amp Rating	NEMA Size	Half Size	Disc Amp Rating	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts					NEMA 1 General Purpose		NEMA 4/4X Stainless ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R ^② 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	18	0	—	30	32CP92B2V2*81		32CP92W2V2*81		32CP92F2V2*81		32CP92N2V2*81	
7½	7½	10	10	27	1	—	30	32DP92B2V2*81		32DP92W2V2*81		32DP92F2V2*81		32DP92N2V2*81	
10	10	15	15	40	—	1¼	60	32EP92B2V2*81		32EP92W2V2*81		32EP92F2V2*81		32EP92N2V2*81	
10	15	25	25	45	2	—	60	32FP92B2V2*81		32FP92W2V2*81		32FP92F2V2*81		32FP92N2V2*81	
15	20	30	30	60	—	2½	100	32GP92B2V2*81		32GP92W2V2*81		32GP92F2V2*81		32GP92N2V2*81	
20	25	50	50	90	3	—	100	32HP92B2V2*81		32HP92W2V2*81		32HP92F2V2*81		32HP92N2V2*81	
30	40	75	75	115	—	3½	200	32IP92B2V2*81		32IP92W2V2*81		32IP92F2V2*81		32IP92N2V2*81	
40	50	100	100	135	4	—	200	32JP92B2V2*81		32JP92W2V2*81		32JP92F2V2*81		32JP92N2V2*81	

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

Max Hp				Cont-actor Amp Rating	NEMA Size	Half Size	Disc Amp Rating	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts					NEMA 1 General Purpose		NEMA 4/4X Stainless ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R ^② 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	18	0	—	30	32CP92B1V2*81		32CP92W1V2*81		32CP92F1V2*81		32CP92N1V2*81	
7½	7½	10	10	27	1	—	30	32DP92B1V2*81		32DP92W1V2*81		32DP92F1V2*81		32DP92N1V2*81	
10	10	15	15	40	—	1¼	60	32EP92B1V2*81		32EP92W1V2*81		32EP92F1V2*81		32EP92N1V2*81	
10	15	25	25	45	2	—	60	32FP92B1V2*81		32FP92W1V2*81		32FP92F1V2*81		32FP92N1V2*81	
15	20	30	30	60	—	2½	100	32GP92B1V2*81		32GP92W1V2*81		32GP92F1V2*81		32GP92N1V2*81	
20	25	50	50	90	3	—	100	32HP92B1V2*81		32HP92W1V2*81		32HP92F1V2*81		32HP92N1V2*81	
30	40	75	75	115	—	3½	200	32IP92B1V2*81		32IP92W1V2*81		32IP92F1V2*81		32IP92N1V2*81	
40	50	100	100	135	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 8/88.

Combination Two Speed Heavy Duty Starters

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

Selection

	Ordering Information	Coil Table	
	► 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 8/150. (6 Required) ► Fuse clips see page 8/96. ► Field Modification Kits see page 8/82. ► Factory Modifications see page 8/95. ► Dimensions see page 8/125. ► Wiring Diagrams see page 8/136. ► Replacement Parts see page 8/157.	60Hz Voltage	Letter
		24 Separate Control	J
		120 Separate Control	F
		110–120/220–240 ^①	A
		200–208	D
		220–240	G
		277	L
		220–240/440–480 ^①	C
		440–480	H
		575–600	E
		For other voltages and frequencies, see Factory Modifications page 8/95.	

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

Max Hp				Contactor Amp Rating	NEMA Size	Half Size	Disc Amp Rating	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts					NEMA 1 General Purpose		NEMA 4/4X Stainless ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R ^② 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	18	0	—	30	32CP92B2H2*81		32CP92W2H2*81		32CP92F2H2*81		32CP92N2H2*81	
5	5	7½	7½	27	1	—	30	32DP92B2H2*81		32DP92W2H2*81		32DP92F2H2*81		32DP92N2H2*81	
7½	7½	10	10	40	—	1½	60	32EP92B2H2*81		32EP92W2H2*81		32EP92F2H2*81		32EP92N2H2*81	
7½	10	20	20	45	2	—	60	32FP92B2H2*81		32FP92W2H2*81		32FP92F2H2*81		32FP92N2H2*81	
10	15	25	25	60	—	2½	100	32GP92B2H2*81		32GP92W2H2*81		32GP92F2H2*81		32GP92N2H2*81	
20	25	40	40	90	3	—	100	32HP92B2H2*81		32HP92W2H2*81		32HP92F2H2*81		32HP92N2H2*81	
25	30	50	50	115	—	3½	200	32IP92B2H2*81		32IP92W2H2*81		32IP92F2H2*81		32IP92N2H2*81	
30	40	75	75	135	4	—	200	32JP92B2H2*81		32JP92W2H2*81		32JP92F2H2*81		32JP92N2H2*81	

Two Separate Windings, 3-Phase (Constant Horsepower)

Max Hp				Contactor Amp Rating	NEMA Size	Half Size	Disc Amp Rating	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts					NEMA 1 General Purpose		NEMA 4/4X Stainless ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R ^② 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	18	0	—	30	32CP92B1H2*81		32CP92W1H2*81		32CP92F1H2*81		32CP92N1H2*81	
5	5	7½	7½	27	1	—	30	32DP92B1H2*81		32DP92W1H2*81		32DP92F1H2*81		32DP92N1H2*81	
7½	7½	10	10	40	—	1½	60	32EP92B1H2*81		32EP92W1H2*81		32EP92F1H2*81		32EP92N1H2*81	
7½	10	20	20	45	2	—	60	32FP92B1H2*81		32FP92W1H2*81		32FP92F1H2*81		32FP92N1H2*81	
10	15	25	25	60	—	2½	100	32GP92B1H2*81		32GP92W1H2*81		32GP92F1H2*81		32GP92N1H2*81	
20	25	40	40	90	3	—	100	32HP92B1H2*81		32HP92W1H2*81		32HP92F1H2*81		32HP92N1H2*81	
25	30	50	50	115	—	3½	200	32IP92B1H2*81		32IP92W1H2*81		32IP92F1H2*81		32IP92N1H2*81	
30	40	75	75	135	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 8/88.

Combination Two Speed Heavy Duty Starters

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

Selection

	Ordering Information	Coil Table		Low Speed FLA Table				
	▶ 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.③ ▶ Field Modification Kits see page 8/82. ▶ Factory Modifications see page 8/95. ▶ Dimensions see page 8/125. ▶ Wiring Diagrams see page 8/136. ▶ Replacement Parts see page 8/157.	60Hz Voltage	Letter	Size	FLA	OLR Frame Size	†	
		24 Separate Control	J	0,1	0.25–1	A	A	
		120 Separate Control	F	0,1	0.75–3.4	A	B	
		110–120/220–240①	A	0,1	3–12	A1	C	
		200–208	D	0,1	5.5–22	A1	D	
		220–240	G	0-1 ³ / ₄	10–40	A1	E	
		277	L	2-3	13–52	B	F	
		220–240/440–480①	C	2-3	25–100	B	G	
		440–480	H	2 ¹ / ₂ -4	50–200	B	H	
575–600	E							
		For other voltages and frequencies, see Factory Modifications page 8/95.						

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

Max Hp				NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Overload		Enclosure®							
200 Volts	230 Volts	460 Volts	575 Volts				Amp Range	Frame Size	NEMA 1 General Purpose	NEMA 4/4X Stainless® Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional)	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 \$
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	—	100	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® Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional)	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 \$
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*	
10	10	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	—	100	25–100	B	32HUG†92B1V*		32HUG†92W1V*		32HUG†92F1V*		32HUG†92N1V*	
30	40	75	75	—	3 1/2	125	50–200	B	32IUH†92B1V*		32IUH†92W1V*		32IUH†92F1V*		32IUH†92N1V*	
40	50	100	100	4	—	150	50–200	B	32JUH†92B1V*		32JUH†92W1V*		32JUH†92F1V*		32JUH†92N1V*	

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

® Dual voltage coils not available in modified starters.

® For conduit hubs and conversion instructions, see page 8/88.

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

® Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Combination Two Speed Heavy Duty Starters

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

Selection

	Ordering Information	Coil Table	High/Low Speed FLA Table ^③																																																								
	▶ 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 FLA in the High/Low Speed FLA table.^③ ▶ Field Modification Kits see page 8/82. ▶ Factory Modifications see page 8/95. ▶ Dimensions see page 8/125. ▶ Wiring Diagrams see page 8/136. ▶ Replacement Parts see page 8/157.	<table><tr><th>60Hz Voltage</th><th>Letter</th></tr><tr><td>24 Separate Control</td><td>J</td></tr><tr><td>120 Separate Control</td><td>F</td></tr><tr><td>110–120/220–240^①</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>220–240/440–480^①</td><td>C</td></tr><tr><td>440–480</td><td>H</td></tr><tr><td>575–600</td><td>E</td></tr></table>	60Hz Voltage	Letter	24 Separate Control	J	120 Separate Control	F	110–120/220–240 ^①	A	200–208	D	220–240	G	277	L	220–240/440–480 ^①	C	440–480	H	575–600	E	<table><tr><th>Size</th><th>FLA</th><th>OLR Frame Size</th><th>†</th></tr><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>0-1³/₄</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>2¹/₂-4</td><td>50–200</td><td>B</td><td>H</td></tr></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 ³ / ₄	10–40	A1	E	2-3	13–52	B	F	2-3	25–100	B	G	2 ¹ / ₂ -4	50–200	B	H
		60Hz Voltage	Letter																																																								
		24 Separate Control	J																																																								
120 Separate Control	F																																																										
110–120/220–240 ^①	A																																																										
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440–480	H																																																										
575–600	E																																																										
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 ³ / ₄	10–40	A1	E																																																								
2-3	13–52	B	F																																																								
2-3	25–100	B	G																																																								
2 ¹ / ₂ -4	50–200	B	H																																																								
For other voltages and frequencies see Factory Modifications page 8/95.	* 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				NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Overload		Enclosure ^④							
200 Volts	230 Volts	460 Volts	575 Volts				Amp Range	Frame Size	NEMA 1 General Purpose		NEMA 4/4X Stainless ^② Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional)		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12 NEMA 3/3R ^② Industrial Use Weatherproof (Field Convertible to 3/3R)	
									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	—	1½	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	—	3½	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 ^④							
200 Volts	230 Volts	460 Volts	575 Volts				Amp Range	Frame Size	NEMA 1 General Purpose		NEMA 4/4X Stainless ^② Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional)		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12 NEMA 3/3R ^② Industrial Use Weatherproof (Field Convertible to 3/3R)	
									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	—	3½	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 8/88.

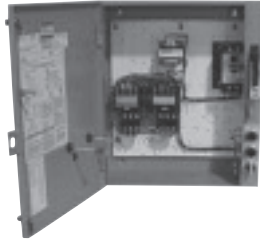
③ First † for high speed, second † for low speed. Use motor nameplate information to select FLA. If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

④ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Combination Two Speed Heavy Duty Starters

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

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 8/150. (6 Required)
- Field Modification Kits see page 8/82.
- Factory Modifications see page 8/95.
- Dimensions see page 8/125.
- Wiring Diagrams see page 8/136.
- Replacement Parts see page 8/157.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240 ^①	A
200–208	D
220–240	G
277	L
220–240/440–480 ^①	C
440–480	H
575–600	E

For other voltages and frequencies, see Factory Modifications page 8/95.

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

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 ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R ^② 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	—	100	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				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 ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R ^② 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	
1/2	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	—	100	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.

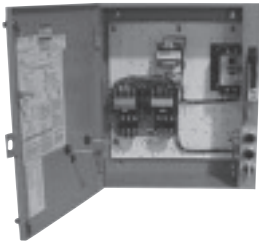
① Dual voltage coils not available in modified starters.

② For conduit hubs and conversion instructions, see page 8/88.

Combination Two Speed Heavy Duty Starters

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

Selection

	Ordering Information	Coil Table	
		60Hz Voltage	Letter
	► Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.	24 Separate Control	J
	► Heater elements see page 8/150. (6 Required)	120 Separate Control	F
	► Field Modification Kits see page 8/82.	110–120/220–240 ^①	A
	► Factory Modifications see page 8/95.	200–208	D
	► Dimensions see page 8/125.	220–240	G
	► Wiring Diagrams see page 8/136.	277	L
	► Replacement Parts see page 8/157.	220–240/440–480 ^①	C
		440–480	H
		575–600	E
		For other voltages and frequencies, see Factory Modifications page 8/95.	

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

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 ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R ^② 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\$
½	½	1	1	0	—	3	32CP92B2HA*81		32CP92W2HA*81		32CP92F2HA*81		32CP92N2HA*81	
1½	1½	3	3	0	—	10	32CP92B2HB*81		32CP92W2HB*81		32CP92F2HB*81		32CP92N2HB*81	
2	2	—	—	0	—	25	32CP92B2HC*81		32CP92W2HC*81		32CP92F2HC*81		32CP92N2HC*81	
½	½	1	1	1	—	3	32DP92B2HA*81		32DP92W2HA*81		32DP92F2HA*81		32DP92N2HA*81	
1½	1½	3	3	1	—	10	32DP92B2HB*81		32DP92W2HB*81		32DP92F2HB*81		32DP92N2HB*81	
3	3	7½	7½	1	—	25	32DP92B2HD*81		32DP92W2HD*81		32DP92F2HD*81		32DP92N2HD*81	
5	5	—	—	1	—	30	32DP92B2HE*81		32DP92W2HE*81		32DP92F2HE*81		32DP92N2HE*81	
—	—	10	10	—	1¼	40	32EP92B2HF*81		32EP92W2HF*81		32EP92F2HF*81		32EP92N2HF*81	
7½	7½	—	—	—	1¼	50	32EP92B2HG*81		32EP92W2HG*81		32EP92F2HG*81		32EP92N2HG*81	
—	7½	15	20	2	—	40	32FP92B2HH*81		32FP92W2HH*81		32FP92F2HH*81		32FP92N2HH*81	
7½	10	20	—	2	—	50	32FP92B2HJ*81		32FP92W2HJ*81		32FP92F2HJ*81		32FP92N2HJ*81	
—	—	30	30	—	2½	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	—	3½	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				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 ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R ^② 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
½	½	1	1	0	—	3	32CP92B1HA*81		32CP92W1HA*81		32CP92F1HA*81		32CP92N1HA*81	
1½	1½	3	3	0	—	10	32CP92B1HB*81		32CP92W1HB*81		32CP92F1HB*81		32CP92N1HB*81	
2	2	—	—	0	—	25	32CP92B1HC*81		32CP92W1HC*81		32CP92F1HC*81		32CP92N1HC*81	
½	½	1	1	1	—	3	32DP92B1HA*81		32DP92W1HA*81		32DP92F1HA*81		32DP92N1HA*81	
1½	1½	3	3	1	—	10	32DP92B1HB*81		32DP92W1HB*81		32DP92F1HB*81		32DP92N1HB*81	
3	3	7½	7½	1	—	25	32DP92B1HD*81		32DP92W1HD*81		32DP92F1HD*81		32DP92N1HD*81	
5	5	—	—	1	—	30	32DP92B1HE*81		32DP92W1HE*81		32DP92F1HE*81		32DP92N1HE*81	
—	—	10	10	—	1¼	40	32EP92B1HF*81		32EP92W1HF*81		32EP92F1HF*81		32EP92N1HF*81	
7½	7½	—	—	—	1¼	50	32EP92B1HG*81		32EP92W1HG*81		32EP92F1HG*81		32EP92N1HG*81	
—	7½	15	20	2	—	40	32FP92B1HH*81		32FP92W1HH*81		32FP92F1HH*81		32FP92N1HH*81	
7½	10	20	—	2	—	50	32FP92B1HJ*81		32FP92W1HJ*81		32FP92F1HJ*81		32FP92N1HJ*81	
—	—	30	30	—	2½	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	—	3½	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 8/88.

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 8/82.
- Factory Modifications see page 8/95.
- Dimensions see pages 8/107 open and 8/116 enclosed.
- Wiring Diagrams see page 8/142.
- Replacement Parts see page 8/157.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240 ^①	A
200–208	D
220–240	G
277	L
220–240/440–480 ^①	C
440–480	H
575–600	E

For other voltages and frequencies, see Factory Modifications page 8/95.

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 ^④		NEMA 1 General Purpose		NEMA 4/4X Stainless ^② 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 ^② 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	—	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*		40CP32O*	
7½	7½	10	10	27	1	—	40DP32A*		40DP32B*		40DP32W*		40DP32F*		40DP32H*		40DP32O*	
10	10	15	15	40	—	1¼	40EP32A*		40EP32B*		40EP32W*		40EP32F*		40EP32H*		40EP32O*	
10	15	25	25	45	2	—	40FP32A*		40FP32B*		40FP32W*		40FP32F*		40FP32H*		40FP32O*	
15	20	30	30	60	—	2½	40GP32A*		40GP32B*		40GP32W*		40GP32F*		40GP32H*		40GP32O*	
25	30	50	50	90	3	—	40HP32A*		40HP32B*		40HP32W*		40HP32F*		40HP32H*		40HP32O*	
30	40	75	75	115	—	3½	40IP32A*		40IP32B*		40IP32W*		40IP32F*		40IP32H*		40IP32O*	
40	50	100	100	135	4	—	40JG32A*		40JG32B*		40JG32W*		40JG32F*		40JG32H*		40JG32O*	
75	100	200	200	270	5	—	40LP32A*		40LP32B*		40LP32E* ^①		—	—	40LP32H*		40LP32O*	
150	200	400	400	540	6	—	40MP32A*		40MP32B*		40MP32E* ^③		—	—	—	—	40MP32O*	
—	300	600	600	810	7④②	—	40NH32A*		40NH32B*		40NH32E* ^③		—	—	—	—	40NH32O*	
—	450	900	900	1215	8⑤②	—	40PH32A*		40PH32B*		40PH32E* ^③		—	—	—	—	40PH32O*	

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 ^④ General Purpose		NEMA 4/4X Stainless ^② 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 ^② NEMA 3/3R Industrial Use Weatherproof	
							Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1 ½	1 ½	2	2	9	00	—	40BP82B*		Use Size 0	—	Use Size 0	—	Use Size 0	—
3	3	5	5	18	0	—	40CP82B*		40CP82W*		40CP82H*		40CP82H*	
7 ½	7 ½	10	10	27	1	—	40DP82B*		40DP82W*		40DP82H*		40DP82H*	
10	10	15	15	40	—	1 ¼	40EP82B*		40EP82W*		40EP82H*		40EP82H*	
10	15	25	25	45	2	—	40FP82B*		40FP82W*		40FP82H*		40FP82H*	
15	20	30	30	60	—	2 ½	40GP82B*		40GP82W*		40GP82H*		40GP82H*	
25	30	50	50	90	3	—	40HP82B*		40HP82W*		40HP82H*		40HP82H*	
30	40	75	75	115	—	3 ½	40IP82B*		40IP82W*		40IP82H*		40IP82H*	
40	50	100	100	135	4	—	40JG82B*		40JG82W*		40JG82H*		40JG82H*	

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

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

② For conduit hubs and conversion instructions, see page 8/88.

③ Enclosure is NEMA Type 4 (painted steel).

④ Only available
F coil 100-250V AC 50/60Hz, or DC
H coil 150-500V AC 50/60Hz, or DC

⑤ Only available
F coil 100-250V AC 50/60Hz, or DC

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

⑦ Lugs are not included, refer to page 8/86.

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 8/82.
- Factory Modifications see page 8/95.
- Dimensions see pages 8/107 open and 8/116 enclosed.
- Wiring Diagrams see page 8/142.
- Replacement Parts see page 8/157.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240 ^①	A
200–208	D
220–240	G
277	L
220–240/440–480 ^①	C
440–480	H
575–600	E

For other voltages and frequencies, see Factory Modifications page 8/95.

Open Type & Standard Width Enclosure, Single Phase, 2-Pole^{③④}

Max Hp		Cont-actor Amp Rating	NEMA Size	Half Size	Enclosure											
115 Volts	208/ 230 Volts				Open Type ^⑤		NEMA 1 General Purposes		NEMA 4/4X Stainless ^② 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 ^② 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 \$
1/8	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*		40CP120*	
2	3	27	1	—	40DP12A*		40DP12B*		40DP12W*		40DP12F*		40DP12H*		40DP120*	
3	5	35	1P	—	40EP12A*		40EP12B*		40EP12W*		40EP12F*		40EP12H*		40EP120*	
3	7½	45	2	—	40FP12A*		40FP12B*		40FP12W*		40FP12F*		40FP12H*		40FP120*	
5	10	60	—	2½	40GP12A*		40GP12B*		40GP12W*		40GP12F*		40GP12H*		40GP120*	
7½	15	90	3	—	40HP12A*		40HP12B*		40HP12W*		40HP12F*		40HP12H*		40HP120*	
—	—	115	—	3½	40IP12A*		40IP12B*		40IP12W*		40IP12F*		40IP12H*		40IP120*	
—	—	135	4	—	40JG12A*		40JG12B*		40JG12W*		40JG12F*		40JG12H*		40JG120*	

Open Type & Standard Width Enclosure, 4-Pole

Max Hp				Con- tactor Amp Rating	NEMA Size	Half Size	Enclosure											
200 Volts	230 Volts	460 Volts	575 Volts				Open Type		NEMA 1 General Purpose		NEMA 4/4X Stainless ^② 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 ^② 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 \$
1/3	1 1/2	2	2	9	00	—	40BP22A*		40BP22B*		Use Size 0	—	Use Size 0	—	Use Size 0	—		
2	3	5	5	18	0	—	40CP22A*		40CP22B*		40CP22W*		40CP22F*		40CP22H*	40CP220*		
3	7 1/2	10	10	27	1	—	40DP22A*		40DP22B*		40DP22W*		40DP22F*		40DP22H*	40DP220*		
5	10	15	15	40	—	1 1/4	40EP22A*		40EP22B*		40EP22W*		40EP22F*		40EP22H*	40EP220*		

Vacuum Contactors, 3-Phase, 3-Pole^①



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.

^① Dual voltage coils not available for vacuum contactors. Refer to Page 8/95 for a complete list of available coil voltages.

^② For conduit hubs and conversion instructions, see page 8/88.

^③ To order single phase contactor in an extra wide enclosure, order the enclosure kit from Page 16-91 and the open style contactor as separate items.

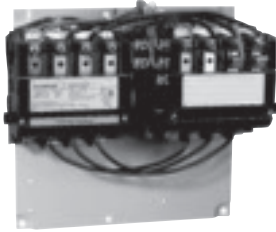
^④ Coils D, F, or G will be wired for incoming voltage. J coil will be wired for separate source. Coils E, H, and L do not apply to single phase starters.

^⑤ 1 NO Auxiliary.

Reversing Heavy Duty Contactors

Class 43

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 8/82.
- Factory Modifications see page 8/95.
- Dimensions see pages 8/108 open and 8/121 enclosed.
- Wiring Diagrams see page 8/142.
- Replacement Parts see page 8/157.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240 ^①	A
200–208	D
220–240	G
277	L
220–240/440–480 ^①	C
440–480	H
575–600	E
For other voltages and frequencies, see Factory Modifications page 8/95.	

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

Max Hp				Cont-actor Amp Rating	NEMA Size	Half Size	Enclosure											
200 Volts	230 Volts	460 Volts	575 Volts				Open Type ^②		NEMA 1 General Purpose		NEMA 4/4X Stainless ^② 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 ^② 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	½	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*	—		
7½	7½	10	10	27	1	—	43DP32A*	43DP32B*	43DP32W*	—	43DP32F*	—	43DP32H*	—	43DP320*	—		
10	10	15	15	40	—	1¼	43EP32A*	43EP32B*	43EP32W*	—	43EP32F*	—	43EP32H*	—	43EP320*	—		
10	15	25	25	45	2	—	43FP32A*	43FP32B*	43FP32W*	—	43FP32F*	—	43FP32H*	—	43FP320*	—		
15	20	30	30	60	—	2½	43GP32A*	43GP32B*	43GP32W*	—	43GP32F*	—	43GP32H*	—	43GP320*	—		
25	30	50	50	90	3	—	43HP32A*	43HP32B*	43HP32W*	—	43HP32F*	—	43HP32H*	—	43HP320*	—		
30	40	75	75	115	—	3½	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* ^③	—	—	—	—	—	43LP320*	—		
100	200	400	400	540	6	—	43MP32A*	43MP32B*	43MP32E* ^③	—	—	—	—	—	43MP320*	—		
—	300	600	600	810	7⑤	—	43NH32A*	43NH32B*	43NH32E* ^③	—	—	—	—	—	43NH320*	—		
—	450	900	900	1215	8⑥	—	43PH32A*	—	—	—	—	—	—	—	—	—		

Open Type & Standard Width Enclosure, Single Phase, 3-Wire, 2-Pole^④

Max Hp		Cont-actor Amp Rating	NEMA Size	Enclosure											
115 Volts	208/230 Volts			Open Type		NEMA 1 General Purpose		NEMA 4/4X Stainless [®] Watertight, Dust-tight Corrosion Resistant 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 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 \$
1½	1	9	00	43BP12A*		43BP12B*		Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—
1	2	18	0	43CP12A*		43CP12B*		43CP12W*		43CP12F*		43CP12H*		43CP120*	
2	3	27	1	43DP12A*		43DP12B*		43DP12W*		43DP12F*		43DP12H*		43DP120*	
3	5	35	1P	43EP12A*		43EP12B*		43EP12W*		43EP12F*		43EP12H*		43EP120*	

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

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

② For conduit hubs and conversion instructions, see page 8/88.

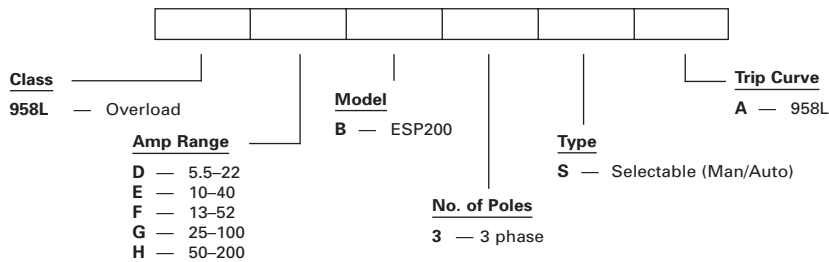
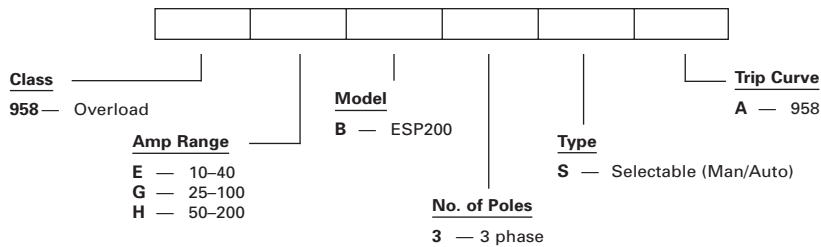
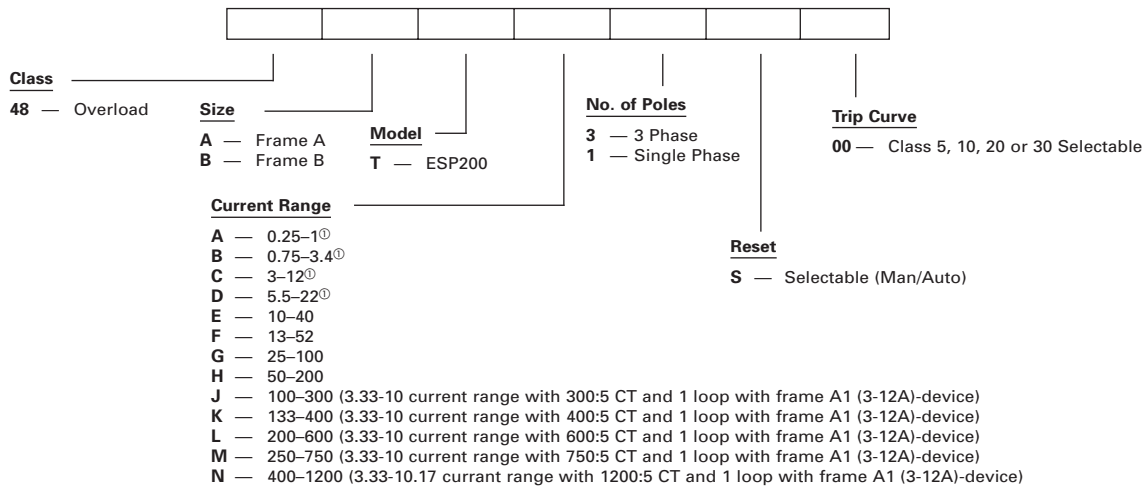
③ Enclosure is NEMA Type 4 (painted steel).

④ 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.

⑤ Only available
F coil 100–250V AC 50/60Hz, or DC
H coil 150–500V AC 50/60Hz, or DC

⑥ Only available
F coil 100–250V AC 50/60Hz, or DC

⑦ Auxiliary contacts
43B–43E 4th pole built-in
43F–43J 2 NO & 2 NC

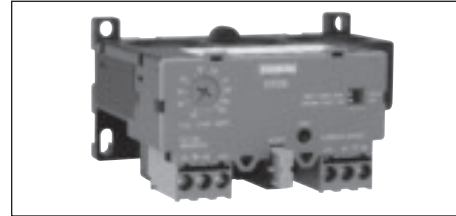


① Ranges available in Single or 3-phase.

Overload Relays

Solid State ESP200, Class 48, 958 and 958L

General



Features	Benefits
▪ Trip Classes - 5, 10, 20, or 30 Selectable by DIP-switches	▪ Field changeable reduces time and inventory. Suitable for light, normal and heavy starting conditions
▪ Phase Loss Protection - Trips in less than 3 Seconds	▪ Protects motor burn out and minimizes motor heating up
▪ Phase Unbalance - Trips based on Trip Class selected	▪ Minimizes temperature rise of the motor on a asymmetrical three-phase-system
▪ Ground Fault - Trips 60% of Motor Current	▪ 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
▪ Trip Indicator - Visible	▪ Save time, faster to identify overload Trip
▪ Ambient Insensitive	▪ Prevents nuisance tripping
▪ No Heaters Required	▪ Saves cost and eliminates time for installation of heaters
▪ Self-Powered - No outside source required	▪ Reduce cost for external power supply
▪ FLA dial with wide Adjustment - 4:1 ratio	▪ Provides wide range, reduces inventory
▪ Self Protected in short circuit condition (when used with proper fuses or motor starter protector)	▪ Unlike bimetal overloads, this eliminates replacement of the overload heaters after short circuit
▪ Test Button - Tests Electronics	▪ Tests the complete electronic functions including the trip mechanism. Increases up time
▪ Thermal Memory	▪ Prevents re-starting motor when it is still hot
▪ Conformally coated circuit board	▪ Resists against environmental conditions
▪ 1 NO and 1NC Contacts Standard. B600, R300	▪ Makes it easier for user to wire local contacts
▪ Operating Temperature: -25 °C - 65 °C	▪ Wide operating temperature range prevents nuisance tripping with temperature changes
▪ Repeat Accuracy <1%.	▪ For more precise settings and reduced nuisance tripping
▪ Removable Terminal Block	▪ Terminal Block can be removed without removing wires. Saves time for replacements
▪ Automatic reset	▪ 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
▪ Remote reset	▪ 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
▪ DIN Rail Mounted	▪ Reduces installation time
▪ Touch - Safe Terminals	▪ Protects against accidental touching of live circuits
▪ UL listed CSA certified	▪ Third party approval standard

Overload Relays

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

General

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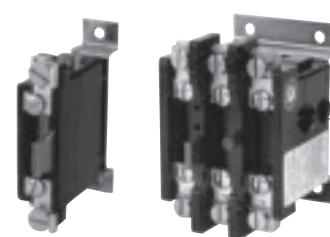
8



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 heater-less 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°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 8/51.
- ▶ Dimensions see page 8/109.
- ▶ 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 8/86.

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" ⑥	48ATK3S00	3UB81234KW2	
200–600	3	"A1" ④	48ATL3S00	3UB81234LW2	
250–750	3	"A1" ⑦	48ATM3S00	3UB81234MW2	
400–1220	3	"A1" ⑤	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	

Solid State—3RB206^{③⑥}, 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 ^①	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 60 100 180	1 NC 1 NC 1 NC 1 NC	5A (B600) & 5A (P300)	48DA18AA4 48GA18AA4 48HA18AA4 48JA18AA4	
3	30 30 60 60 100 180	1 NC 1 NO/NC 1 NC 1 NO/NC 3 NC 3 NC	10A (A600) & 5A (P300) 5A (B600) & 5A (P300)	48DC38AA4 48DC39AA4 48GC38AA4 48GC39AA4 48HA38AA4 48JA38AA4	

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 8/109.

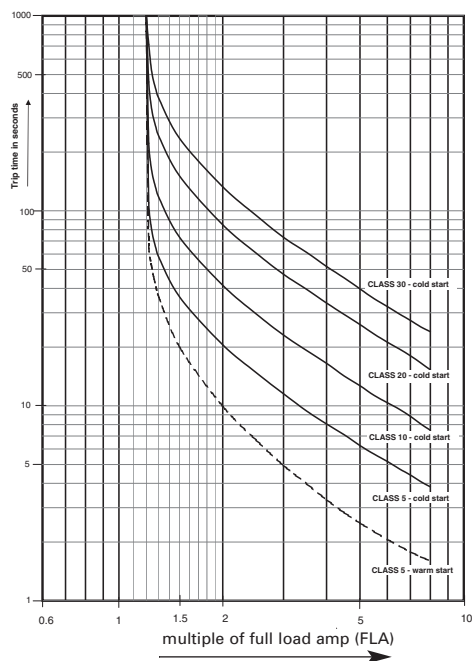
Current Transformers

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	

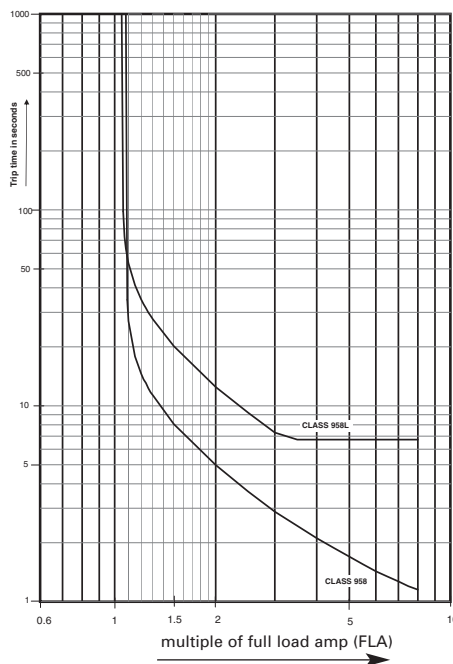
Solid State—Class 958 and 958L

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	

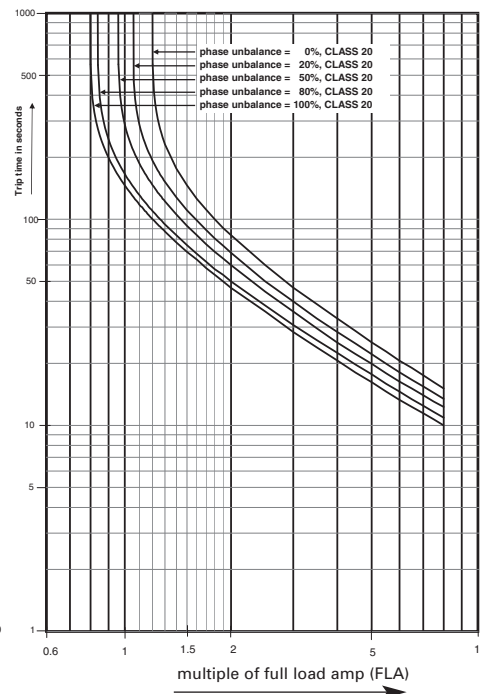
Time - Current - Characteristics
CLASS 48



Time - Current - Characteristics
CLASS 958, 958L



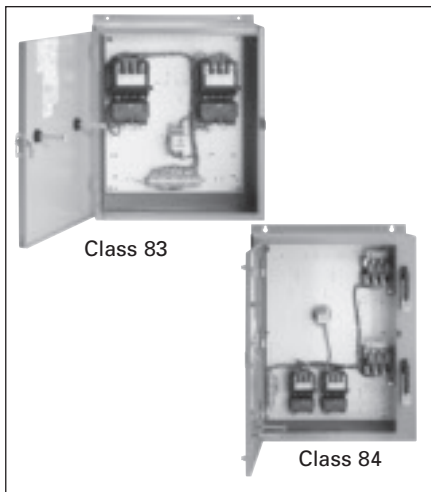
Trip - curve depending on unbalance
CLASS 20



① Temperature rating -25° to +60°C.

Duplex Heavy Duty Controllers

General



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 and Service Equipment
- UL Listed file #E14900 (class 83); file #E185287 (class 84)
- CSA certified file #LR 6535 (class 83 & 84)

Application

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

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

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

Enclosure Types

Duplex controllers are available in NEMA 1, 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 IlSCO, Burndy and T&B crimp type lugs
- The 200A switch accepts up to 300 MCM versus 250 MCM wire size

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

Duplex Heavy Duty Controllers

Non-Combination, Class 83

Selection



Ordering Information

- Standard coil voltage supplied will be 120V, separate control. For non-alternator styles (see factory modifications) change the 9th character using the coil table.
- Heater elements for bimetal overloads see page 8/150 (6-Required).
- Field Modification Kits see page 8/82.
- Factory Modifications see page 8/95.
- Dimensions see page 8/127.
- Wiring Diagrams see page 8/143.
- Replacement Parts see page 8/157.

Coil Table

60Hz Voltage	Letter
24 Separate Control ^②	J
120 Separate Control	F
200–208 ^②	D
220–240 ^②	G
277 ^②	L
440–480 ^②	H
550–600 ^②	E

Non-Combination (with Solid-State Overload)

Max Hp				NEMA Size	Half Size	Overload		Enclosure ^③							
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 316 Stainless Steel (Optional)		NEMA 4 Painted Watertight, Dust-tight		NEMA 12 NEMA 3/3R ^① Industrial Use Weatherproof (Field Convertible to 3/3R)	
								Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/4	1/4	1/4	1/4	0	—	0.25–1	A	83CUA92BF		83CUA92WF		83CUA92EF		83CUA920F	
1/2	1/2	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	
1/4	1/4	1/4	1/4	1	—	0.25–1	A	83DUA92BF		83DUA92WF		83DUA92EF		83DUA920F	
1/2	1/2	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 1/2	25–100	B	83GUG92BF		83GUG92WF		83GUG92EF		83GUG920F	
25	30	50	50	3	—	25–100	B	83HUG92BF		83HUG92WF		83HUG92EF		83HUG920F	
30	40	75	75	—	3 1/2	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 ^① Industrial Use Weatherproof	
						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 8/88.

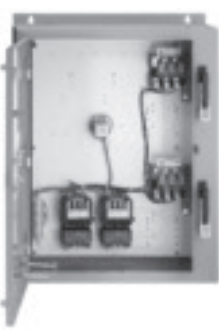
② Not available on standard alternator style ('92' in the catalog number).

③ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Duplex Heavy Duty Controllers

Combination Disconnect [Fusible & Non-Fusible], Class 84

Selection

	Ordering Information	Coil Table	
	▶ Standard coil voltage supplied will be 120V, separate control. For non-alternator styles (see factory modifications) change the 10th character using the coil table. ▶ Heater elements for bimetal overloads see page 8/150 (6-Required). ▶ For factory installed fusible disconnect, see page 8/96. ▶ Field Modification Kits see page 8/82. ▶ Factory Modifications see page 8/95. ▶ Dimensions see page 8/127. ▶ Wiring Diagrams see page 8/143. ▶ Replacement Parts see page 8/157.	60Hz Voltage	Letter
		24 Separate Control ^②	J
		120 Separate Control	F
		200–208 ^②	D
		220–240 ^②	G
		277 ^②	L
		440–480 ^②	H
		550–600 ^②	E

Two Disconnect Switches with Solid-State Overload

Max Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Enclosure ^③							
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 316 Stainless Steel (Optional)		NEMA 4 Painted Watertight, Dust-tight		NEMA 12 NEMA 3/3R ^① Industrial Use Weatherproof (Field Convertible to 3/3R)	
									Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/4	1/4	1/4	1/4	0	—	0.25–1	A	30	84CUA92BDF		84CUA92WDF		84CUA92EDF		84CUA920DF	
1/2	1/2	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	
1/4	1/4	1/4	1/4	1	—	0.25–1	A	30	84DUA92BDF		84DUA92WDF		84DUA92EDF		84DUA920DF	
1/2	1/2	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 1/4	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 1/4	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 1/4	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 ^① 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 3/4	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 8/88.

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

③ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Duplex Heavy Duty Controllers

Combination Circuit Breaker, Class 84

Selection



Ordering Information

- ▶ Standard coil voltage supplied will be 120V, separate control. For non-alternator styles (see factory modifications) change the 10th character using the coil table.
- ▶ Heater elements for bimetal overloads see page 8/150 (6-Required).
- ▶ Field Modification Kits see page 8/82.
- ▶ Factory Modifications see page 8/95.
- ▶ Dimensions see page 8/127.
- ▶ Wiring Diagrams see page 8/143.
- ▶ Replacement Parts see page 8/157.

Coil Table

60Hz Voltage	Letter
24 Separate Control ²	J
120 Separate Control	F
200–208 ²	D
220–240 ²	G
277 ²	L
440–480 ²	H
550–600 ²	E

2 Motor Circuit Protectors (with Solid-State Overload)

Max Hp				NEMA Size	Half Size	Overload		Motor Circuit Interrupter ETI	Enclosure ³							
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 316 Stainless Steel (Optional)		NEMA 4 Painted Watertight, Dust-tight		NEMA 12 NEMA 3/3R ¹ Industrial Use Weatherproof (Field Convertible to 3/3R)	
Catalog Number	Catalog Number	Catalog Number	Catalog Number			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	0	—	0.25–1	A	3	84CUA92BMF		84CUA92WMF		84CUA92EMF		84CUA920MF	
1/2	1/2	1 1/2	2	0	—	0.75–3.4	A	3	84CUB92BMF		84CUB92WMF		84CUB92EMF		84CUB920MF	
2	2	5	5	0	—	3–12	A1	10	84CUC92BMF		84CUC92WMF		84CUC92EMF		84CUC920MF	
3	3	—	—	0	—	5.5–22	A1	25	84CUD92BMF		84CUD92WMF		84CUD92EMF		84CUD920MF	
1/4	1/4	1 1/2	2	1	—	0.25–1	A	3	84DUA92BMF		84DUA92WMF		84DUA92EMF		84DUA920MF	
1/2	1/2	5	5	1	—	0.75–3.4	A	3	84DUB92BMF		84DUB92WMF		84DUB92EMF		84DUB920MF	
2	2	10	10	1	—	3–12	A1	10	84DUC92BMF		84DUC92WMF		84DUC92EMF		84DUC920MF	
3	3	—	—	1	—	5.5–22	A1	25	84DUD92BMF		84DUD92WMF		84DUD92EMF		84DUD920MF	
7 1/2	7 1/2	—	—	1	—	10–40	A1	30	84DUE92BMF		84DUE92WMF		84DUE92EMF		84DUE920MF	
—	—	15	15	—	1 1/4	10–40	A1	40	84EUE92BMF		84EUE92WMF		84EUE92EMF		84EUE920MF	
10	15	25	25	2	—	13–52	B	50	84FUF92BMF		84FUF92WMF		84FUF92EMF		84FUF920MF	
15	20	30	30	—	2 1/2	25–100	B	100	84GUG92BMF		84GUG92WMF		84GUG92EMF		84GUG920MF	
20	25	50	50	3	—	25–100	B	100	84HUG92BMF		84HUG92WMF		84HUG92EMF		84HUG920MF	
30	40	75	75	—	3 1/2	50–200	B	125	84IUH92BMF		84IUH92WMF		84IUH92EMF		84IUH920MF	
40	50	100	100	4	—	50–200	B	150	84JUH92BMF		84JUH92WMF		84JUH92EMF		84JUH920MF	

2 Motor Circuit Protectors (with Ambient Compensated Bimetal Overload)

Max Hp				NEMA Size	Half 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 ¹ Industrial Use Weatherproof	
Catalog Number	Catalog Number	Catalog Number	Catalog Number				Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/4	1/4	1 1/2	2	0	—	3	84CPB92BMF81		84CPB92WMF81		84CPB92EMF81		84CPB920MF81	
2	2	5	5	0	—	10	84CPD92BMF81		84CPD92WMF81		84CPD92EMF81		84CPD920MF81	
3	3	—	—	0	—	25	84CPE92BMF81		84CPE92WMF81		84CPE92EMF81		84CPE920MF81	
1/2	1/2	1 1/2	2	1	—	3	84DPB92BMF81		84DPB92WMF81		84DPB92EMF81		84DPB920MF81	
2	2	5	5	1	—	10	84DPD92BMF81		84DPD92WMF81		84DPD92EMF81		84DPD920MF81	
3	3	10	10	1	—	25	84DPE92BMF81		84DPE92WMF81		84DPE92EMF81		84DPE920MF81	
7 1/2	7 1/2	—	—	1	—	30	84DPF92BMF81		84DPF92WMF81		84DPF92EMF81		84DPF920MF81	
—	—	15	15	—	1 1/4	40	84EPF92BMF81		84EPF92WMF81		84EPF92EMF81		84EPF920MF81	
10	10	—	—	—	1 1/4	50	84EPG92BMF81		84EPG92WMF81		84EPG92EMF81		84EPG920MF81	
—	—	15	20	2	—	40	84FPF92BMF81		84FPF92WMF81		84FPF92EMF81		84FPF920MF81	
10	15	25	25	2	—	50	84FPH92BMF81		84FPH92WMF81		84FPH92EMF81		84FPH920MF81	
—	—	30	30	—	2 1/2	50	84GPH92BMF81		84GPH92WMF81		84GPH92EMF81		84GPH920MF81	
15	20	—	—	—	2 1/2	100	84GPJ92BMF81		84GPJ92WMF81		84GPJ92EMF81		84GPJ920MF81	
—	—	30	40	3	—	50	84HPJ92BMF81		84HPJ92WMF81		84HPJ92EMF81		84HPJ920MF81	
20	25	50	50	3	—	100	84HPK92BMF81		84HPK92WMF81		84HPK92EMF81		84HPK920MF81	
30	40	75	75	—	3 1/2	125	84IPL92BMF81		84IPL92WMF81		84IPL92EMF81		84IPL920MF81	
40	50	100	100	4	—	150	84JPM92BMF81		84JPM92WMF81		84JPM92EMF81		84JPM920MF81	

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 8/88.

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

³ Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Pump Control Panels

Irrigation Pump Panel with Solid State Overload, Class 81

General

	Ordering Information	Coil Table	
	▶ Replace the (*) with a letter from the coil table. ▶ Field Modification Kits see page 8/82. ▶ Factory Modifications see page 8/95. ▶ Dimensions see page 8/128. ▶ Wiring Diagrams see page 8/145. ▶ Replacement parts refer to instruction sheet SFIS-81010-1207.	60Hz Voltage	Letter
		24	J
		110-220	F
		200-208	D
		208-240	G
		277	L
		440-480	H

Siemens introduces its new Class 81 Irrigation Pump Panel. This newest addition to the already extensive line of Siemens pump panels 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

Features and Benefits

- Heavy-duty horsepower rated contactors sized 1/2 – 40hp to provide reliable motor control and protection expected in the most demanding applications

- Type 3R enclosure fabricated with galvanized steel versus conventional cold rolled steel for superior corrosion resistance
- Rugged 30mm H-O-A switch and Start push button, which are standard features, meet Type 3, 4, 12, and 13 specifications and are oil and dust tight for durability
- Pre-punched opening with cover plate for convenient field installation of a conduit hub should top entry be required
- Full gasketed door to ensure a dust tight and water tight seal
- Mounting flanges at top and bottom of enclosure for easy mounting on poles or flat surfaces using keyhole slots
- Door is removable for ease of installation and maintenance
- Factory and field modifications for custom applications
- UL rated as service entrance equipment
- UL listed
- Pre-drilled mounted holes for MotorSaver®

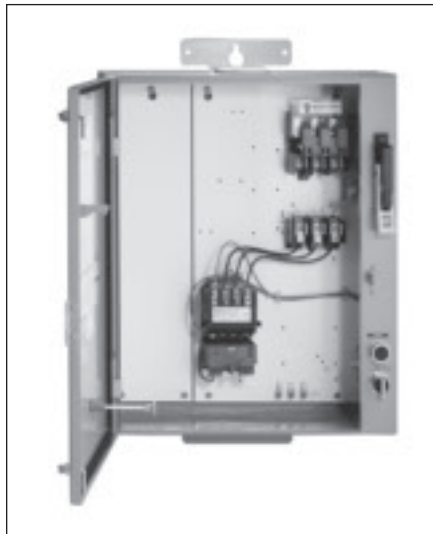
Circuit Breaker

Max Hp			Contactor Amp Rating	Overload Amp Range	Breaker Amp Size	Catalog Number
200 Volts	230 Volts	480 Volts				
1/2	1/2	1	25	0.75-3	15	81AFB6MA*
1 1/2	2	3	25	2.5-10	15	81AFD6MA*
2	2	5	25	2.5-10	20	81AFD6MB*
3	3	7 1/2	25	9-18	25	81AFE6MC*
3	5	10	30	9-18	30	81BFE6MD*
5	5	10	30	13-27	40	81BFF6ME*
5	7 1/2	15	40	13-27	50	81CFF6MF*
7 1/2	10	20	50	22-45	60	81DFH6MG*
10	10	25	60	22-45	70	81EFH6MH*
10	15	30	60	30-60	90	81EFJ6MK*
20	20	40	90	45-90	125	81GEK6MN*

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.

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.

Pump Control Panels

Class 87, 88

General

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

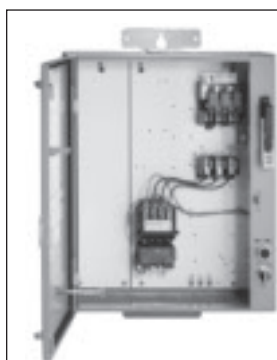
Class 87 NEMA Vacuum Starter Pump Control Panels

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 87^③

Selection



Ordering Information

- Field Modification Kits see page 8/82.
- Factory Modifications see page 8/95.
- Dimensions see page 8/128.
- Wiring Diagrams see page 8/145.
- Replacement Parts see page 8/157.
- 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 Separate Control	J
120 Separate Control	F
110–120/220–240	A ^①
200–208	D
220–240	G
220–240/440–480	C ^②
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 ^②	A	30	30A/600V	87DUB6FC	
—	—	5	5	1	—	3–12	A1	30	30A/600V	87DUC6FC	
—	—	7½	10	1	—	5.5–22	A1	30	30A/600V	87DUD6FC	
—	—	7½	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	
—	—	15	25	2	—	13–52	B	60	60A/600V	87FUF6FC	
—	—	25	25	2	—	13–52	B	100	100A/600V	87FUF60C	
—	—	30	30	—	2½	13–52	B	60	60A/600V	87GUG6FC	
—	—	30	30	—	2½	13–52	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	25	—	—	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	—	—	—	—	0.75–3.4 ^②	A	3	87DUB6MC	
2	2	5	5	1	—	3–12	A1	10	87DUC6MC	
3	3	7½	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 Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Pump Control Panels

Pump Panel with Ambient Compensated Bimetal Overload, Class 87

Selection

Ordering Information	Coil Table	
▶ Heater elements for bimetal overloads see page 8/150 (6-Required). ▶ Field Modification Kits see page 8/82. ▶ Factory Modifications see page 8/95. ▶ Dimensions see page 8/128. ▶ Wiring Diagrams see page 8/145. ▶ Replacement Parts see page 8/157. ▶ 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. ▶ 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.	60Hz Voltage	Letter
	24 Separate Control 120 Separate Control 110-120/220-240 200-208 220-240 220-240/440-480 277 440-480 550-600	J F A ^① D G C ^① 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	—	1¾	30	30A/600V	87EAF6FC	
—	—	15	15	—	1¾	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	—	—	—	1¾	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	—	1¾	40	87EAF6MC	
10	10	—	—	—	1¾	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.

① Not available on Size 5 or above.

Vacuum Starter Pump Panels

With Solid-State Overload Relay, Class 87

Selection

Ordering Information	Coil Table													
► Field Modification Kits see page 8/82. ► Factory Modifications see page 8/95. ► Dimensions see page 8/128. ► Wiring Diagrams see page 8/145. ► Replacement Parts see page 8/157. ► Sizes 4-6 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.	60Hz Voltage ***													
	<table> <tr><td>24 Separate Control</td><td>J</td></tr> <tr><td>120 Separate Control</td><td>F</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>440-480</td><td>H</td></tr> <tr><td>550-600</td><td>E</td></tr> </table>	24 Separate Control	J	120 Separate Control	F	200-208	D	220-240	G	277	L	440-480	H	550-600
24 Separate Control	J													
120 Separate Control	F													
200-208	D													
220-240	G													
277	L													
440-480	H													
550-600	E													

Fusible Disconnect

Max Hp		NEMA Size	Overload Range	Fuse Clip Amps/Volts	Catalog Number	List Price \$
460 Volts	575 Volts					
100	100	4	55-250A	200A/600V	87JCM4F*	
200	200	5	55-250A	400A/600V	87LCU4F*	

Circuit Breaker

Max Hp		NEMA Size	Overload Range	Circuit Breaker Rating Amps	Catalog Number	List Price \$
460 Volts	575 Volts					
100	100	4	55-250A	250A	87JCM4M*	
200	200	5	55-250A	400A	87LCT4M*	
250	300	6	160-630A	400A	87MCW4M*	
400	400	6	160-630A	600A	87MCX4M*	

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 88^①

Selection

Ordering Information	Coil and Control Voltage
► Field Modification Kits see page 8/82. ► Factory Modifications see page 8/95. ► Dimensions see page 8/128. ► Wiring Diagrams see pages 8/138 and 8/139. ► Replacement Parts see page 8/157.	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. 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"

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	88FUT2FG	—	50	88FUT2MG	
	20	25-100	B	—	2½	100A/250V	88GUG2FG		100	88GUG2MG	
	30	25-100	B	3	—	100A/250V	88HUG2FG		100	88HUG2MG	
	40	50-200	B	—	3½	200A/250V	88IUT2FG		125	88IUT2MG	
	50	50-200	B	4	—	200A/250V	88JUT2FG		150	88JUT2MG	
	75	55-250	—	5	—	—	—		250	88LPST2MG	
	100	55-250	—	5	—	400A/250V	88LPT2FG		400	88LPT2MG	
460	200	160-630	—	6	—	—	—	—	600	88MSXT2MG	
	25	13-52	B	2	—	60A/600V	88FUT4FH		50	88FUT4MH	
	30	25-100	B	—	2½	60A/600V	88GUG4FH		50	88GUG4MH	
	50	25-100	B	3	—	100A/600V	88HUG4FH		100	88HUG4MH	
	75	50-200	B	—	3½	200A/600V	88IUT4FH		125	88IUT4MH	
	100	50-200	B	4	—	200A/600V	88JUT4FH		150	88JUT4MH	
	150	55-250	—	5	—	—	—		250	88LPST4MH	
460	200	55-250	—	5	—	400A/600V	88LPS2MH		400	88LPS2MH	
	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	—	1½	100A/250V	88EUP2FG	—	100	88EUP2MG	
	25	13-52	B	2	—	100A/250V	88FUP2FG		100	88FUP2MG	
	40	25-100	B	—	2½	200A/250V	88GUP2FG		100	88GUP2MG	
	50	25-100	B	3	—	200A/250V	88HUP2FG		150	88HUP2MG	
	60	50-200	B	—	3½	200A/250V	88IUP2FG		250	88IUP2MG	
	75	50-200	B	4	—	400A/250V	88JUP2FG		250	88JUP2MG	
	125	55-250	—	5	—	—	—		400	88LPSP2MG	
460	150	55-250	—	5	—	600A/250V	88LUP2FG		600	88LUP2MG	
	30	10-40	A1	—	1½	100A/600V	88EUP4FH	—	100	88EUP4MH	
	40	13-52	B	2	—	100A/600V	88FUP4FH		100	88FUP4MH	
	60	25-100	B	—	2½	200A/600V	88GUP4FH		100	88GUP4MH	
	75	25-100	B	3	—	200A/600V	88HUP4FH		150	88HUP4MH	
	100	50-200	B	—	3½	200A/600V	88IUP4FH		250	88IUP4MH	
	150	50-200	B	4	—	400A/600V	88JUP4FH		250	88JUP4MH	
	250	55-250	—	5	—	—	—		400	88LPSP4MH	
460	350	55-250	—	5	—	600A/600V	88LUP4FH		600	88LSP4MH	

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

^① Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Reduced Voltage Pump Panels

Wye Delta with Solid State Overload, Class 88^①

Selection

Ordering Information	Coil and Control Voltage
▶ Field Modification Kits see page 8/82. ▶ Factory Modifications see page 8/95. ▶ Dimensions see page 8/128. ▶ Wiring Diagrams see pages 8/140 and 8/141. ▶ Replacement Parts see page 8/157.	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. 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"

Wye Delta

Motor Voltage	Max Hp	Overload		NEMA Size	Half Size	Fuse Clip Size Amps/Volts	Motor Circuit Interruter 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		88IHC6FD		88IHC6MD	
	60	50-200	B	4	—	400A/250V	250	88JUH06FD		88JUH06MD		88JHC6FD		88JHC6MD	
	75	55-250	—	5	—	400A/600V	400	88LPS06FD		88LPS06MD		88LPC6FD		88LPC6MD	
	150	55-250	—	5	—	600A/600V	600	88LPU06FD		88LPU06MD		88LPC6FD		88LPC6MD	
300	160-630	—	6	—	—	800	—	—	88MSX06MD		—	—	88MSXC6MD		
230	10	10-40	A1	1	—	60A/250V	50	88DUE02FG		88DUE02MG		88DUEC2FG		88DUEC2MG	
	15	10-40	A1	—	1½	60A/250V	50	88EUE02FG		88EUE02MG		88EUEC2FG		88EUEC2MG	
	25	13-52	B	2	—	100A/250V	100	88FUF02FG		88FUF02MG		88FUC2FG		88FUC2MG	
	30	25-100	B	—	2½	200A/250V	100	88GUG02FG		88GUG02MG		88GUC2FG		88GUC2MG	
	50	25-100	B	3	—	200A/250V	150	88HUG02FG		88HUG02MG		88HUC2FG		88HUC2MG	
	60	50-200	B	—	3½	200A/250V	250	88IUH02FG		88IUH02MG		88IHC2FG		88IHC2MG	
	75	50-200	B	4	—	400A/250V	250	88JUH02FG		88JUH02MG		88JHC2FG		88JHC2MG	
	100	55-250	—	5	—	400A/250V	400	88LPS02FG		88LPS02MG		88LPC2FG		88LPC2MG	
	150	55-250	—	5	—	600A/250V	600	88LPU02FG		88LPU02MG		88LPC2FG		88LPC2MG	
350	160-630	—	6	—	—	1200	—	—	88MSX02MG		—	—	88MSXC2MG		
460	15	10-40	A1	1	—	60A/600V	30	—	—	—	—	—	—	—	—
	30	10-40	A1	—	1½	60A/600V	50	88EUE04FH		88EUE04MH		88EUEC4FH		88EUEC4MH	
	40	13-52	B	2	—	100A/600V	100	88FUF04FH		88FUF04MH		88FUC4FH		88FUC4MH	
	60	25-100	B	—	2½	200A/600V	100	88GUG04FH		88GUG04MH		88GUC4FH		88GUC4MH	
	75	25-100	B	3	—	200A/600V	125	88HUG04FH		88HUG04MH		88HUC4FH		88HUC4MH	
	100	50-200	B	—	3½	200A/600V	150	88IUH04FH		88IUH04MH		88IHC4FH		88IHC4MH	
	150	50-200	B	4	—	400A/600V	250	88JUH04FH		88JUH04MH		88JHC4FH		88JHC4MH	
	200	55-250	—	5	—	400A/600V	400	88LPS04FH		88LPU04MH		88LPC4FH		88LPC4MH	
	300	55-250	—	5	—	600A/600V	600	88LPU04FH		88LPU04MH		88LPC4FH		88LPC4MH	
700	160-630	—	6	—	—	1200	—	—	88MSX04MH		—	—	88MSXC4MH		
575	15	10-40	A1	1	—	60A/600V	30	—	—	—	—	—	—	—	—
	30	10-40	A1	—	1½	60A/600V	50	88EUE05FE		88EUE05ME		88EUEC5FE		88EUEC5ME	
	40	13-52	B	2	—	100A/600V	50	88FUF05FE		88FUF05ME		88FUC5FE		88FUC5ME	
	60	25-100	B	—	2½	200A/600V	100	88GUG05FE		88GUG05ME		88GUC5FE		88GUC5ME	
	75	25-100	B	3	—	200A/600V	125	88HUG05FE		88HUG05ME		88HUC5FE		88HUC5ME	
	100	50-200	B	—	3½	200A/600V	150	88IUH05FE		88IUH05ME		88IHC5FE		88IHC5ME	
	150	50-200	B	4	—	400A/600V	250	88JUH05FE		88JUH05ME		88JHC5FE		88JHC5ME	
	200	55-250	—	5	—	400A/600V	400	88LPS05FE		88LPU05ME		88LPC5FE		88LPC5ME	
	300	55-250	—	5	—	600A/600V	400	88LPU05FE		88LPU05ME		88LPC5FE		88LPC5ME	
700	160-630	—	6	—	—	1200	—	—	88MSX05ME		—	—	88MSXC5ME		

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

① Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Reduced Voltage Heavy Duty Starters

Features and Benefits

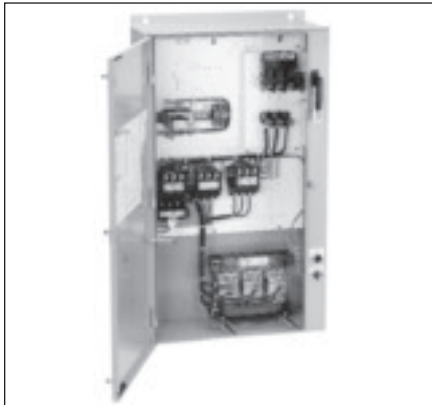
General

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
- ESP200 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
- ESP200 overload as standard
- CPT supplied as standard
- Wide range of factory modifications



Part-Winding Starter

- Simplest design – most economical
- Adjustable starting time
- ESP200 overload as standard
- CPT supplied as standard
- Wide range of factory modifications

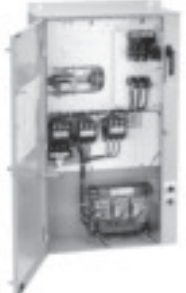
Various Methods of Electro-Mechanical Reduced Voltage Motor Starting —A General Comparison

Characteristic	Autotransformer			Part-Winding	Wye-Delta
	50% Tap	65% Tap	80% Tap	2 step	
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 & 37^①

Selection

	Ordering Information ► Field Modification Kits see page 8/82. ► Factory Modifications see page 8/95. ► Dimensions see page 8/126. ► Wiring Diagrams see page 8/139. ► Replacement Parts see page 8/157. ► For additional enclosure options see page 8/98.	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 separate control voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC separate control voltage (CPT not supplied), change the 9th character to "J".
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NEMA 1 General Purpose Enclosures

Motor Voltage	Max Hp	NEMA Size	Half Size	Overload		Non-Combination Enclosure		Combination Non-Fusible Disconnect		Fuse Clip Size Amps/Volts	Combination Fusible Disconnect		Circuit Breaker Amps	Combination Circuit Breaker	
				Amp Range	Frame Size	Catalog Number	List Price \$	Catalog Number	List Price \$		Catalog Number	List Price \$		Catalog Number	List Price \$
200	10	—	1%	10–40	A1	36EUT6BD	—	37EUT6BDD	—	60A/250V	37EUT6BDF	—	50	37EUT6BDP	
	15	2	—	13–52	B	36FUT6BD		37FUT6BDD		60A/250V	37FUT6BDF		50	37FUT6BDP	
	25	—	2%	25–100	B	36GUG6BD		37GUG6BDD		100A/250V	37GUG6BDF		100	37GUG6BDP	
	30	3	—	25–100	B	36HUG6BD		37HUG6BDD		100A/250V	37HUG6BDF		100	37HUG6BDP	
	40	—	3%	50–200	B	36IUT6BD		37IUT6BDD		200A/250V	37IUT6BDF		125	37IUT6BDP	
	50	4	—	50–200	B	36JUT6BD		37JUT6BDD		200A/250V	37JUT6BDF		150	37JUT6BDP	
	75	5	—	55–250	—	—		—		—	—		250	37LPST6BDP	
	150	6	—	160–630	—	36LPUT6BD		37LPUT6BDD		400A/250V	37LPUT6BDF		400	37LPUT6BDP	
230	10	—	1%	10–40	A1	36EUT2BG	—	37EUT2BGD	—	60A/250V	37EUT2BGF	—	50	37EUT2BGP	
	15	2	—	13–52	B	36FUT2BG		37FUT2BGD		60A/250V	37FUT2BGF		50	37FUT2BGP	
	20	—	2%	25–100	B	36GUG2BG		37GUG2BGD		100A/250V	37GUG2BGF		100	37GUG2BGP	
	30	3	—	25–100	B	36HUG2BG		37HUG2BGD		100A/250V	37HUG2BGF		100	37HUG2BGP	
	40	—	3%	50–200	B	36IUT2BG		37IUT2BGD		200A/250V	37IUT2BGF		125	37IUT2BGP	
	50	4	—	50–200	B	36JUT2BG		37JUT2BGD		200A/250V	37JUT2BGF		150	37JUT2BGP	
	75	5	—	55–250	—	—		—		—	—		250	37LPST2BGP	
	100	5	—	55–250	—	36LPUT2BG		37LPUT2BGD		400A/250V	37LPUT2BGF		400	37LPUT2BGP	
460	15	—	1%	10–40	A1	36EUT4BH	—	37EUT4BHD	—	60A/250V	37EUT4BHF	—	50	37EUT4BHP	
	25	2	—	13–52	B	36FUT4BH		37FUT4BHD		60A/250V	37FUT4BHF		50	37FUT4BHP	
	30	—	2%	13–52	B	36GUG4BH		37GUG4BHD		100A/250V	37GUG4BHF		100	37GUG4BHP	
	50	3	—	25–100	B	36HUG4BH		37HUG4BHD		100A/250V	37HUG4BHF		100	37HUG4BHP	
	75	—	3%	50–200	B	36IUT4BH		37IUT4BHD		200A/250V	37IUT4BHF		125	37IUT4BHP	
	100	4	—	50–200	B	36JUT4BH		37JUT4BHD		200A/250V	37JUT4BHF		150	37JUT4BHP	
	150	5	—	55–250	—	—		—		—	—		250	37LPST4BHP	
	200	5	—	55–250	—	36LPUT4BH		37LPUT4BHD		400A/250V	37LPUT4BHF		400	37LPUT4BHP	
575	400	6	—	160–630	—	36MPXT4BH		37MPXT4BHD		600A/250V	37MPXT4BHF		600	37MPXT4BHP	
	15	—	1%	10–40	A1	36EUT5BE	—	37EUT5BED	—	60A/250V	37EUT5BEF	—	50	37EUT5BEP	
	25	2	—	13–52	B	36FUT5BE		37FUT5BED		60A/250V	37FUT5BEF		50	37FUT5BEP	
	30	—	2%	13–52	B	36GUG5BE		37GUG5BED		100A/250V	37GUG5BEF		100	37GUG5BEP	
	50	3	—	25–100	B	36HUG5BE		37HUG5BED		100A/250V	37HUG5BEF		100	37HUG5BEP	
	75	—	3%	50–200	B	36IUT5BE		37IUT5BED		200A/250V	37IUT5BEF		125	37IUT5BEP	
	100	4	—	50–200	B	36JUT5BE		37JUT5BED		200A/250V	37JUT5BEF		150	37JUT5BEP	
	150	5	—	55–250	—	—		—		—	—		250	37LPST5BEP	
	200	5	—	55–250	—	36LPUT5BE		37LPUT5BED		400A/250V	37LPUT5BEF		400	37LPUT5BEP	
400	6	—	—	160–630	—	36MPXT5BE		37MPXT5BED		600A/250V	37MPXT5BEF		600	37MPXT5BEP	

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

① Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Reduced Voltage Heavy Duty Starters

2 Step Part Winding with Solid State Overload, Class 36 & 37^①

Selection

	Ordering Information				Coil and Control Voltage			
	► Field Modification Kits see page 8/82. ► Factory Modifications see page 8/95. ► Dimensions see page 8/126. ► Wiring Diagrams see page 8/138. ► Replacement Parts see page 8/157. ► For additional enclosure options see page 8/98.				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 separate control voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC separate control voltage (CPT not supplied), change the 9th character to "J".			

NEMA 1 General Purpose Enclosures

Motor Voltage	Max Hp	NEMA Size	Half Size	Overload		Non-Combination Enclosure		Combination Non-Fusible Disconnect		Fuse Clip Size Amps/Volts	Combination Fusible Disconnect		Circuit Breaker Amps	Combination Circuit Breaker	
				Amp Range	Frame Size	Catalog Number	List Price \$	Catalog Number	List Price \$		Catalog Number	List Price \$		Catalog Number	List Price \$
200	7½	0	—	5.5–22	A1	36CUDP6BD	—	37CUDP6BDD	—	60A/250V	37CUDP6BDF	—	30	37CUDP6BDP	—
	10	1	—	5.5–22	A1	36DUDP6BD		37DUDP6BDD		60A/250V	37DUDP6BDF		50	37DUDP6BDP	
	15	—	1½	10–40	A1	36EUEP6BD		37EUEP6BDD		100A/250V	37EUEP6BDF		100	37EUEP6BDP	
	20	2	—	13–52	B	36FUEP6BD		37FUEP6BDD		100A/250V	37FUEP6BDF		100	37FUEP6BDP	
	30	—	2½	25–100	B	36GUGP6BD		37GUGP6BDD		200A/250V	37GUGP6BDF		125	37GUGP6BDP	
	40	3	—	25–100	B	36HUGP6BD		37HUGP6BDD		200A/250V	37HUGP6BDF		150	37HUGP6BDP	
	50	—	3¾	50–200	B	36IUHP6BD		37IUHP6BDD		200A/250V	37IUHP6BDF		250	37IUHP6BDP	
	75	4	—	50–200	B	36JUHP6BD		37JUHP6BDD		400A/250V	37JUHP6BDF		400	37JUHP6BDP	
	100	5	—	55–250	—	—		—		—	—		600	37LSP6BDP	
	150	5	—	55–250	—	36LPUP6BD		37LPUP6BDD		600A/250V	37LPUP6BDF		600	37LPUP6BDP	
230	7½	0	—	5.5–22	A1	36CUDP2BG	—	37CUDP2BGD	—	60A/250V	37CUDP2BGF	—	30	37CUDP2BGP	—
	10	1	—	5.5–22	A1	36DUDP2BG		37DUDP2BGD		60A/250V	37DUDP2BGF		50	37DUDP2BGP	
	20	—	1½	10–40	A1	36EUEP2BG		37EUEP2BGD		100A/250V	37EUEP2BGF		100	37EUEP2BGP	
	25	2	—	13–52	B	36FUEP2BG		37FUEP2BGD		100A/250V	37FUEP2BGF		100	37FUEP2BGP	
	30	—	2½	25–100	B	36GUGP2BG		37GUGP2BGD		100A/250V	37GUGP2BGF		100	37GUGP2BGP	
	50	3	—	25–100	B	36HUGP2BG		37HUGP2BGD		200A/250V	37HUGP2BGF		150	37HUGP2BGP	
	60	—	3¾	50–200	B	36IUHP2BG		37IUHP2BGD		200A/250V	37IUHP2BGF		250	37IUHP2BGP	
	75	4	—	50–200	B	36JUHP2BG		37JUHP2BGD		400A/250V	37JUHP2BGF		250	37JUHP2BGP	
	125	5	—	55–250	—	—		—		—	—		400	37LSP2BGP	
	150	5	—	55–250	—	36LPUP2BG		37LPUP2BGD		600A/250V	37LPUP2BGF		600	37LPUP2BGP	
460	10	0	—	5.5–22	A1	36CUDP4BH	—	37CUDP4BHD	—	30A/600V	37CUDP4BHF	—	30	37CUDP4BHP	—
	15	1	—	5.5–22	A1	36DUDP4BH		37DUDP4BHD		60A/600V	37DUDP4BHF		30	37DUDP4BHP	
	30	—	1½	10–40	A1	36EUEP4BH		37EUEP4BHD		60A/600V	37EUEP4BHF		50	37EUEP4BHP	
	40	2	—	13–52	B	36FUEP4BH		37FUEP4BHD		100A/600V	37FUEP4BHF		100	37FUEP4BHP	
	60	—	2½	25–100	B	36GUGP4BH		37GUGP4BHD		200A/600V	37GUGP4BHF		100	37GUGP4BHP	
	75	3	—	25–100	B	36HUGP4BH		37HUGP4BHD		200A/600V	37HUGP4BHF		125	37HUGP4BHP	
	100	—	3¾	50–200	B	36IUHP4BH		37IUHP4BHD		200A/600V	37IUHP4BHF		150	37IUHP4BHP	
	150	4	—	50–200	B	36JUHP4BH		37JUHP4BHD		400A/600V	37JUHP4BHF		250	37JUHP4BHP	
	250	5	—	55–250	—	—		—		—	—		400	37LSP4BHP	
	350	5	—	55–250	—	36LPUP4BH		37LPUP4BHD		600A/600V	37LPUP4BHF		600	37LPUP4BHP	
575	600	6	—	160–630	—	36MPXP4BH	—	37MPXP4BHD	—	1200A/600V	37MPXP4BHF	—	1200	37MPXP4BHP	—
	10	0	—	5.5–22	A1	36CUDP5BE		37CUDP5BED		30A/600V	37CUDP5BEF		30	37CUDP5BEP	
	15	1	—	5.5–22	A1	36DUDP5BE		37DUDP5BED		60A/600V	37DUDP5BEF		30	37DUDP5BEP	
	30	—	1½	10–40	A1	36EUEP5BE		37EUEP5BED		60A/600V	37EUEP5BEF		50	37EUEP5BEP	
	40	2	—	13–52	B	36FUEP5BE		37FUEP5BED		60A/600V	37FUEP5BEF		50	37FUEP5BEP	
	60	—	2½	25–100	B	36GUGP5BE		37GUGP5BED		100A/600V	37GUGP5BEF		100	37GUGP5BEP	
	75	3	—	25–100	B	36HUGP5BE		37HUGP5BED		200A/600V	37HUGP5BEF		125	37HUGP5BEP	
	100	—	3¾	50–200	B	36IUHP5BE		37IUHP5BED		400A/600V	37IUHP5BEF		150	37IUHP5BEP	
	150	4	—	50–200	B	36JUHP5BE		37JUHP5BED		400A/600V	37JUHP5BEF		250	37JUHP5BEP	
	250	5	—	55–250	—	—		—		400A/600V	37LSP5BEF		—	—	
	350	5	—	55–250	—	36LPUP5BE		37LPUP5BED		600A/600V	37LPUP5BEF		400	37LPUP5BEP	
	600	6	—	160–630	—	36MPXP5BE		37MPXP5BED		1200A/600V	37MPXP5BEF		1200	37MPXP5BEP	

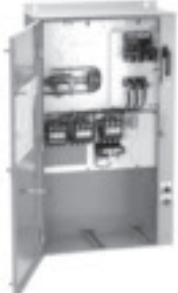
Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Reduced Voltage Heavy Duty Starters

Wye Delta, Open Transition with Solid State Overload, Class 36 & 37^①

Selection

	Ordering Information	Coil and Control Voltage
	► Field Modification Kits see page 8/82. ► Factory Modifications see page 8/95. ► Dimensions see page 8/126. ► Wiring Diagrams see page 8/140. ► Replacement Parts see page 8/157. ► For additional enclosure options see page 8/98.	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 separate control voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC separate control voltage (CPT not supplied), change the 9th character to "J".

NEMA 1 General Purpose Enclosures

Motor Voltage	Max Hp	NEMA Size	Half Size	Overload		Non-Combination Enclosure		Combination Non-Fusible Disconnect		Fuse Clip Size Amps/Volts	Combination Fusible Disconnect		Circuit Breaker Amps	Combination Circuit Breaker	
				Amp Range	Frame Size	Catalog Number	List Price \$	Catalog Number	List Price \$		Catalog Number	List Price \$		Catalog Number	List Price \$
200	10	1	—	10–40	A1	36DUE06BD		37DUE06BDD		60A/250V	37DUE06BDF		50	37DUE06BDP	
	15	—	1½	10–40	A1	36EUE06BD		37EUE06BDD		100A/250V	37EUE06BDF		100	37EUE06BDP	
	20	2	—	13–52	B	36FUF06BD		37FUF06BDD		100A/250V	37FUF06BDF		100	37FUF06BDP	
	30	—	2½	25–100	B	36GUG06BD		37GUG06BDD		200A/250V	37GUG06BDF		125	37GUG06BDP	
	40	3	—	25–100	B	36HUG06BD		37HUG06BDD		200A/250V	37HUG06BDF		150	37HUG06BDP	
	50	—	3¾	50–200	B	36IUH06BD		37IUH06BDD		200A/250V	37IUH06BDF		250	37IUH06BDP	
	60	4	—	50–200	B	36JUH06BD		37JUH06BDD		400A/250V	37JUH06BDF		250	37JUH06BDP	
	75	5	—	55–250	—	36LPS06BD		37LPS06BDD		400A/250V	37LPS06BDF		400	37LPS06BDP	
230	150	5	—	55–250	—	36LPU06BD		37LPU06BDD		600A/250V	37LPU06BDF		600	37LPU06BDP	
	300	6	—	160–630	—	36MPX06BD		37MPX06BDD		1200A/250V	37MPX06BDF		1200	37MPX06BDP	
	10	1	—	10–40	A1	36DUE02BG		37DUE02BGD		60A/250V	37DUE02BGF		50	37DUE02BGP	
	15	—	1½	10–40	A1	36EUE02BG		37EUE02BGD		60A/250V	37EUE02BGF		50	37EUE02BGP	
	25	2	—	13–52	B	36FUF02BG		37FUF02BGD		100A/250V	37FUF02BGF		100	37FUF02BGP	
	30	—	2½	25–100	B	36GUG02BG		37GUG02BGD		200A/250V	37GUG02BGF		100	37GUG02BGP	
	50	3	—	25–100	B	36HUG02BG		37HUG02BGD		200A/250V	37HUG02BGF		150	37HUG02BGP	
	60	—	3¾	50–200	B	36IUH02BG		37IUH02BGD		200A/250V	37IUH02BGF		250	37IUH02BGP	
460	75	4	—	50–200	B	36JUH02BG		37JUH02BGD		400A/250V	37JUH02BGF		250	37JUH02BGP	
	100	5	—	55–250	—	36LPS02BG		37LPS02BGD		400A/250V	37LPS02BGF		400	37LPS02BGP	
	150	5	—	55–250	—	36LPU02BG		37LPU02BGD		600A/250V	37LPU02BGF		600	37LPU02BGP	
	350	6	—	160–630	—	36MPX02BG		37MPX02BGD		1200A/250V	37MPX02BGF		1200	37MPX02BGP	
	15	1	—	10–40	A1	36DUD04BH		37DUD04BHD		30A/600V	37DUD04BHF		30	37DUD04BHP	
	30	—	1½	10–40	A1	36EUE04BH		37EUE04BHD		60A/600V	37EUE04BHF		50	37EUE04BHP	
	40	2	—	13–52	B	36FUF04BH		37FUF04BHD		100A/600V	37FUF04BHF		100	37FUF04BHP	
	60	—	2½	25–100	B	36GUG04BH		37GUG04BHD		200A/600V	37GUG04BHF		100	37GUG04BHP	
575	75	3	—	25–100	B	36HUG04BH		37HUG04BHD		200A/600V	37HUG04BHF		125	37HUG04BHP	
	100	—	3¾	50–200	B	36IUH04BH		37IUH04BHD		200A/600V	37IUH04BHF		150	37IUH04BHP	
	150	4	—	50–200	B	36JUH04BH		37JUH04BHD		400A/600V	37JUH04BHF		250	37JUH04BHP	
	200	5	—	55–250	—	36LPS04BH		37LPS04BHD		400A/600V	37LPS04BHF		400	37LPS04BHP	
	300	5	—	55–250	—	36LPU04BH		37LPU04BHD		600A/600V	37LPU04BHF		600	37LPU04BHP	
	700	6	—	160–630	—	36MPX04BH		37MPX04BHD		1600A/600V	37MPX04BHF		1200	37MPX04BHP	
	15	1	—	10–40	A1	36DUD05BE		37DUD05BED		30A/600V	37DUD05BEF		30	37DUD05BEP	
	30	—	1½	10–40	A1	36EUE05BE		37EUE05BED		60A/600V	37EUE05BEF		50	37EUE05BEP	
575	40	2	—	13–52	B	36FUF05BE		37FUF05BED		100A/600V	37FUF05BEF		50	37FUF05BEP	
	60	—	2½	25–100	B	36GUG05BE		37GUG05BED		100A/600V	37GUG05BEF		100	37GUG05BEP	
	75	3	—	25–100	B	36HUG05BE		37HUG05BED		200A/600V	37HUG05BEF		125	37HUG05BEP	
	100	—	3¾	50–200	B	36IUH05BE		37IUH05BED		200A/600V	37IUH05BEF		150	37IUH05BEP	
	150	4	—	50–200	B	36JUH05BE		37JUH05BED		400A/600V	37JUH05BEF		250	37JUH05BEP	
	200	5	—	55–250	—	36LPS05BE		37LPS05BED		400A/600V	37LPS05BEF		250	37LPS05BEP	
	300	5	—	55–250	—	36LPU05BE		37LPU05BED		600A/600V	37LPU05BEF		400	37LPU05BEP	
	700	6	—	160–630	—	36MPX05BE		37MPX05BED		1600A/600V	37MPX05BEF		1600	37MPX05BEP	

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

① Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Reduced Voltage Heavy Duty Starters

Wye Delta, Closed Transition with Solid State Overload, Class 36 & 37^①

Selection

Ordering Information	Coil and Control Voltage
► Field Modification Kits see page 8/82. ► Factory Modifications see page 8/95. ► Dimensions see page 8/126. ► Wiring Diagrams see page 8/141. ► Replacement Parts see page 8/157. ► For additional enclosure options see page 8/98.	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 separate control voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC separate control voltage (CPT not supplied), change the 9th character to "J".

NEMA 1 General Purpose Enclosures

Motor Voltage	Max Hp	NEMA Size	Half Size	Overload		Non-Combination Enclosure		Combination Non-Fusible Disconnect		Fuse Clip Size Amps/Volts	Combination Fusible Disconnect		Circuit Breaker Amps	Combination Circuit Breaker	
				Amp Range	Frame Size	Catalog Number	List Price \$	Catalog Number	List Price \$		Catalog Number	List Price \$		Catalog Number	List Price \$
200	10	1	—	10–40	A1	36DUEC6BD		37DUEC6BDD		60A/250V	37DUEC6BDF		50	37DUEC6BDP	
	15	—	1%	10–40	A1	36EUEC6BD		37EUEC6BDD		100A/250V	37EUEC6BDF		100	37EUEC6BDP	
	20	2	—	13–52	B	36FUEC6BD		37FUEC6BDD		100A/250V	37FUEC6BDF		100	37FUEC6BDP	
	30	—	2%	25–100	B	36GUGC6BD		37GUGC6BDD		200A/250V	37GUGC6BDF		125	37GUGC6BDP	
	40	3	—	25–100	B	36HUGC6BD		37HUGC6BDD		200A/250V	37HUGC6BDF		150	37HUGC6BDP	
	50	—	3%	50–200	B	36IUHC6BD		37IUHC6BDD		200A/250V	37IUHC6BDF		250	37IUHC6BDP	
	60	4	—	50–200	B	36JUHC6BD		37JUHC6BDD		400A/250V	37JUHC6BDF		250	37JUHC6BDP	
	75	5	—	55–250	—	36LPSC6BD		37LPSC6BDD		400A/250V	37LPSC6BDF		400	37LPSC6BDP	
	150	5	—	55–250	—	36LPUC6BD		37LPUC6BDD		600A/250V	37LPUC6BDF		600	37LPUC6BDP	
	300	6	—	160–630	—	36MPXC6BD		37MPXC6BDD		1200A/250V	37MPXC6BDF		1200	37MPXC6BDP	
230	10	1	—	10–40	A1	36DUEC2BG		37DUEC2BGD		60A/250V	37DUEC2BGF		50	37DUEC2BGP	
	15	—	1%	10–40	A1	36EUEC2BG		37EUEC2BGD		60A/250V	37EUEC2BGF		50	37EUEC2BGP	
	25	2	—	13–52	B	36FUEC2BG		37FUEC2BGD		100A/250V	37FUEC2BGF		100	37FUEC2BGP	
	30	—	2%	25–100	B	36GUGC2BG		37GUGC2BGD		200A/250V	37GUGC2BGF		100	37GUGC2BGP	
	50	3	—	25–100	B	36HUGC2BG		37HUGC2BGD		200A/250V	37HUGC2BGF		150	37HUGC2BGP	
	60	—	3%	50–200	B	36IUHC2BG		37IUHC2BGD		200A/250V	37IUHC2BGF		250	37IUHC2BGP	
	75	4	—	50–200	B	36JUHC2BG		37JUHC2BGD		400A/250V	37JUHC2BGF		250	37JUHC2BGP	
	100	5	—	55–250	—	36LPSC2BG		37LPSC2BGD		400A/250V	37LPSC2BGF		400	37LPSC2BGP	
	150	5	—	55–250	—	36LPUC2BG		37LPUC2BGD		600A/250V	37LPUC2BGF		600	37LPUC2BGP	
	350	6	—	160–630	—	36MPXC2BG		37MPXC2BGD		1200A/250V	37MPXC2BGF		1200	37MPXC2BGP	
460	15	1	—	10–40	A1	36DUDC4BH		37DUDC4BHD		30A/600V	37DUDC4BHF		30	37DUDC4BHP	
	30	—	1%	10–40	A1	36EUEC4BH		37EUEC4BHD		60A/600V	37EUEC4BHF		50	37EUEC4BHP	
	40	2	—	13–52	B	36FUEC4BH		37FUEC4BHD		100A/600V	37FUEC4BHF		100	37FUEC4BHP	
	60	—	2%	25–100	B	36GUGC4BH		37GUGC4BHD		200A/600V	37GUGC4BHF		100	37GUGC4BHP	
	75	3	—	25–100	B	36HUGC4BH		37HUGC4BHD		200A/600V	37HUGC4BHF		125	37HUGC4BHP	
	100	—	3%	50–200	B	36IUHC4BH		37IUHC4BHD		200A/600V	37IUHC4BHF		150	37IUHC4BHP	
	150	4	—	50–200	B	36JUHC4BH		37JUHC4BHD		400A/600V	37JUHC4BHF		250	37JUHC4BHP	
	200	5	—	55–250	—	36LPSC4BH		37LPSC4BHD		400A/600V	37LPSC4BHF		400	37LPSC4BHP	
	300	5	—	55–250	—	36LPUC4BH		37LPUC4BHD		600A/600V	37LPUC4BHF		600	37LPUC4BHP	
	700	6	—	160–630	—	36MPXC4BH		37MPXC4BHD		1600A/600V	37MPXC4BHF		1200	37MPXC4BHP	
575	15	1	—	10–40	A1	36DUDC5BE		37DUDC5BED		30A/600V	37DUDC5BEF		30	37DUDC5BEP	
	30	—	1%	10–40	A1	36EUEC5BE		37EUEC5BED		60A/600V	37EUEC5BEF		50	37EUEC5BEP	
	40	2	—	13–52	B	36FUEC5BE		37FUEC5BED		100A/600V	37FUEC5BEF		50	37FUEC5BEP	
	60	—	2%	25–100	B	36GUGC5BE		37GUGC5BED		100A/600V	37GUGC5BEF		100	37GUGC5BEP	
	75	3	—	25–100	B	36HUGC5BE		37HUGC5BED		200A/600V	37HUGC5BEF		125	37HUGC5BEP	
	100	—	3%	50–200	B	36IUKC5BE		37IUKC5BED		200A/600V	37IUKC5BEF		150	37IUKC5BEP	
	150	4	—	50–200	B	36JUHC5BE		37JUHC5BED		400A/600V	37JUHC5BEF		250	37JUHC5BEP	
	200	5	—	55–250	—	36LPSC5BE		37LPSC5BED		400A/600V	37LPSC5BEF		250	37LPSC5BEP	
	300	5	—	55–250	—	36LPUC5BE		37LPUC5BED		600A/600V	37LPUC5BEF		400	37LPUC5BEP	
	700	6	—	160–630	—	37MPXC5BF		37MPXC5BED		1600A/600V	37MPXC5BEF		1600	37MPXC5BEP	

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

① Enclosed starters with the ESP200 OLR will not be available until approximately December 2009. Continue to order enclosed starters with the ESP100 OLR until then.

Features

- Compact Design
- Silver Cadmium Oxide Contacts
- Pressure Type Terminals
- Straight Thru Wiring
- Wide Variety of Contact Configurations
- 12-Poles Maximum
- Available From 20 Amps–400 Amps
Up to 12-Poles 20, 30 and 60 Amps
3-Poles On 100–400 Amps
- Full Line of Enclosures
NEMA 1
NEMA 3R/12
NEMA 4/4X (Stainless Steel)
- Available In Combination Form with
Choice of:
Fusible Disconnect
Non-Fusible Disconnect
Circuit Breaker
- All Combination Lighting Contactors
are UL Service Entrance Listed
- Full Line of Factory And Field
Modifications
- UL Listed Files #E27683
- CSA Certified File LR 6535

Application

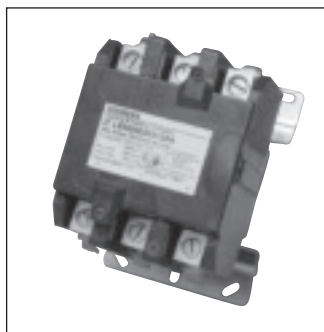
Siemens electrically held lighting contactors provide a safe, convenient means of local or remote switching for tungsten and ballast lamp loads, mercury arc lamps, and 3-phase resistive heating.

Class LE electrically held lighting and heating contactors are used in applications where it is not critical that the contacts remain in the closed position during loss of control power.

These lighting contactors are rated at 480V Tungsten, 600V Ballast. They are available in 2–12 poles with a variety of NO and NC contact arrangements.

Typical applications include:

- Industrial and Commercial Buildings
- Stadiums
- Airports
- Non-Critical Resistive Heaters and
other Non-Inductive Loads



Lighting and Heating Control

Electrically Held Lighting Contactors, Class LE

Selection

	Ordering Information		Coil Table	
	► Replace the *** with a number from the coil table. ► Field modifications see page 8/82. ► Factory modification kits see page 8/95. ► Dimensions see page 8/111 open page 8/129 enclosed. ► Wiring Diagrams see page 8/146. ► Replacement parts see page 8/160.		60Hz Voltage	Number
			24	024
			120	120
			208	208
			240	240
			277	277
			480	480
			600	600

Open and Non-combination Enclosed Contactors

Max. Amp Rating	Number of Poles	Normally Closed Contacts	Normally Open Contacts	Open Type		NEMA 1 General Purpose		NEMA 12 NEMA 3/3R ^① Industrial Use Weatherproof		NEMA 4/4X Stainless Steel ^① Watertight, Dust-tight, Corrosion Resistant, 304 Stainless Steel	
				Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
20	2	2 0	0 2	LEN00B200***A LEN00B002***A		LEN01B200***A LEN01B002***A		LEN02B200***A LEN02B002***A		LEN04B200***A LEN04B002***A	
	3	3 0	0 3	LEN00B300***A LEN00B003***A		LEN01B300***A LEN01B003***A		LEN02B300***A LEN02B003***A		LEN04B300***A LEN04B003***A	
	4	4 2 1 0	0 2 3 4	LEN00B400***A LEN00B202***A LEN00B103***A LEN00B004***A		LEN01B400***A LEN01B202***A LEN01B103***A LEN01B004***A		LEN02B400***A LEN02B202***A LEN02B103***A LEN02B004***A		LEN04B400***A LEN04B202***A LEN04B103***A LEN04B004***A	
	6	2 0	4 6	LEN00B204***A LEN00B006***A		LEN01B204***A LEN01B006***A		LEN02B204***A LEN02B006***A		LEN04B204***A LEN04B006***A	
	8	4 2 0	4 6 8	LEN00B404***A LEN00B206***A LEN00B008***A		LEN01B404***A LEN01B206***A LEN01B008***A		LEN02B404***A LEN02B206***A LEN02B008***A		LEN04B404***A LEN04B206***A LEN04B008***A	
	9	4 2 0	5 7 9	LEN00B405***A LEN00B207***A LEN00B009***A		LEN01B405***A LEN01B207***A LEN01B009***A		LEN02B405***A LEN02B207***A LEN02B009***A		LEN04B405***A LEN04B207***A LEN04B009***A	
	10	4 2 0	6 8 10	LEN00B406***A LEN00B208***A LEN00B010***A		LEN01B406***A LEN01B208***A LEN01B010***A		LEN02B406***A LEN02B208***A LEN02B010***A		LEN04B406***A LEN04B208***A LEN04B010***A	
	12	4 2 0	8 10 12	LEN00B408***A LEN00B210***A LEN00B012***A		LEN01B408***A LEN01B210***A LEN01B012***A		LEN02B408***A LEN02B210***A LEN02B012***A		LEN04B408***A LEN04B210***A LEN04B012***A	
	30 ^②	3 6 9 12	0 6 9 12	LEN00C003***A LEN00C006***A LEN00C009***A LEN00C012***A		LEN01C003***A LEN01C006***A LEN01C009***A LEN01C012***A		LEN02C003***A LEN02C006***A LEN02C009***A LEN02C012***A		LEN04C003***A LEN04C006***A LEN04C009***A LEN04C012***A	
	60 ^②	3 6 9 12	0 6 9 12	LEN00D003***A LEN00D006***A LEN00D009***A LEN00D012***A		LEN01D003***A LEN01D006***A LEN01D009***A LEN01D012***A		LEN02D003***A LEN02D006***A LEN02D009***A LEN02D012***A		LEN04D003***A LEN04D006***A LEN04D009***A LEN04D012***A	
100	3	0	3	LEN00E003***A		LEN01E003***A		LEN02E003***A		LEN04E003***A	
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 For conduit hubs and conversion instructions, see page 8/88.

② Can be field assembled. Order mounting kit 49MCMPMA and required number of contactors.
Example, 3, three pole contactors and 1 mounting plate for a 9-pole open assembly.

Lighting and Heating Control

Combination Electrically Held Lighting Contactors, Class LE

Selection

	Ordering Information		Coil Table	
	▶ Replace the *** with a number from the coil table. ▶ Field modification kits see page 8/82. ▶ Factory modifications see page 8/95. ▶ Dimensions see page 8/129. ▶ Wiring Diagrams see page 8/146. ▶ Replacement parts see page 8/160.		60Hz Voltage	Number
			24	024
			120	120
			208	208
			240	240
			277	277
			480	480
			600	600

Combination Lighting Contactors

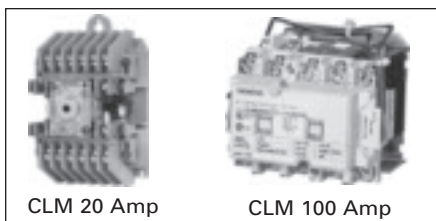
Disconnect Type	Max. Amp Rating	Number of NO Poles	Disc Amp Rating	Disc Amp/ Fuse Clip Rating	Circuit Breaker Rating	NEMA 1 General Purpose		NEMA 12, NEMA 3/3R ^① NEMA 4 Painted (thru 100 amps) Industrial Use Weatherproof, Watertight, Dust-tight		NEMA 4/4X Stainless Steel ^① Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	
						Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
Non-Fusible	20	3	30A	—	—	LEDB1B003***A		LEDB2B003***A		LEDB4B003***A	
	30	3	30A	—	—	LEDB1C003***A		LEDB2C003***A		LEDB4C003***A	
	60	3	60A	—	—	LEDD1D003***A		LEDD2D003***A		LEDD4D003***A	
	100	3	100A	—	—	LEDF1E003***A		LEDF2E003***A		LEDF4E003***A	
	200	3	200A	—	—	LEDH1F003***A		LEDH2F003***A		LEDH4F003***A	
	300	3	400A	—	—	LEDK1G003***A		LEDK2G003***A		LEDK4G003***A	
Fusible	20	3	—	30A/250V	—	LEFA1B003***A		LEFA2B003***A		LEFA4B003***A	
		3	—	30A/600V	—	LEFB1B003***A		LEFB2B003***A		LEFB4B003***A	
	30	3	—	30A/250V	—	LEFA1C003***A		LEFA2C003***A		LEFA4C003***A	
		3	—	30A/600V	—	LEFB1C003***A		LEFB2C003***A		LEFB4C003***A	
	60	3	—	60A/250V	—	LEFC1D003***A		LEFC2D003***A		LEFC4D003***A	
		3	—	60A/600V	—	LEFD1D003***A		LEFD2D003***A		LEFD4D003***A	
	100	3	—	100A/250V	—	LEFE1E003***A		LEFE2E003***A		LEFE4E003***A	
		3	—	100A/600V	—	LEFF1E003***A		LEFF2E003***A		LEFF4E003***A	
	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***A		LEBT2B003***A		LEBT4B003***A	
	30	3	—	—	30A	LEBV1C003***A		LEBV2C003***A		LEBV4C003***A	
	60	3	—	—	60A	LEBY1D003***A		LEBY2D003***A		LEBY4D003***A	
	100	3	—	—	100A	LEBZ1E003***A		LEBY2D003***A		LEBZ4E003***A	

① For conduit hubs and conversion instructions, see page 8/88.

Lighting and Heating Contactors

Mechanically and Magnetically Held Lighting Contactors

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^①
- Energy management systems^①
- Microprocessors^①
- Occupancy sensors^①

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.

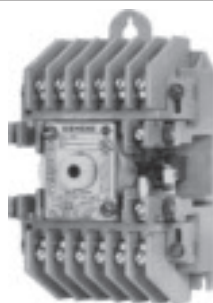
Opening – When the “Trip” pushbutton is operated, the trip solenoid coil is energized, unhooking the latch lever from the latch pin, which allows the contactor to open. As the contactor opens, the coil-clearing auxiliary contact de-energizes the trip solenoid coil.

^① Operation through control modules.

Lighting Control

Mechanically and Magnetically Held Lighting Contactors, Class CLM

Selection



Ordering Information

- Replace *** with a number from the coil table.
- Field modification kits see page 8/82.
- Factory modifications see page 8/95.
- Dimensions see page 8/112 open page 8/129 enclosed.
- Wiring Diagrams see page 8/147.
- Replacement parts see page 8/160.

Coil Table

60Hz Voltage	Number
24 ^②	024
120	120
208	208
240	240
277	277
480	480
600 ^③	600

Open and Non-combination Enclosed Contactors

Max Amp Rating	Number of Poles	Open Type ^①		Enclosure					
		Catalog Number	List Price \$	NEMA 1 General Purpose		NEMA 12 NEMA 3/3R ^② Industrial Use Weatherproof		NEMA 4/4X Stainless Steel ^③ 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	CLM0C02***		CLM1C02***		CLM2C02***		CLMSC02***	
	3	CLM0C03***		CLM1C03***		CLM2C03***		CLMSC03***	
	4	CLM0C04***		CLM1C04***		CLM2C04***		CLMSC04***	
	5	CLM0C05***		CLM1C05***		CLM2C05***		CLMSC05***	
	6	CLM0C06***		CLM1C06***		CLM2C06***		—	—
	8	CLM0C08***		CLM1C08***		CLM2C08***		—	—
60	2	CLM0D02***		CLM1D02***		CLM2D02***		CLMSD02***	
	3	CLM0D03***		CLM1D03***		CLM2D03***		CLMSD03***	
	4	CLM0D04***		CLM1D04***		CLM2D04***		CLMSD04***	
	5	CLM0D05***		CLM1D05***		CLM2D05***		CLMSD05***	
	6	CLM0D06***		CLM1D06***		CLM2D06***		—	—
	8	CLM0D08***		CLM1D08***		CLM2D08***		—	—
100	2	CLM0E02***		CLM1E02***		CLM2E02***		CLMSE02***	
	3	CLM0E03***		CLM1E03***		CLM2E03***		CLMSE03***	
	4	CLM0E04***		CLM1E04***		CLM2E04***		CLMSE04***	
	5	CLM0E05***		CLM1E05***		CLM2E05***		CLMSE05***	
200	2	CLM0F02***		CLM1F02***		CLM2F02***		CLMSF02***	
	3	CLM0F03***		CLM1F03***		CLM2F03***		CLMSF03***	
	4	CLM0F04***		CLM1F04***		CLM2F04***		CLMSF04***	
	5	CLM0F05***		CLM1F05***		CLM2F05***		CLMSF05***	
300	2	CLM0G02***		CLM1G02***		CLM2G02***		—	—
	3	CLM0G03***		CLM1G03***		CLM2G03***		—	
400	2	CLM0H02***		CLM1H02***		CLM2H02***		—	—
	3	CLM0H03***		CLM1H03***		CLM2H03***		—	

Open 20 Amp Contactors

Max Amp Rating	Number of Poles ^①	110–120V Coil 50/60Hz		208–240V Coil 50/60Hz		265–277V Coil 50/60Hz		440–480V Coil 50/60Hz	
		Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
20	2	CLM22031		CLM22061		CLM22071		CLM22091	
	3	CLM32031		CLM32061		CLM32071		CLM32091	
	4	CLM42031		CLM42061		CLM42071		CLM42091	
	6	CLM62031		CLM62061		CLM62071		CLM62091	
	8	CLM82031		CLM82061		CLM82071		CLM82091	
	10	CLM102031		CLM102061		CLM102071		CLM102091	
	12	CLM122031		CLM122061		CLM122071		CLM122091	

① 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.

② 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.

③ For conduit hubs and conversion instructions, see page 8/88.

④ CLM 30 & 60A 6-12-pole can be field assembled. Order mounting kit 49MCMPPMA and the appropriate number of 2-5 pole contactors.

⑤ 600 volt coils are not available on 20 amp contactors.

Lighting Control

Combination Mechanically and Magnetically Held Lighting Contactors, Class CLM

Selection

	Ordering Information		Coil Table	
	▶ Replace *** with a number from the coil table. ▶ Field modification kits see page 8/82. ▶ Factory modifications see page 8/95. ▶ Dimensions see page 8/129. ▶ Wiring Diagrams see page 8/147. ▶ Replacement parts see page 8/160.		60Hz Voltage	Number
			24 ^①	024
			120	120
			208	208
			240	240
			277	277
			480	480
			600 ^③	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 ^② NEMA 4 Painted (thru 100 amps) Industrial Use Weatherproof, Watertight, Dust-tight			
						Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
Non-Fusible	20	3	30A	—	—	CMNB14***		CMNB24***		CMNBS4***	
	30	3	30A	—	—	CMNC14***		CMNC24***		CMNCS4***	
	60	3	60A	—	—	CMND15***		CMND25***		CMNDS5***	
	100	3	100A	—	—	CMNE16***		CMNE26***		CMNES6***	
	200	3	200A	—	—	CMNF17***		CMNF27***		CMNFS7***	
Fusible	300	3	400A	—	—	CMNG18***		CMNG28***		CMNGS8***	
	20	3	—	30A/250V	—	CMFB10***		CMFB20***		CMFBS0***	
		3	—	30A/600V	—	CMFB11***		CMFB21***		CMFBS1***	
	30	3	—	30A/250V	—	CMFC10***		CMFC20***		CMFCS0***	
		3	—	30A/600V	—	CMFC11***		CMFC21***		CMFCS1***	
	60	3	—	60A/250V	—	CMFD12***		CMFD22***		CMFDS2***	
		3	—	60A/600V	—	CMFD13***		CMFD23***		CMFDS3***	
	100	3	—	100A/250V	—	CMFE14***		CMFE24***		CMFES4***	
		3	—	100A/600V	—	CMFE15***		CMFE25***		CMFES5***	
	200	3	—	200A/250V	—	CMFF16***		CMFF26***		CMFFS6***	
		3	—	200A/600V	—	CMFF17***		CMFF27***		CMFFS7***	
	300	3	—	400A/250V	—	CMFG18***		CMFG28***		CMFGS8***	
		3	—	400A/600V	—	CMFG19***		CMFG29***		CMFGS9***	
Circuit Breaker	20	3	—	—	20A	CMBB14***		CMBB24***		CMBBS4***	
	30	3	—	—	30A	CMBC15***		CMBC25***		CMBCS5***	
	60	3	—	—	60A	CMBD18***		CMBD28***		CMBDS8***	
	100	3	—	—	100A	CMBE18***		CMBE28***		CMBES8***	
	200	3	—	—	200A	CMBF10***		CMBF20***		CMBFS0***	
	300	3	—	—	300A	CMBG11***		CMBG21***		CMBGS1***	

Lighting & 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 8/88.

③ 600 volt coils are not available on 20 amp contactors.

Features

- Epoxy-encapsulated (50–5000VA); Completely seals 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 molded barriers. 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 10-32 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 CSA. Their rugged construction and excellent electrical characteristics ensure reliable operation of electromagnetic devices and trouble-free performance.

Specifications

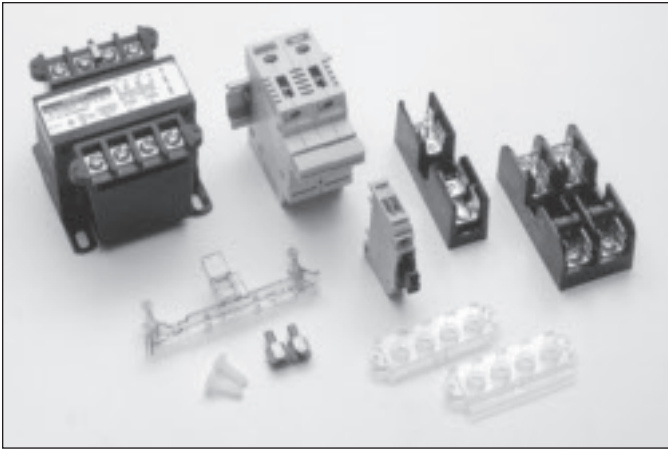
- Laminations are built with silicon steel to minimize core losses and to increase optimum performance and efficiency
- Copper magnet wire of the highest quality assures efficient operation
- Factory mounted type “K” fuse clips are standard on all secondary transformers where possible
- Two jumper links are standard with all transformers which can be wired for dual primary voltages
- UL listed and CSA certified
- 50/60 Hz rated
- Insulation materials are of the highest rating available for the temperature class

- Mounting brackets are 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 105°C (221°F) insulation system. 55°C (131°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

Industrial Control Power Transformers

Class MTG

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 (File # E46323)
- CSA Certified (File #LR27533)
- Exceeds applicable requirements for control transformers as determined by NEMA and ANSI
- Insulation requirements is twice that of UL506
- Proven Epoxy-encapsulated coils operate cooler and completely seal the transformer coils against moisture, dust, dirt and industrial contaminants for maximum protection in hostile and industrial environments
- Available in 50 to 750 VA sizes, in all standard voltage combinations
- Class 105°C (221°F) insulation system. 55°C (131°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.

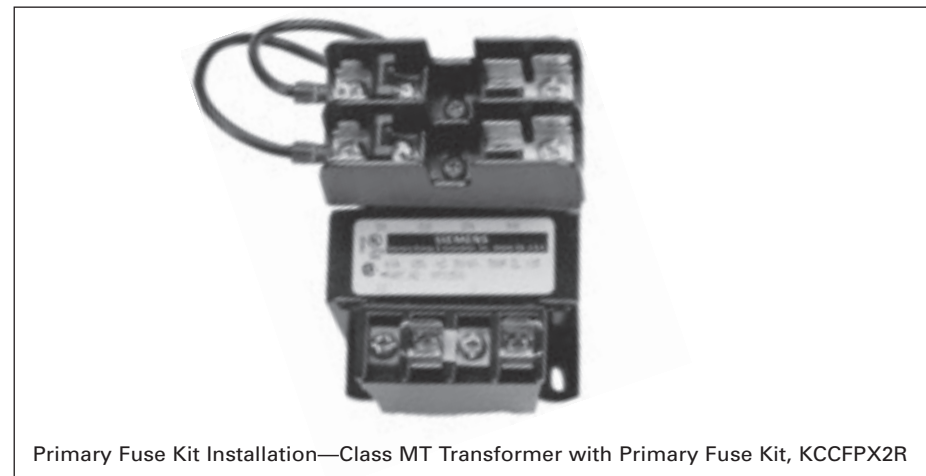
Regulation Data Chart

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 ^①	15000/—	21000/—	27000/—
1000 ^②	9000/—	13000/—	18500/—
1500	10500/—	15000/—	20500/—
2000	17000/—	25500/—	34000/—
3000	24000/—	36000/—	47500/—
5000	55000/—	92500/—	115000/—

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

① For units with Class 105°C insulation systems.

② For units with Class 180°C insulation systems.



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

Industrial Control Power Transformers

Domestic, Class MT

Selection

	Ordering Information		Voltage Table		
	▶ Use the Voltage Table to determine the primary and secondary voltage required. ▶ Field Modifications see page 8/90. ▶ Dimensions see page 8/114. ▶ Wiring Diagrams see page 8/149.		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 ^{①②}		Voltage Letter B ^{②③}		Voltage Letter C ^{②③}		Voltage Letter D ^{②③}		Voltage Letter E ^{①②}		Voltage Letter F ^{①②}	
	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 ^{①②}		Voltage Letter H ^{②④}		Voltage Letter I ^{②④}		Voltage Letter J ^{②③}		Voltage Letter L ^{①②}		Voltage Letter M ^{②④}	
	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		—	—	—	—	—	—
1500	MT1500G		MT1500H		MT1500I		—	—	—	—	—	—
2000	MT2000G		MT2000H		MT2000I		—	—	—	—	—	—
3000	MT3000G		MT3000H		MT3000I		—	—	—	—	—	—
5000	MT5000G		MT5000H		—	—	—	—	—	—	—	—

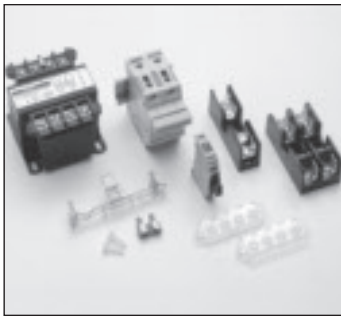
① Includes secondary fuse clip on sizes 50–750VA.
 ② A 2-pole primary Class CC fuse kit is available for field installation. See page 8/77 for details. Catalog Number: KCCFPX2R.

③ Includes secondary fuse clip on sizes 50–500VA.
 ④ Does not include secondary fuse clip on any size.

Industrial Control Power Transformers

International, Class MTG

Selection



Ordering Information

- ▶ Use the Voltage Table to determine the primary and secondary voltage required.
- ▶ Field Modifications see page 8/90.
- ▶ Dimensions see page 8/114.
- ▶ Wiring Diagrams see page 8/149.

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	List Price \$	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	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		—	—	—	—	—	—	—	—	—	—	—	—

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^①

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	SMF40BC1	

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^①

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	

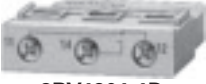
Enclosures—Class MMS

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	SMF40BC1	

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	

^① 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.

	Description	Type	Catalog Number	List Price \$
	Auxiliary Contact Blocks			
	Plug in contact block 1 block per 3RV mountable at the front	1 SPDT contact, NO/NC 1 NO + 1 NC 1 SPDT contact NO/NC electronic contact ^①	3RV1901-1D 3RV1901-1E 3RV1901-1G	
	Side mount auxiliary contact with screw connection 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	3RV1901-1A 3RV1901-1B 3RV1901-1C 3RV1901-1J	
	Signaling Contact Block			
	Signaling contact 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.	3RV1921-1M	
	Auxiliary Releases			
	Undervoltage release 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	3RV1902-1AF0 3RV1902-1AM1 3RV1902-1AP0 3RV1902-1AV1
	Undervoltage release with early make contacts (2NO) 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	3RV1922-1CP0 3RV1922-1CV1
	Shunt trip 1 shunt trip per 3RV mountable at the right-hand side. Cannot be fitted together with undervoltage release.	AC 50Hz/60Hz ^① 20–24V 90–110V 200–240V 350–415V	DC ^② 20–70V 70–190V 190–330V 330–500V	3RV1902-1DB0 3RV1902-1DF0 3RV1902-1DP0 3RV1902-1DV0
	Pilot Lights	AC 50Hz/60Hz		
	For NEMA 1 enclosure only. Kit includes Red, Green, and Amber lenses	24V 120V 240V 480V 600V	49SBLBJ 49SBLBF 49SBLBG 49SBLBH 49SBLBE	③ ③ ③ ③ ③
	Lug Kit 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	3RV1928-1H	
	Mounting			
	Push-in Mounting Hole Kit For screw panel mounting of the 3RV	Four mounting holes required for each 3RV.	3RB1900-0B	
	Sealing device			
	Adjustment Dial covers	For sealing the FLA adjustment dial (Kit includes 10 covers)	3RV1908-0P	
	Front mount auxiliary cover	For sealing the front mount auxiliary opening. (Kit includes 10 covers)	3RV1901-0H	
	Door Operators			
	Thru-the-door operators 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	3RV1926-0B 3RV1926-0K

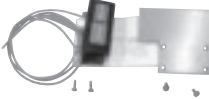
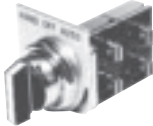
① 100% on time.
② 5 sec. max. on time.
③ Product Category: PILO.

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

Field Modification Kits

Pilot Devices

Selection

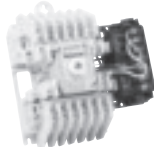
Push Buttons and Selector Switches	Class	Enclosure Type	Controller Size or (Lighting Rating)	Type	Catalog Number	List Price \$
 49SBPB5  49SBSB1  49SAP05  49SAS01	14, 40, LEN, CLM [Ⓢ]	Open	00-4	Start, Stop Push Buttons	49SAPB5	
		1	00-4 or (20–100A)	Hand-Off-Auto Selector Switch	49SASB1	
				Off-On Selector Switch	49SASB4	
				Start, Stop Push Buttons	49SBPB5	
				Hand-Off-Auto Selector Switch	49SBSB1	
			Off-On Selector Switch	49SBSB4		
			5-8 or (200–400A)	Start, Stop Push Buttons	49SAP05	
				Hand-Off-Auto Selector Switch	49SAS01	
				Keyed Hand-Off-Auto (key removable in all positions)	49SAS09	
		Off-On Selector Switch		49SAS04		
		12, 4/4X	00-8 or (20–400A)	Start, Stop Push Buttons	49SAP05	
				Hand-Off-Auto Selector Switch	49SAS01	
				Keyed Hand-Off-Auto (key removable in all positions)	49SAS09	
				Off-On Selector Switch	49SAS04	
22, 43	Open	00-4	Forward-Off-Reverse Selector Switch	49SASB2		
	1	00-4	Forward-Off-Reverse Selector Switch	49SBSB2		
		5-8	Forward, Reverse, Stop Push Buttons	49SAP02		
	12, 4/4X	0-8	Forward-Off-Reverse Selector Switch	49SAS02		
			Forward, Reverse, Stop Push Buttons	49SAP02		
			Forward-Off-Reverse Selector Switch	49SAS02		
30 (2S1W)	Open	0-4	High-Off-Low Selector Switch	49SASB3		
	1	0-1 ¾	High-Off-Low Selector Switch	49SBSB3		
		2-4	High, Low, Stop Push Buttons	49SAP03		
		12, 4/4X	0-4	High-Off-Low Selector Switch	49SAS03	
	High, Low, Stop Push Buttons			49SAP03		
	High-Off-Low Selector Switch			49SAS03		
30 (2S2W)	Open	0-4	High-Off-Low Selector Switch	49SASB3		
	1	0-4	High-Off-Low Selector Switch	49SBSB3		
	12, 4/4X	0-4	High, Low, Stop Push Buttons	49SAP03		
			High-Off-Low Selector Switch	49SAS03		
17, 18, 36, 37, 83, 84, LED, LEF, LEB, CMN [Ⓢ] , CMF [Ⓢ] , CMB [Ⓢ]	1, 12, 4/4X	0-8 (20-400A)	Start, Stop Push Buttons	49SAP05		
			Hand-Off-Auto Selector Switch	49SAS01		
			Keyed Hand-Off-Auto (key removable in all positions)	49SAS09		
			Off-On Selector Switch	49SAS04		
25, 26	1, 12, 4/4X	0-8	Forward, Reverse, Stop Push Buttons	49SAP02		
			Forward-Off-Reverse Selector Switch	49SAS02		
32	1, 12, 4/4X	0-4	High, Low, Stop Push Buttons	49SAP03		
			High-Off-Low Selector Switch	49SAS03		

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.

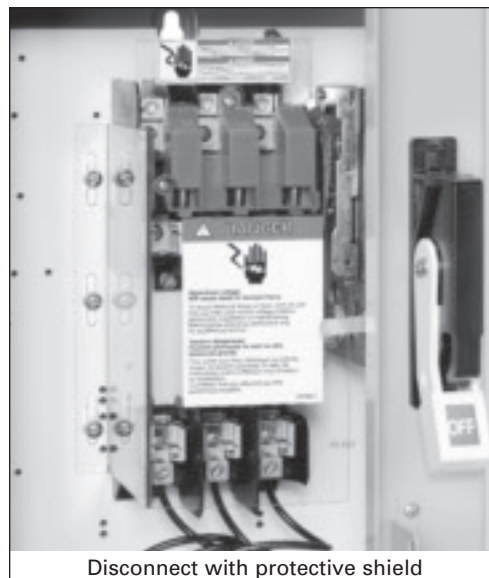
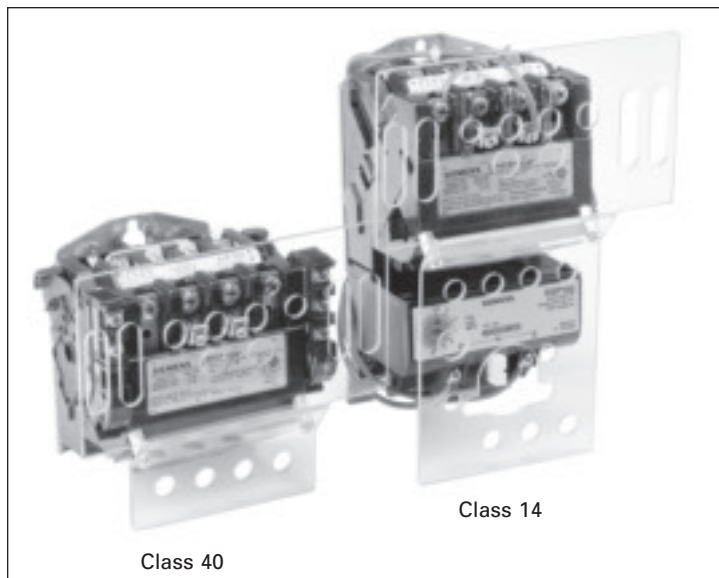
Field Modification Kits NEMA, Lighting and Heating Contactors, 20 Amp CLM, CMB, CMF, CMN

Selection

Solid State Control Module Kits For Lighting and Heating Contactors^①

	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	
	12V AC/DC, 50/60 Hz		CLM4379774			CLM4379784			CLM4379794	

Protective Shielding for NEMA Products



Class 14, 22, 30, 40, 43

Contactor or Starter Size	00-1%	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	

^① These kits are only for use with 20A mechanically held lighting contactors.

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 \$
 49SBLBF  49SPL0BRF	14, 40, 22, ^② 43, ^② 30 (2S2W) ^③ LEN, CLM	1	00-4 or (20-200A)	Red, Green, Amber	ON, RUN, OFF ^① , OL TRIPPED ^⑤ , FORWARD, REVERSE, LOW, HIGH	24 Vac	49SBLBJ	
						120 Vac	49SBLBF	
						208/240/277 Vac	49SBLBG	
						480 Vac	49SBLBH	
						600 Vac	49SBLBE	
						24 Vac (Full Voltage)	49SPL0BRJ	
	1	12, 4/4X	5-8 or (300-400A)	Red (Transformer Type)	ON	120 Vac	49SPL0BRF	
						240 Vac	49SPL0BRG	
						480 Vac	49SPL0BRH	
						600 Vac	49SPL0BRE	
						24 Vac (Full Voltage)	49SPL0AGJ	
						120 Vac	49SPL0AGF	
	1	12, 4/4X	0-8 or (20-400A)	Green (Transformer Type)	OFF ^④	240 Vac	49SPL0AGG	
						480 Vac	49SPL0AGH	
						600 Vac	49SPL0AGE	
						24 Vac (Full Voltage)	49SBLBJ	
						120 Vac	49SBLBF	
						208/240/277 Vac	49SBLBG	
	30 (2S1W) ^②	1	2-4	Red (Transformer Type)	ON	480 Vac	49SBLBH	
						600 Vac	49SBLBE	
						24 Vac (Full Voltage)	49SPL0BRJ	
						120 Vac	49SPL0BRF	
						240 Vac	49SPL0BRG	
						480 Vac	49SPL0BRH	
	17, 18, 25, ^② 26, ^② 32, ^② 36, 37, 81, 83, 84, 87, 88, LED, LEF, LEB, CMN, CMF, CMB	1	0-4	Green (Transformer Type)	OFF ^④	600 Vac	49SPL0BRE	
						24 Vac (Full Voltage)	49SPL0AGJ	
						120 Vac	49SPL0AGF	
						240 Vac	49SPL0AGG	
						480 Vac	49SPL0AGH	
						600 Vac	49SPL0AGE	
 49SBLBL	Lens Kit ONLY (30 (2S1W)) (14, 40, 22, 43, 30 (2S2W)), LEN, CLM)	1	0-1 3/4 00-4 or (20-200A)	Red, Green, Amber	—	—	49SBLBL	

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.

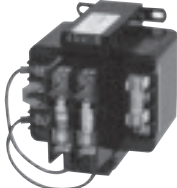
Starter/Contactor Auxiliary Contact Kits

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 ^⑤	
			3 NO & 1 NC	49AB31 ^⑤	
			2 NO & 2 NC	49AB22 ^⑤	
	14, 17, 18, 22, 25, 26, 36, 37, 40, 43, 87, 88	5, 6	2 NO	3RH1921-1EA20 ^②	
			1 NO & 1 NC	3RH1921-1DA11 ^②	
			2 NC	3RH1921-1EA02 ^②	
	14, 17, 18, 22, 25, 26, 40, 43	7, 8	1 NO & 1 NC (Inside L or R)	49CAL18-11	
			1 NO & 1 NC (Outside L or R)	49CAL18-11B	
	LEN, LED, LEF, LEB	20-60 Amps	1 NO	49ACR0	
			1 NC	49ACRC	
			2 NO	49ACR7	
			1 NO & 1 NC	49ACR6	
		100 Amps	2 NC	49ACR8	
			1 NO	49D22125001	
			1 NC	49D22125002	
			1 NO/NC SPDT	49CE42SPDT	
	CLM, CMN, CMF, CMB	20 Amps	1 NO/NC SPDT	3RH1921-1DA11 ^②	
			2 NO/NC SPDT	CLM4097291	
		30-200 Amps	1 NO & 1 NC	CLM4097292	
			2 NC	CLMFCAK11	
			2 NO	CLMFCAK02	
			2 NO	CLMFCAK20	
		300-400 Amps	1 Coil Clearing NO & NC	CLMFCKK11	
			1 NO & 1 NC	CLMHCAK11	
			2 NC	CLMHCAK02	
			2 NO	CLMHCAK20	
			1 Coil Clearing NO & NC	CLMHCKK11	

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 ^③	
		250A	1 NO/1 NC 480V	A02FD64 ^③	
		400A-600A	(2) 1 NO/1 NC SPDT-480V	A02JLD64 ^③	

Control Power Transformer Kits^{①④}

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 ^⑤	45 VA	KT*050 ^{②④}		120	24	1
	3-3½	75	50 VA	KT*050P ^④		208	24	G
	4	100	100 VA	KT*100		208	120	H
	5-6	150	150 VA	KT*150		240/480	24	4
	7-8	300	200 VA	KT*200		240/480	120	8
	Lighting Control		300 VA	KT*300		277	24	5
	CLM	20A, 2 - 12P	500 VA	KT*500		277	120	7
		30A, 3P				600	24	6
		30A, 6 - 12P				600	120	9
		60A, 3P						
		60A, 4 - 6P						
		60A, 8 - 12P						
	LEN	100/200A, 3P						
		100/200A, 5P						
		300/400A, 3P						
		20A, 3 - 12P						
		30/60A, 3 - 6P						
		30/60A, 9 - 12P						

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 Product Category: MCCB.

④ For 24VAC control a minimum of 100VA CPT is required.
⑤ Assembled at the factory.

Field Modification Kits

ESP200 Accessories

Selection

Accessories

Description		Catalog Number	List Price \$
	ESP200 Tamper Resistance Cover	49ASTC1 3UB89848	
	ESP100/200 Mounting Plate	49ASMP1	
		49ASMP2	
		49ASMP3	
	Starter Mounting Adaptor Plate	49D70084	
	Mounting Kit	49ASMS1	
	Universal Reset Operator 8" for class 36, 37 and 81 in NEMA 1, 12 and 3/3R	49MARB	
	Single Reset (blue) for class 14, 17, 18, 22, 25, 26, 30 and 32 in NEMA 1, 12 and 4/4X	49MBRS	
	Single Reset (red) for class 14, 22 and 30 in NEMA 4/4X	49MBRSR	
	ESP200 Reset Extender	49ASRE	
	Oil Tight Boot For Single and Multi Unit using 49MARSR Resets Enclosure type 4, 4X	52AABA	
	Current Transformer 300:5 use with 48ATJ3S00	97CT005	
	Current Transformer 400:5 use with 48ATK3S00	97CT006	
	Current Transformer 600:5 use with 48ATL3S00	97CT008	
	Current Transformer 750:5 use with 48ATM3S00	97CT009	
	Current Transformer 1200:5 use with 48ATN3S00	97CT012	

Miscellaneous Kits

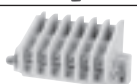
Description			Class	Enclosure Type	Controller Size	Catalog Number	List Price \$	
	Mechanical Interlock for Horizontally Mounted Contactors		Includes wire	14, 40	Open	00–1 1¼ 2, 2½ 3, 3½ 4	49CCF22H 49EEF22H 49GGF22H 49HHP22H 49JJG22H	
			Interlock Only	14, 40	Open	5, 6	3RT1954-2A	
			Wire Kit Only			5	3RA1963-2A 3RA1973-2A	
			Base Plate Only			5 6	3RA1962-2A 3RA1972-2A	
			Mechanical Interlock	14, 40	Open	7 8	49VM750H 49VM1650H	
			Includes wire & mounting plate	14, 40	Open	00–1 1¼ 2, 2½ 3, 3½ 4	49CCF22HP 49EEF22HP 49GGF22HP 49HHP22HP 49JJG22HP	
			Includes mounting plate (Different Frame Sizes)	14, 40	Open	Left 2, 2½ 3, 3½	Right 3, 3½ 2, 2½	49L107944 49L107945
	Surge Suppressor		Surge Suppressor for 120V AC coil. Limits transient voltage produced by the coil to 220% maximum peak line volts.	All but Class LE, CLM	All	00–4 ^①	49D26344	
	Auxiliary Power Pole		NO 36A at 600V AC Max NC 25A at 600V AC Max	All but Class LE, CLM	All	00–1¼	49SAF0 49SAFC	
	Auxiliary Power Pole	2 NC (mounts to contactor or power pole) 2 NO (mounts to contactor or power pole) 2 NO (mounts to contactor only) 1 NO (mounts to contactor only)	LEN, LED, LEF, LEB	All	20 Amps	49LN02A 49LN20A 49LS20A 49LS10A		
	Main Contacts Lighting Contactors		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	
			Mounting Kit for Open Heating & Lighting 6 - 12-poles	LEN, CLM	Open	30, 60 Amp	49MCPMA	
	Load Side Power Take Off Kit		Includes 3 power lugs for making extra connections to the load side of the contactor	All but Class LE, CLM	All	00–1¼	49SAE	
	Lug Kit for Contactors		For AL/CU Wire	14, 40	All	2-2½ 3-3½ 4 Line 4 Load	49SAAF ^③ 49SAAH ^③ 75D35994002 ^③	
	Item	Wire Range	For AL/CU Wire	14, 40	All	5, 6	3RT1966-4G ^②	
	49SAAF	2-14	Use CU Only	14, 40	All	7 8	49ZATK750-3 ^② 49ZATK1650-6 ^②	
	49SAAH	2/0-14						
	75D35994001	250MCM-6						
	Ground Lug Kit Meets CSA Standard 22.2 No 14-1973		1 Conductor 2-14 For AL/CU Wire	All	All	All	49D11960001	
	Lightning Arrestor			All	All	All	49D45584002	
	Backspin Timer		On delay timer that reduces risk of starting into a backspin	87, 88	All	All	3RP2025-1AQ30 3RP2025-1AP30	
	Hole Plug		Covers the hole that is typically used for the conduit hub	87	All	1-4	49D41149006	

Illustration	Description	Contactor	Wire Size	Catalog Number	List Price \$
 Lug Kit 1 Kit = 1 Terminal block. 1 kit necessary for each line and load. 3RT1966-4G		NEMA size 4 (Vacuum) NEMA size 5 NEMA size 6	2/0 to 600 MCM, max. one 500MCM & one 600MCM	3RT1966-4G	

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

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

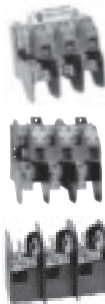
③ Lug Kit for contactors include 3 lugs for line or load. 75D35994001 for line side. 75D35994002 for load side.

Field Modification Kits

NEMA Accessories

Selection

Fused and Non-Fused Disconnect Switch Kits (Includes load base plus line and load fuse clips)^②

	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 ^③	List Price \$	Lug Wire Size
	30	HNB612		HFB21		30A, 250V	—	—	HBB21		#14-2 AWG (Cu/Al)
				HFB612		30A, 600V	HBB612		HBB612		
	60	HNB623		HFB22		60A, 250V	—	—	HBB22		#14-2 AWG (Cu/Al)
				HFB62		60A, 600V	HBB62		HBB62		
	100	HNB623		HFB63		100A, 250V	—	—	HBB63		#14-1/0 AWG (Cu/Al)
						100A, 600V	HBB63				
	200	HNB64		HFB64		200A, 250V	—	—	HBB64		#6-300 AWG (Cu/Al)
						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 \$
Breather/Drain		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	
Hole Plugs		For tapered NPT conduit openings.	1/2 3/4 1 1 1/2 2 2 1/2	51AAHA 51AAHB 51AAHC 51AAHD 51AAHE 51AAHF	
Reducer Bushings		Cast aluminum, UL Recognized and CSA Certified. Used to reduce existing tapered NPT conduit opening when required.	3/4-1/2 1-1/2 1 1/2-3/4 1 1/2-1	51AARBA 51AARCA 51AARDB 51AARDC	
			2 1/2-3/4 2 1/2-1 2 1/2-1 1/2 2 1/2-2	51AARFB 51AARFC 51AARFD 51AARFE	
			3-1 3-1 1/2 3-2 3-2 1/2	51AARGC 51AARGD 51AARGE 51AARGF	

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.	Metal Hub 3/4" 1" 1 1/2" 2" 2 1/2"	All	All	12, 3, 3R, 4	49MACML 49MACMD 49MACMN 49MACMF 49MACMG	
	Use UL Listed conduit hub for the appropriate NEMA type. 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	Reset mechanisms				
	Reset plunger Mounts directly to overload relay. Requires separate reset operator in enclosure door. Kit includes reset plunger, holder and funnel.		3RB206	3RU1900-1A	
	Flexible cable reset mechanism Requires a 6.5 mm hole in the enclosure with a maximum enclosure thickness of 8 mm.	Cable length 15.75 in (400mm)	3RB206	3RU1900-1B	
		Cable length 23.62 in (600mm)		3RU1900-1C	
	Covers Tamper resistant cover for current setting and manual/automatic reset button.		3RB206	3RB2984-0	

Competitive Retrofit Overload Plates

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

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

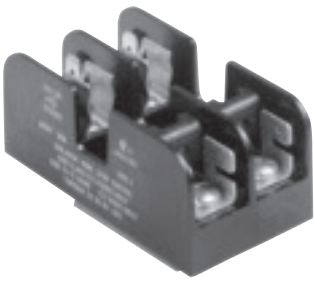
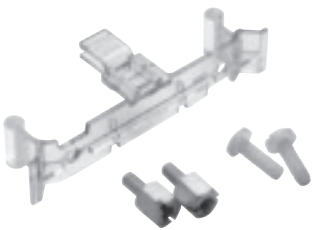
Class	Size	Model Type	21 - 27V		96 - 127V		200 - 277V	
			Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
All	5	P	—	—	3RT1965-5PF31		3RT1965-5PP31	
		V	—	—	3RT1966-5PF31		3RT1966-5PP31	
	6	P	—	—	3RT1975-5PF31		3RT1975-5PP31	
		V	—	—	3RT1976-5PF31		3RT1976-5PP31	

Field Modification Kits

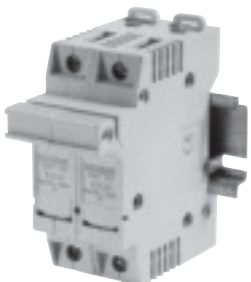
Class MT, MTG

Selection

Fuse Blocks, Touch-Safe Terminal Covers

Catalog Number	Description	List Price \$
 KCCFP2RG	2-Pole Primary Class CC Fuse Block for domestic fusing. Max 600V.- (Single- pole cover kits, if required are listed below. One cover kit required per pole.)	
 KCCF1G	1-Pole Secondary Midget Fuse Block for 13/32 × 1½ domestic Fusing. Max 250V. (Single pole cover kits, if required are listed below.)	
 KCCFBCK	Single Pole Fuse Block cover Kit for domestic fuse blocks listed above. (For primary or secondary) 2-Kits required for 2-pole fuse block.	
 KTTSC4P (cover for 4 terminals)	Snap-On Transformer Terminal Touch-Safe Cover Kit. (Includes primary and secondary covers.) KTTSC6P (cover for 6 terminals) also available.	
49FCCPT	Fuse Clips 2 per pack	
49JUCPT	Terminals Jumper	

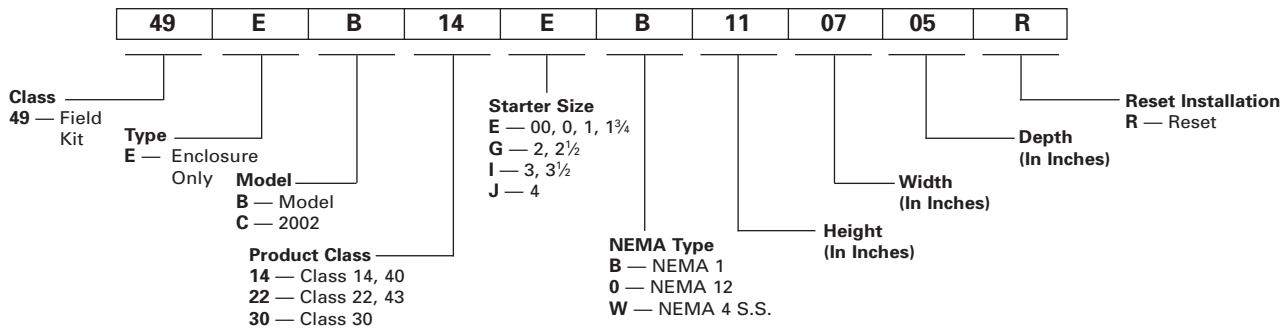
International Fusing^①

Catalog Number	Description	List Price \$
 8WA1011-1SF12	1-Pole Fuse Block, Touch-Safe. Up to 6.3A for 5 mm × 20 mm or 5 mm × 25 mm (Requires DIN Rail Mounting)	
 3NW7011	1-Pole Fuse Block, Touch-Safe 25A, for 10 × 38 mm Cylindrical Fuses. (Requires DIN Rail Mounting.)	
 3NW7021	2-Pole Fuse Block, Touch-Safe 25A, for 10 × 38 mm Cylindrical Fuses. (Requires DIN Rail Mounting.)	
 3NW7111	1-Pole Fuse Block, Touch-Safe 4-50A, for 14 × 51 mm Cylindrical Fuses. (Requires DIN Rail Mounting.)	
 8WA1815	Fuse Block DIN Rail Mounting for separate screw mounting to panel. (Max 2-pole 2-25A size per rail.) (Max 1-pole 4-50A size per rail.)	

^① Product Category: IEC.

Heavy Duty Control Non-Combination Enclosure Kits, Class 49

Selection



Non-Reversing Starters & Contactors Class 14, 40

Size	NEMA 1 General Purpose (Clamshell)②④					NEMA 4/4X Stainless① Watertight, Dust-tight, Corrosion Resistant③⑤					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		Model C Enclosure		Max CPT VA	Model B Enclosure		Model B Enclosure		Max CPT VA	Model B Enclosure		Model B Enclosure		Max CPT VA
	Catalog Number	List Price \$	Catalog Number	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	Catalog Number	List Price \$
00-1¼	49EC14EB110705R		49EC14IB201208R	200		49EB14EW130806R		49EB22EW131306R			49EB14E0130806R		49EB22E0131306R		
2, 2½	49EC14GB140807R		49EC14IB201208R	200		49EB14GW160907R		49EB22GW161406R			49EB14G0160907R		49EB22G0161406R		
3, 3½	49EC14IB201208R		49EC14IB201208R	100		49EB14JW261408R		49EB22JW261408R			49EB14J0261408R		49EB22J0261408R		
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 Resistant③⑤					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		Model C Enclosure		Max CPT VA	Model B Enclosure		Model B Enclosure		Max CPT VA	Model B Enclosure		Model B Enclosure		Max CPT VA
	Catalog Number	List Price \$	Catalog Number	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	Catalog Number	List Price \$
00-1¼	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 Resistant③⑤					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		Model C Enclosure		Max CPT VA	Model B Enclosure		Model B Enclosure		Max CPT VA	Model B Enclosure		Model B Enclosure		Max CPT VA
	Catalog Number	List Price \$	Catalog Number	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	Catalog Number	List Price \$
0-1¼	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 Resistant③⑤					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		Model C Enclosure		Max CPT VA	Model B Enclosure		Model B Enclosure		Max CPT VA	Model B Enclosure		Model B Enclosure		Max CPT VA
	Catalog Number	List Price \$	Catalog Number	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	Catalog Number	List Price \$
0-1¼	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 8/116.

① For conduit hubs and conversion instructions, see page 8/88.

② Clamshell enclosure suitable for one operating device and two pilot lights. See Field Mods page 8/82.

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 8/82.

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

Selection

Lighting & Heating Contactors Class LE

Size	Pole	NEMA 1 General Purpose (Clamshell)②④						NEMA 4/4X Stainless① Watertight, Corrosion Resistant③⑥						NEMA 12/3/3R① Industrial Use③⑤								
		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	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			Catalog Number				Catalog Number			Catalog Number				Catalog Number			Catalog Number			
20A	2-12	49EC14EB110705R		49EC14IB201208R		200VA		49EB22GW161406R			49EB22GW161406R	—			49EB22G0161406R			49EB22G0161406R		—		
30A	3	49EC14EB110705R		49EC14IB201208R		200VA		49EB22GW161406R			49EB22GW161406R	—			49EB22G0161406R			49EB22G0161406R		—		
30A	6-9	49EC14IB201208R		49EC14IB201208R		200VA		49EB14JW261408R			49EB14JW261408R	—			49EB14J0261408R			49EB14J0261408R		—		
30A	12	49EC14IB201208R		49EC14JB251409R		250VA		49EB14JW261408R			—		—		49EB14J0261408R			—		—		
60A	3	49EC14EB110705R		49EC14IB201208R		200VA		49EB22GW161406R			49EB22GW161406R	—			49EB22G0161406R			49EB22G0161406R		—		
60A	6-9	49EC14IB201208R		49EC14IB201208R		200VA		49EB14JW261408R			49EB14JW261408R	—			49EB14J0261408R			49EB14J0261408R		—		
60A	12	49EC14IB201208R		49EC14JB251409R		250VA		49EB14JW261408R			—		—		49EB14J0261408R			—		—		
100A	3	49EC14IB201208R		49EC14IB201208R		200VA		49EB14JW261408R			49EB14JW261408R	—			49EB14J0261408R			49EB14J0261408R		—		

Lighting & Heating Contactors Class CLM

Size	Pole	NEMA 1 General Purpose (Clamshell)②④						NEMA 4/4X Stainless① Watertight, Corrosion Resistant③⑥						NEMA 12/3/3R① Industrial Use③⑤					
		Without CPT			With CPT (Extra Wide)			Without CPT			With CPT (Extra Wide)			Without CPT			With CPT (Extra Wide)		
		Model C/B Enclosure		List Price \$	Model C/B Enclosure		Max CPT	List Price \$	Model B Enclosure		List Price \$	Model B Enclosure		Max CPT	List Price \$	Model B Enclosure		Max CPT	List Price \$
		Catalog Number			Catalog Number				Catalog Number	List Price \$		Catalog Number	Max CPT			List Price \$	Catalog Number		
20A	2-12	49EC14GB140807R		49EC14IB201208R	200VA		49EB22GW161406R		49EB22GW161406R	—		49EB22G0161406R		49EB22G0161406R	—		49EB22G0161406R	—	
30A	2-5	49EC14EB110705R		49EC14IB201208R	200VA		49EB22GW161406R		49EB22GW161406R	—		49EB22G0161406R		49EB22G0161406R	—		49EB22G0161406R	—	
30A	6-12	49EB30GB161808R		49EB30GB161808R	200VA		49EB30GW161808R		49EB30GW161808R	—		49EB30G0161808R		49EB30G0161808R	—		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 8/129.

① For conduit hubs and conversion instructions, see page 8/88.

② Clamshell enclosure suitable for one operating device and two pilot lights. See Field Mods page 8/82.

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 8/82.

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

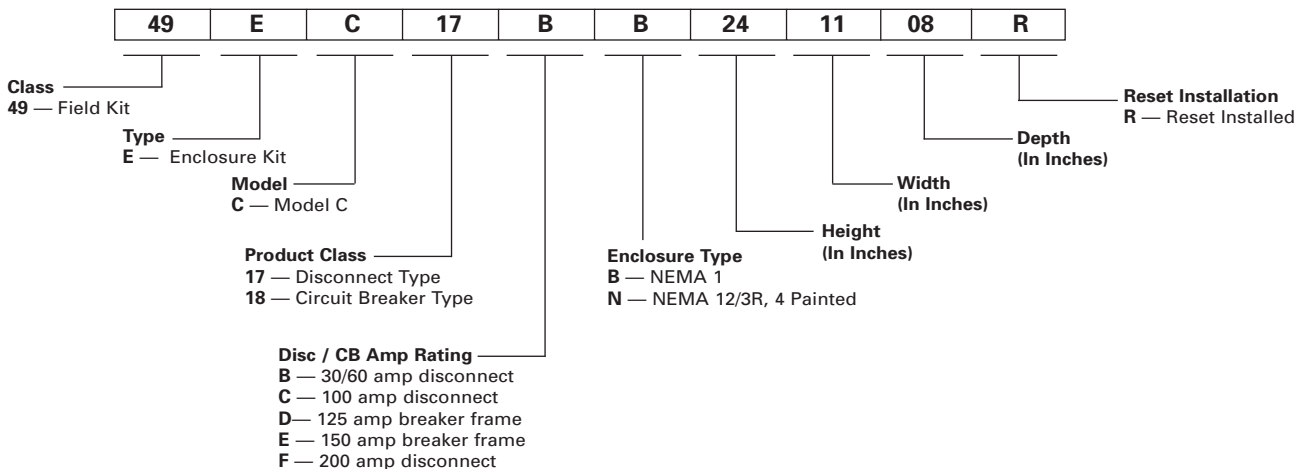
MCP Type Enclosure Kit

- 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

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



Combination Starter 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 ^① Industrial Use, Weatherproof, Watertight, Dust-tight	
		Catalog Number	List Price \$	Catalog Number	List Price \$
0 - 2	60	49EC17BB241108R		49EC17BN241108R	
2 ½ - 3	100	49EC17CB242008R		49EC17CN242008R	
3 ½ - 4	200	49EC17FB362408R		49EC17FN362408R	

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 ^① Industrial Use, Weatherproof, Watertight, Dust-tight	
		Catalog Number	List Price \$	Catalog Number	List Price \$
0 - 2	50	49EC18DB241108R		49EC18DN241108R	
2 ½ - 3	100	49EC18DB242008R		49EC18DN242008R	
3 ½	125	49EC18DB362408R		49EC18DN362408R	
4	150	49EC18EB362408R		49EC18EN362408R	



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		Fuse Clip Kit		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 3-12 5.5-22	3 10 25	ED63A003 ED63A010 ED63A025	3 10 25	ED63A003 ED63A010 ED63A025
1	0.75-3.4 3-12 5.5-22 10-40	3 10 25 30	ED63A003 ED63A010 ED63A025 ED63A030	3 10 25 30	ED63A003 ED63A010 ED63A025 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 8/88.

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	Suffix	List Price \$
Push Buttons	Start, Stop	14, 17, 18, 36, 37, 40, 83, 84, CLM, CM, LE	All	A1	
	Forward, Reverse, Stop	22, 25, 26, 43	All ^①	A2	
	High, Low, Stop	30, 32	All		
	E-Stop	14 ^① , 17, 18, 22 ^① , 25, 26, 30 ^① , 32, 36, 37, 40 ^① , 43 ^①	All ^①	ES	
	Test Push Buttons	83, 84	All	K1	
Selector Switches	Hand-Off-Auto	14, 17, 18, 36, 37, 40, 83, 84, LE	All	A3	
		CM, CLM	All	A3	
	For 24 volt HOA control, 20 Amp contactor only	CM, CLM	1	EM	
	Off-On	14, 17, 18, 22, 25, 26, 30, 32, 36, 37, 40, 43, 83, 84, CLM, CM, LE	All	A4	
	Auto-Off	14, 17, 18, 40, 83, 84, CM, CLM, LE	All ^①	A6	
	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, LE, CLM, CM	All ^①	A9	
	Auto-Off-Low-High	30, 32	All ^①	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
		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
		Suffix →	FA	FB	FC	FD	FJ	FK	FL ^③	FW ^①	FS ^①	FT ^①	FU ^①
14, 40, 17, 18, 36, 37, 81, 87, 88, LE, CLM, CM	All												
22, 25, 26, 30, 32, 43, 83, 84	All												

Coil Options

Class 14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 83 ^④ , 84 ^⑤ , 87, 88					
Volts 60 HZ	Volts 50 HZ	Coil Letter Change	Controller Size — List Price \$		
			00–2½	3, 3½	4
24 Separate Control 120 Separate Control 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	NC	NC	NC
DC Coil ^②	24V 48V 125V 250V	S ^⑤ 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	NC

Miscellaneous Options

	Class	Change the 92 to	List Price \$
Omit Alternator (deduct)	83, 84	95	
Duplex with Separate Relay Alternation	83, 84	93	NC
Duplex with lead pump transfer switch	83, 84	94	NC

① Not Available on Class 14, 40, 22, 43, 30 (size 00–4) and Class LE, CLM (20–30amp) NEMA 1 clamshell enclosures.

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

③ Available with solid-state OLR starter sizes 00–8 and with bimetal OLR starter sizes 00–2½.

④ For Class 83, 84 standard enclosure (92) alternating relay available in 24V or 120V control only.

⑤ S coil is not available for size 4 contactors or starters.

Factory Modifications

Selection

Ordering Information	Transformer Table		
- Replace (*) with letter from Transformer Table. - Prices for modifications are additions to standard equipment prices and are not to be used as separate selling prices. 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.	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^①

Description	Catalog No Suffix	Product Class	Enclosure Type	20-60	100	—	200	300-400	—	—	Lighting & Heating Ratings (Amps)
				00-2½	3	3½, 4	5	6	7	8	
Standard Capacity ^① with 1-Secondary Fuse	B*	14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 81, 83 ^② , 84 ^③ , 87	1, 3, 4, 12 7 & 9		—	—	—	—	—	—	Motor Controller Size
Standard Capacity with 2-Primary and 1-Secondary Fuse	D*	14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 81, 83 ^② , 84 ^③ , 87, 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, 81, 83 ^② , 84 ^③ , 87, LE, CLM, CM	1, 3, 4, 12 7 & 9								
		36, 37, 88	All						—	—	
150VA Extra Capacity with 2-Primary and 1-Secondary Fuse	C*1	14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 81, 83 ^② , 84 ^③ , 87, LE, CLM, CM	1, 3, 4, 12								
		36, 37, 88	All						—	—	

Factory Assembled Fuse Clips—Class 25, 32, 84^④

Fuse Clip Amps	Volts	Rejection Clip Suffix ^②	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	
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 00 through 2½ with control voltage other than 24VAC 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 ESP200 styles add the rejection clip suffix to the end of the base style catalog number. For thermal styles add the rejection clip suffix immediately before the 81 in the part number.

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

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

⑤ Price x 2 Class 83 and 84.

Ordering Information

- Prices for modifications additions to standard equipment prices and are not to be used as separate selling prices. 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.

Additional Auxiliary Contacts

Class	NO Contacts	NC Contacts	Catalog Number Suffix	Controller Size — List Price \$			
				00–1½	2–4	5–6	7–8
14, 17, 18, 40, 83 ^③ , 84 ^③	—	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			—	—
22, 25, 26, 43 & 30, 32 (2-winding)	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		—	—	—
30, 32 (1-winding)	6	2	G62		—	—	—
	7	1	G71		—	—	—
	8	—	G80		—	—	—
	—	2	G02 ^①			—	—
	2	—	G20 ^①			—	—
	2	2	G22 ^①			—	—
	4	0	G40 ^①			—	—
	4	4	G44 ^①			—	—
	6	2	G62 ^①			—	—
	8	0	G80 ^①			—	—
LE, CLM, CM CLM, CM	0	2	G02 ^①	—		—	—
	2	—	G20 ^①	—		—	—
	2	2	G22 ^①			—	—
	4	—	G40 ^①			—	—
	4	4	G44 ^①	—		—	—
	6	2	G62 ^①	—		—	—
	8	—	G80 ^①	—		—	—
	1	1	G11		—	—	—
	0	2	G02 ^①		—	—	—
	2	0	G20 ^①		—	—	—
	2	2	G22 ^①		—	—	—

Overload Options

Class 14, 17, 18, 22, 25, 26, 30, 32, 36, 37								
Description	Trip Class	Phase	Contacts	Catalog Number Suffix	Controller Size—List Price \$			
					00–2½	3–4	5, 6	7, 8
Ambient Compensated Bimetal	Class 10 or 20 (K or E heaters)	3-Phase or Single Phase	NO & NC, SPDT	91	②	—	—	—
			NC	81	—	—	—	—
ESP200	Class 5, 10, 20, 30 selectable	3-Phase or Single Phase	NO & NC	N/A	—	—	—	—
3RB200 (Sz 5-6)	Class 10	3-Phase	NO & NC	51	—	—	—	—
	Class 20	3-Phase	NO & NC	—	—	—	—	—

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

Ordering Information

- Prices for modifications additions to standard equipment prices and are not to be used as separate selling prices. 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.

Control Options

Description	Class	Enclosure Type	Catalog Number Suffix	List Price \$
Lighting Control Modules	CLM 20 Amp	All	2W, 3W, 3WS	
Surge Suppression for 120V AC Coil ^②	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 Fuse Indicator Light	17, 25, 32, 37, 84, 87, 88, CM, LE	All	L11	
Single Phase 120VAC Combination Starter	17, 18	All	Z1^③	NC
Single Phase 240VAC Combination Starter	17, 18	All	Z1^③	NC

Reversing Options

Description	Class	Catalog Number Suffix	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									

Enclosure Options Class 36, 37

Class	Enclosure Type	Change the 8th Character of the Catalog Number to:	Controller Size — List Price Adder \$					
			0–1¾	2, 2½	3	3½, 4	5	6
36	NEMA 12/3R ^①	N						
37	NEMA 4 (Painted)	E						
37	NEMA 4 (Stainless Steel)	W					—	—

Enclosure Options Class 14, 17, 18

Class	Enclosure Type	Change the 7th Character of the Catalog Number with Bimetal OLR to:	Change the 8th Character of the Catalog Number with ESP200 OLR to:	Controller Size – List Price Adder \$				
				00–1 3/4	2–2 1/2	3	3 1/2–4	5–8
14	NEMA 4/4X (316 Stainless Steel)	X	X					—
14 (Extra Wide)	NEMA 4/4X (316 Stainless Steel)	X	X					—
17 & 18	NEMA 4/4X (316 Stainless Steel)	X	X					—

Note: Add price to the standard 304 stainless steel unit price.

^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 Specify the single phase voltage when ordering.

Ordering Information

- Prices shown are additions to standard equipment prices as listed in the catalog and are not to be used as separate selling prices. 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.

Control Relays

Description	Class	Enclosure Type	Suffix	List Price \$
Control Relay ^① 4-Poles Max	All	1, 3, 4, 7, 9, 12	R40	
4 NO			R22	
2 NO/2 NC			R04	
4 NC	All	1, 3, 4, 7 & 9, 12	R1 ^④	
Under Voltage, Phase Failure, Phase Sequence, Phase Unbalance (460V)			R2 ^④	
Under Voltage, Phase Failure, Phase Sequence, Phase Unbalance (230V)			R4 ^④	
Under Voltage, Phase Failure, Phase Sequence, Phase Unbalance (575V)		1, 3, 4, 7, 9, 12	R5	
Ground Fault Relay			T1	
Electronic On Delay Relay (.15s–100h) 24V/120V ^①			T2	
Electronic On Delay Relay (.15s–100h) 24V/240V ^{①②}			T3	
Electronic Off Delay Relay (.15s–100s) 120V ^①			T4	
Electronic Off Delay Relay (.15s–100s) 240V ^{①②}		All	T7	
24 hour time clock			T8	
24 hour time clock with day omission			T9	
7 day time clock			A6	
Compelling Relay	30, 32	1, 4, 12	A7	
Acceleration Control			A8	
Deceleration Control				

Meters—Mounted on Enclosure

Description	Class	Enclosure Type	Suffix	List ^③ Price \$
Ammeter (includes a C.T. if necessary)	14, 17, 18, 22, 25, 26, 36, 37, 40, 43, 83, 84	1, 3, 4, 12	M1	
Ammeter and Switch (3-Phase with 3 C.T.'s)			M2	
Voltmeter			M3	
Voltmeter and Switch (3-Phase)			M4	
Elapsed Time Meter ^④			M5	
Wattmeter			M6	

Function Identification Plates

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

Terminal Blocks^①

Description	Class	Suffix	List Price \$
3 Point Terminal	All	TC3 ^⑤	
6 Point Terminal		TC6 ^⑤	
9 Point Terminal		TC9 ^⑤	

Special Ratings

Description	Class	Suffix	List Price \$
Service Entrance Rating (Included as a standard feature for product class 81, 84, 87, 88.)	17, 18, 25, 26, 32, 37	N3	

① Supplied mounted and unwired.

② Not available on Class 36, 37.

③ Price x 2 Class 83 and 84.

④ ETM available with 120V coil only.

⑤ For terminal point more than 9 terminals use additional suffixes. Max 3 suffixes can be selected.

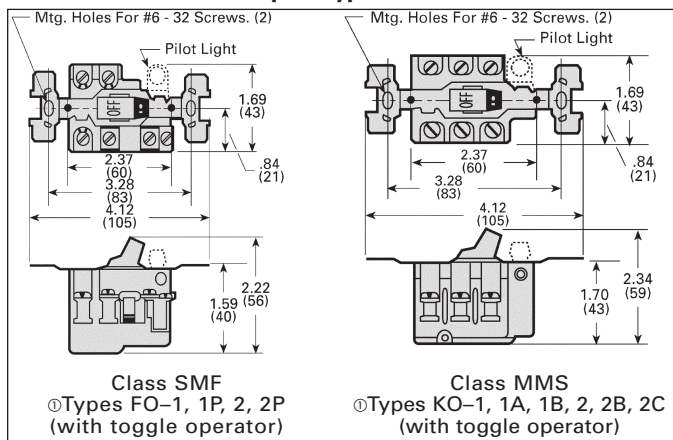
⑥ Available 3-Phase only.

Manual Control

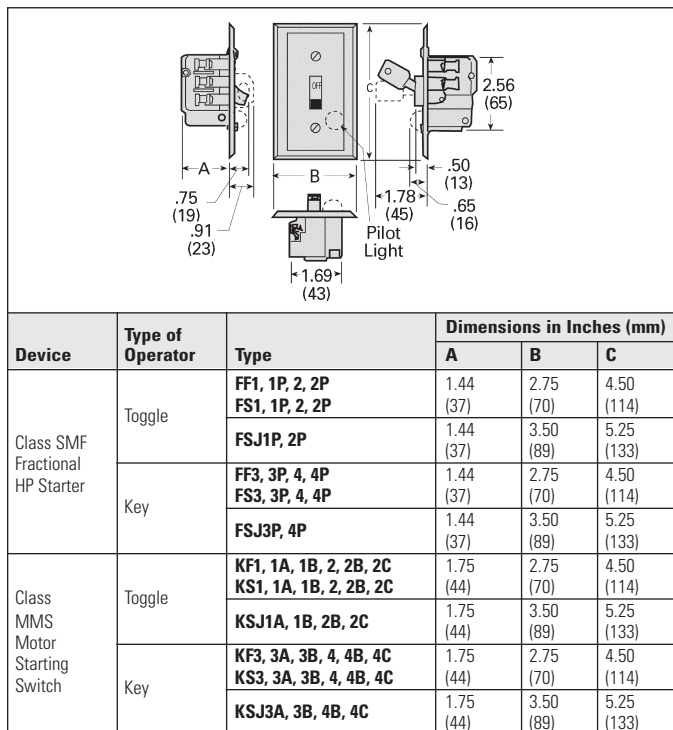
Class SMF, MMS

Dimensions

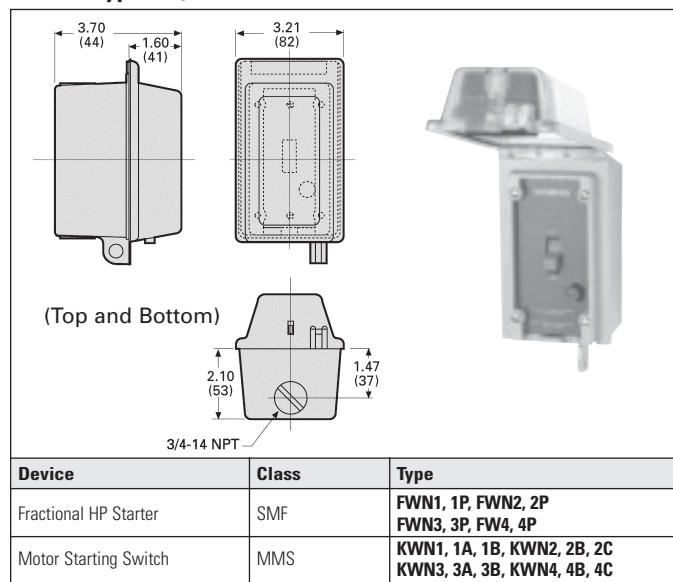
Class SMF and MMS Open Type



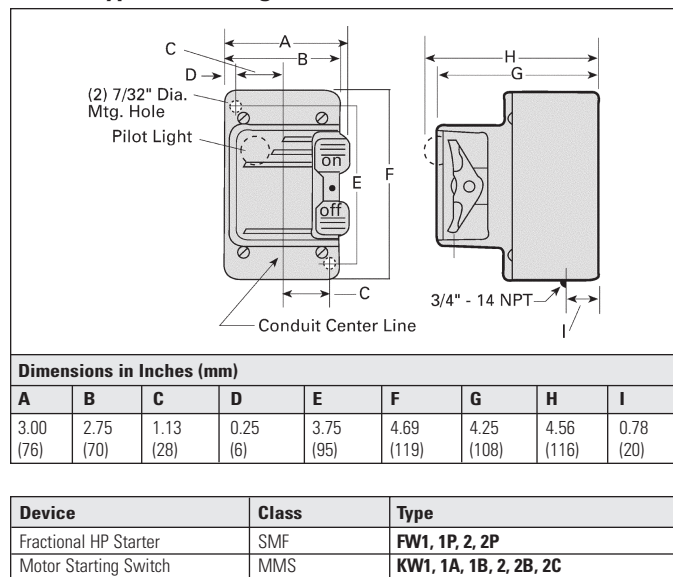
NEMA Type 1B General Purpose Flush Mounting



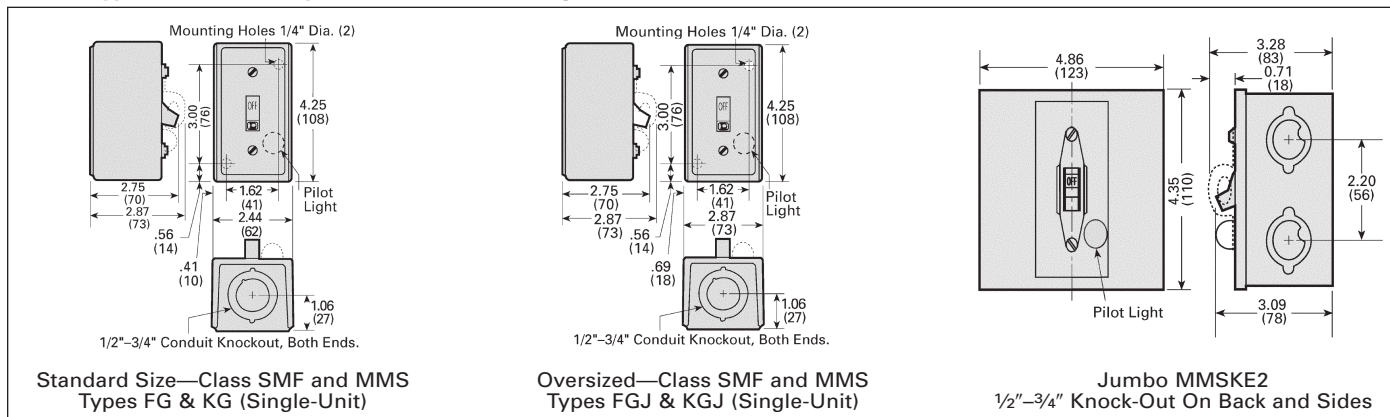
NEMA Type 3R, 4 and 12



NEMA Type 4 Watertight Die Cast Zinc Enclosure



NEMA Type 1 General Purpose Surface Mounting Enclosures



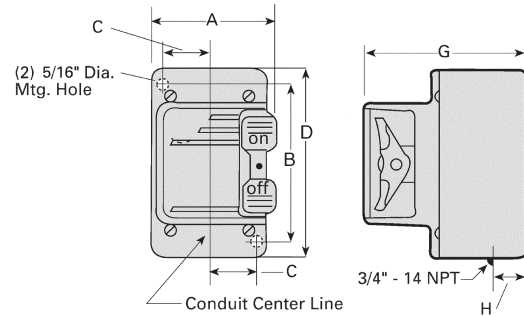
Note: Dimensions for reference, not for construction.
Dimensions are in inches (mm).

① Dimensions typical for key operator devices.

NEMA Type 7 and 9 Cast Aluminum Enclosure

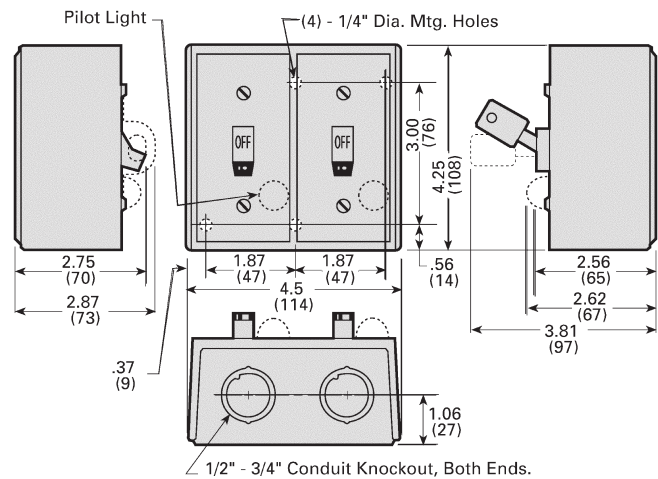
Dimensions in Inches (mm)					
A	B	C	D	G	H
4.00 (101)	5.75 (146)	1.38 (35)	6.36 (161)	4.38 (111)	1.20 (30)

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



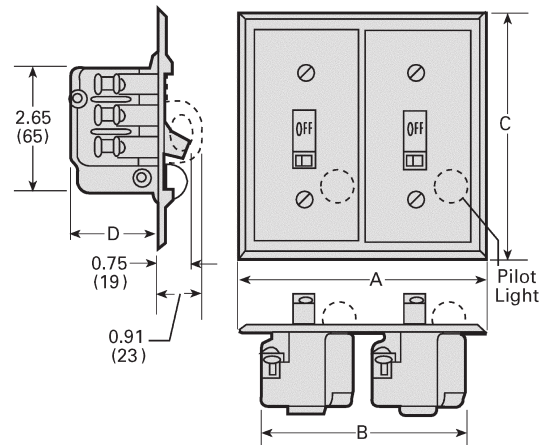
NEMA Type 1 General Purpose Enclosure For Two Unit Devices

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 ^①	Toggle	SMF	FG71, 71P, 72, 72P
	Key	SMF	FG74P
Reversing Switch ^②	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 ^③	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 ^④	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.

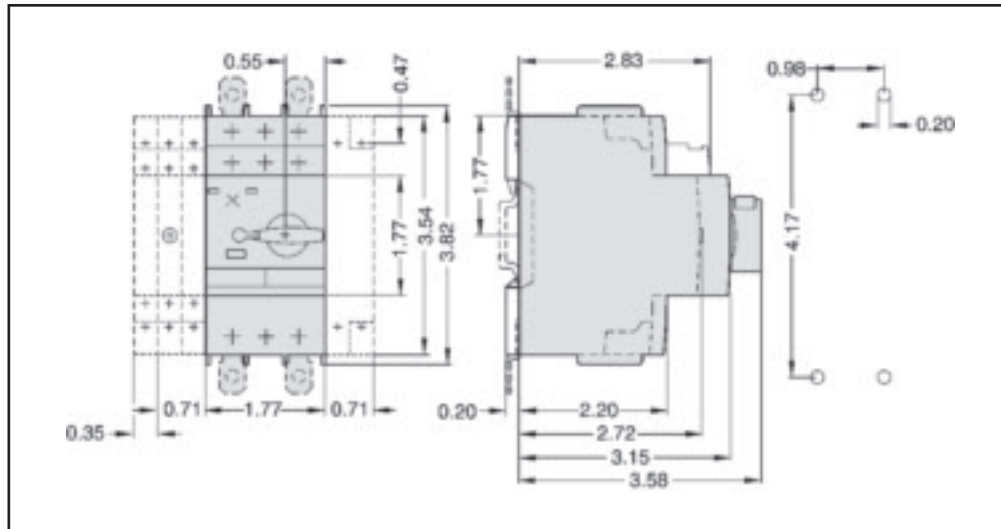
④ Selector switch is on the left, extends 1.62 in. (41 mm) from mounting surface.

Manual Control

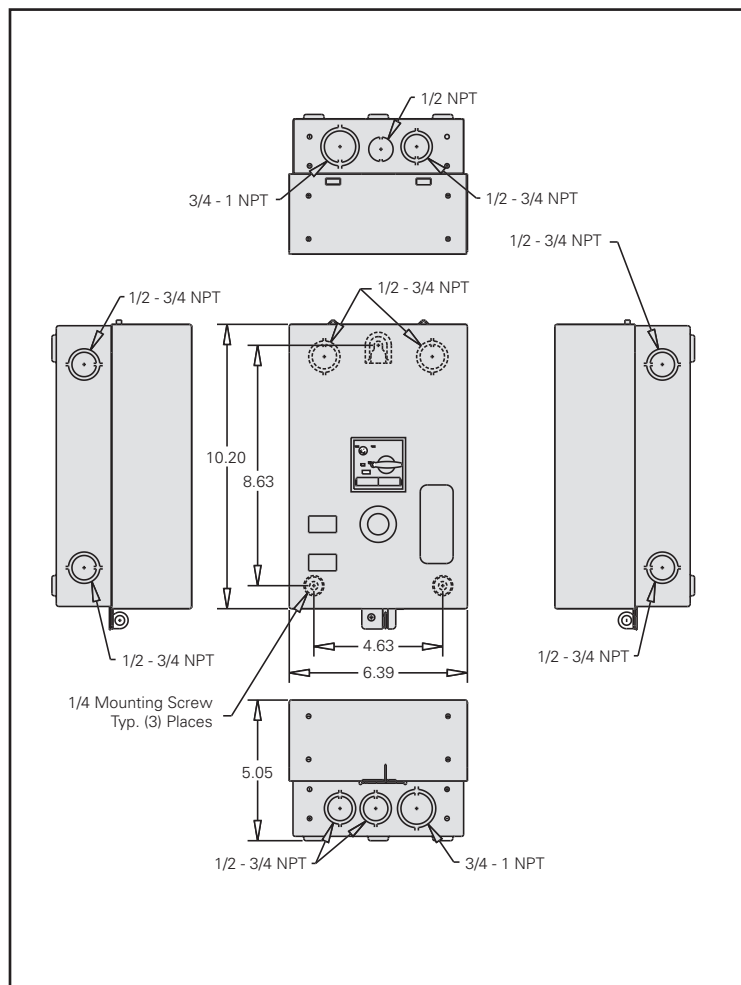
Class 11 - 3RV

Dimensions

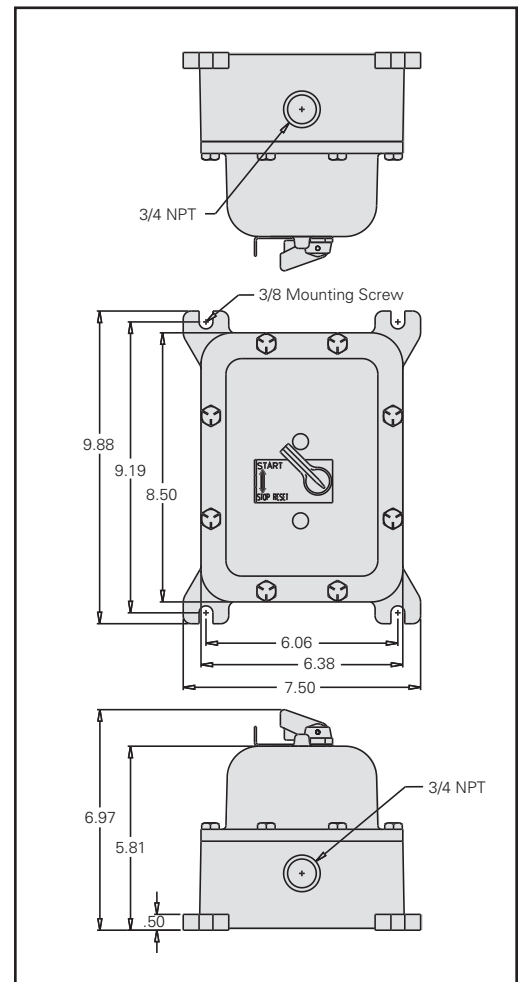
3RV102



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.

Figure 1

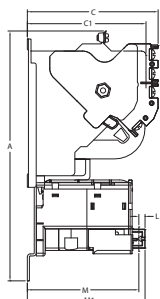


Figure 2

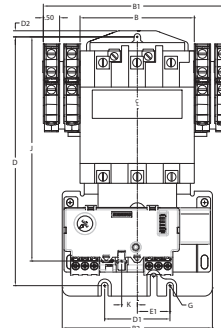
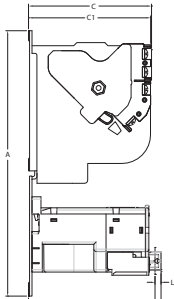
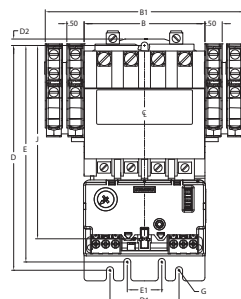


Figure 3

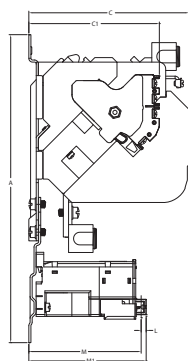
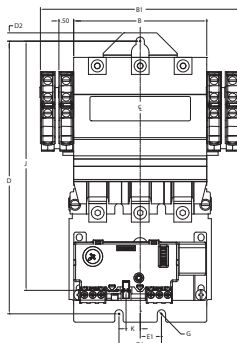
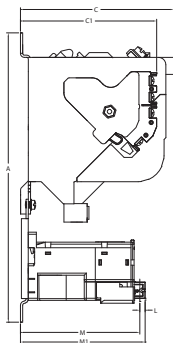


Figure 4

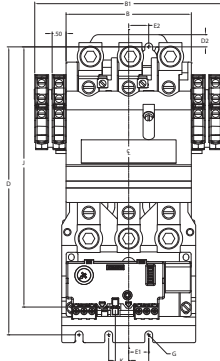
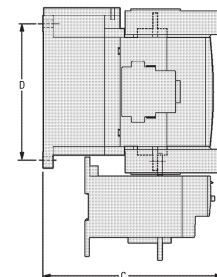
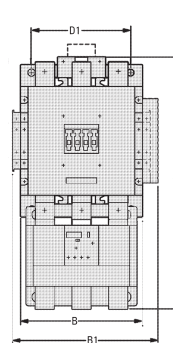


Figure 5



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

Figure 1

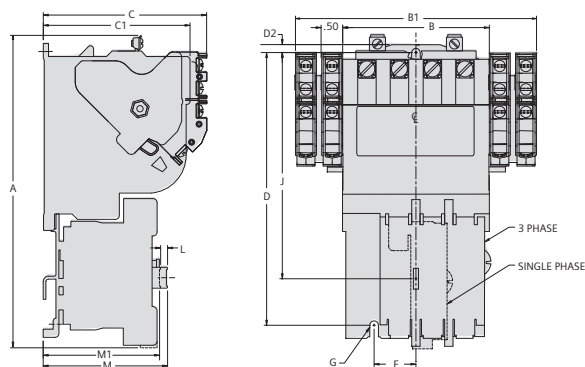


Figure 2

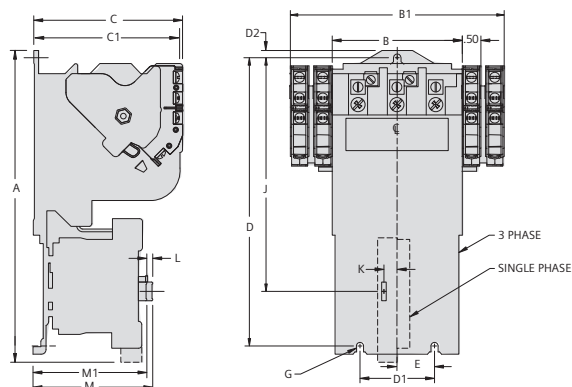


Figure 3

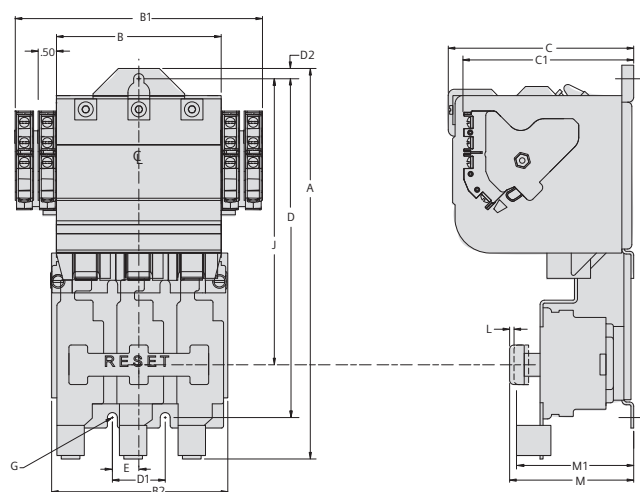
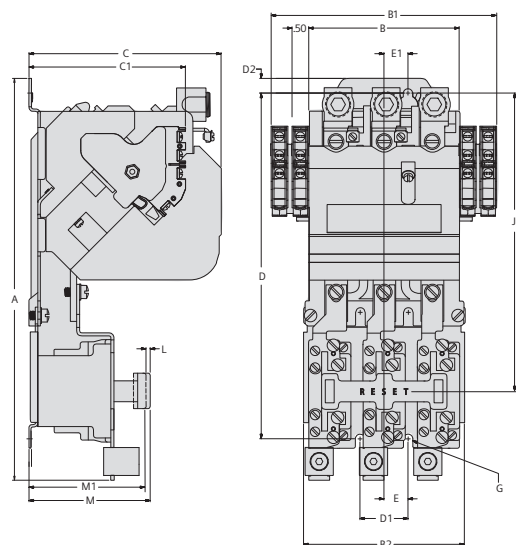


Figure 4



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	M1
00-1¼	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)
2-2½	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)
3-3½	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)

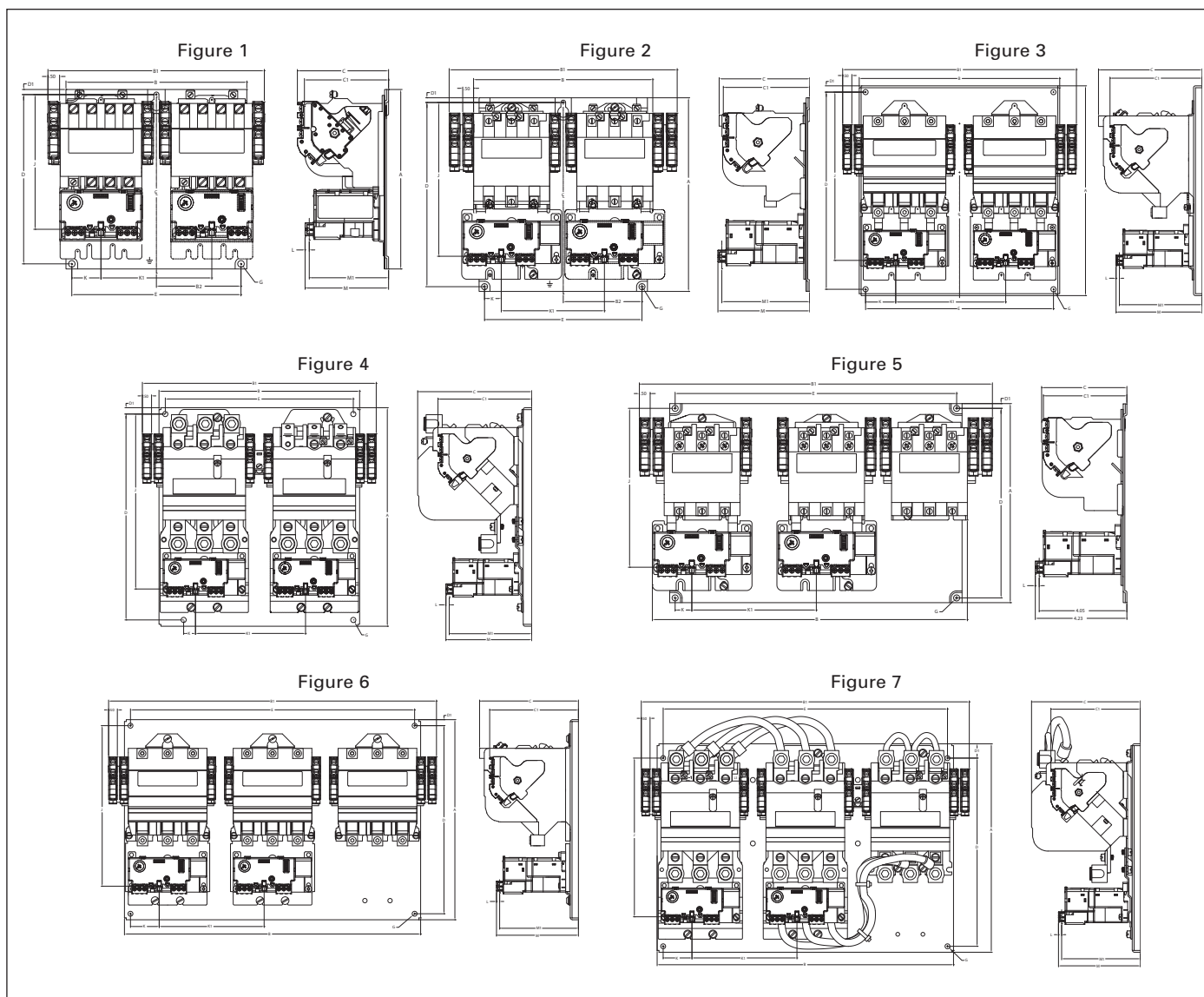
Note: Dimensions in inches (millimeters). Dimensions for reference, not for construction. Contact Sales Office for dimensions not listed.

Reversing & Multispeed Heavy Duty Starters

Solid State Overload Class 22, 30

Dimensions

1
2
3
4
5
6
7
8



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	M1
00-1¼	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	4.68	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

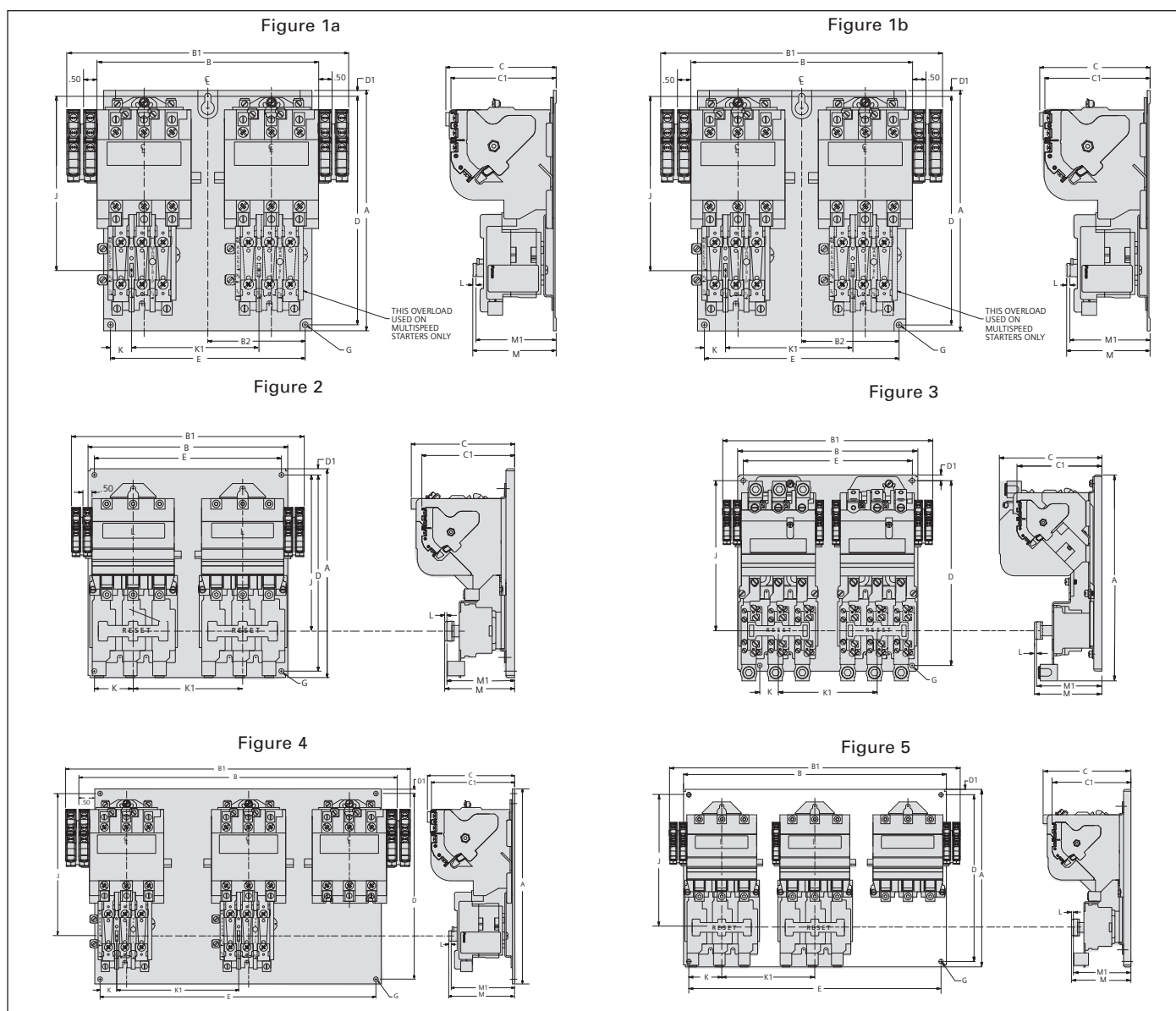
Size	Figure	Outline Dimensions						Mounting Dimensions			Mounting Screw	Reset Dimensions					
		A	B	B1	B2	C	C1	D	D1	E	G	J	K	K1	L	M	M1
00-1¼	1	7.69	7.75	10.50	3.62	3.92	3.61	7.25	0.22	7.25	#10	5.77	1.25	4.75	0.18	3.58	3.40
2-2½	5	9.19	14.55	16.30	—	3.94	3.85	8.75	0.22	13.00	#10	7.33	0.77	5.75	0.18	4.23	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



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	G	J	K	K1	L	M	M1
00-1 $\frac{1}{4}$	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
2-2 $\frac{1}{2}$	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
3-3 $\frac{1}{2}$	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	G	J	K	K1	L	M	M1
00-1 $\frac{1}{4}$	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
2-2 $\frac{1}{2}$	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
3-3 $\frac{1}{2}$	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).

Full Voltage Open Type NEMA Contactor Size 00-8

Figure 1

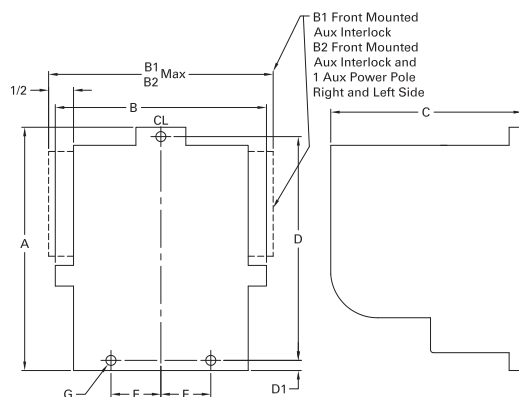


Figure 2

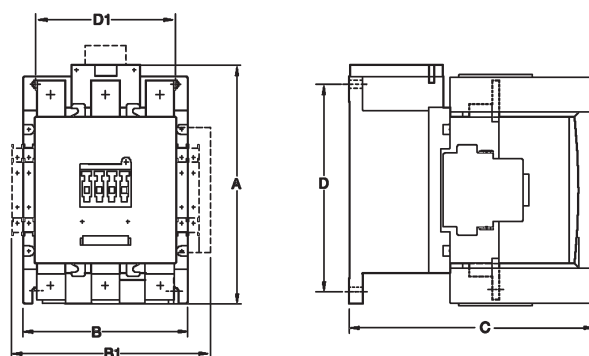


Figure 3

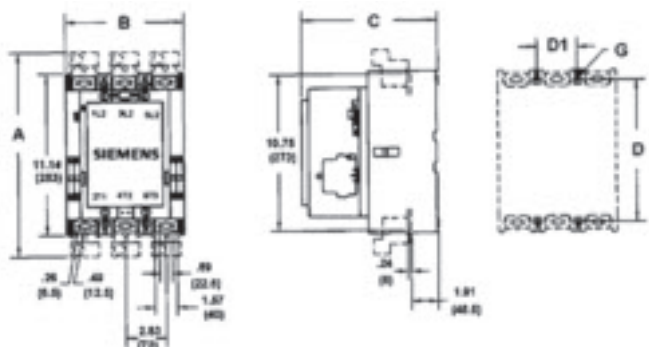
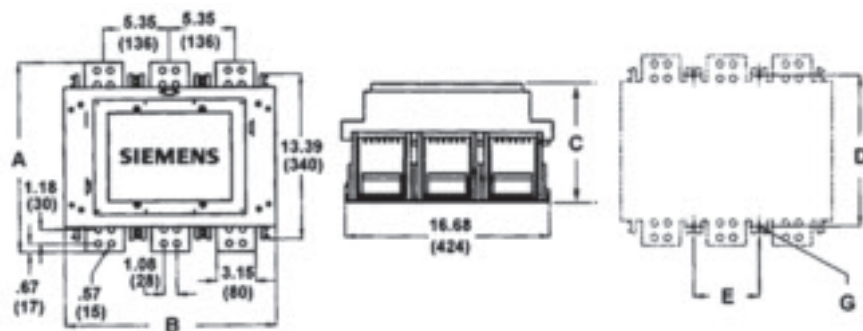


Figure 4



Open Type

		Outline Dimensions						Mounting Dimensions			Mounting Screw
Size	3rd Character of Catalog No. ^①	Fig	A	B	B1	B2	C	D	D1	E	G
00–1¾	C, D, E	1	4.31 (110)	3.94 (100)	4.25 (108)	4.75 (121)	3.75 (70)	3.94 (100)	0.19 (5)	1.00 (25)	#10
2–2½	F,G	1	4.88 (124)	3.94 (100)	4.25 (108)	—	4.00 (102)	4.50 (114)	0.19 (5)	1.00 (25)	#10
3–3½	H, I	1	6.13 (156)	5.13 (130)	5.50 (140)	—	5.06 (129)	5.63 (143)	0.25 (6)	0.75 (19)	0.25 (6)
4	J	1	7.81 (198)	5.19 (132)	5.50 (140)	—	5.75 (146)	6.56 (167)	0.81 (21)	0.75 (19)	0.5 (13)
5	L	2	8.27 (210)	5.71 (145)	6.89 (175)	—	8.54 (217)	7.09 (180)	4.72 (120)	—	0.35 (9)
6	M	2	8.43 (214)	6.3 (160)	7.48 (190)	—	9.29 (236)	7.09 (180)	5.12 (130)	—	0.35 (9)
7	N	3	14.05 (357)	8.27 (210)	—	—	9.53 (242)	9.80 (249)	2.83 (72)	—	0.25 (6)
8	P	4	15.41 (392)	17.23 (438)	—	—	10.56 (268)	12.28 (312)	—	5.35 (136)	0.35 (9)

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

① 3rd character of catalog number identifies contactor rating.

Magnetic Reversing Contactors

Class 43

Dimensions

Figure 1

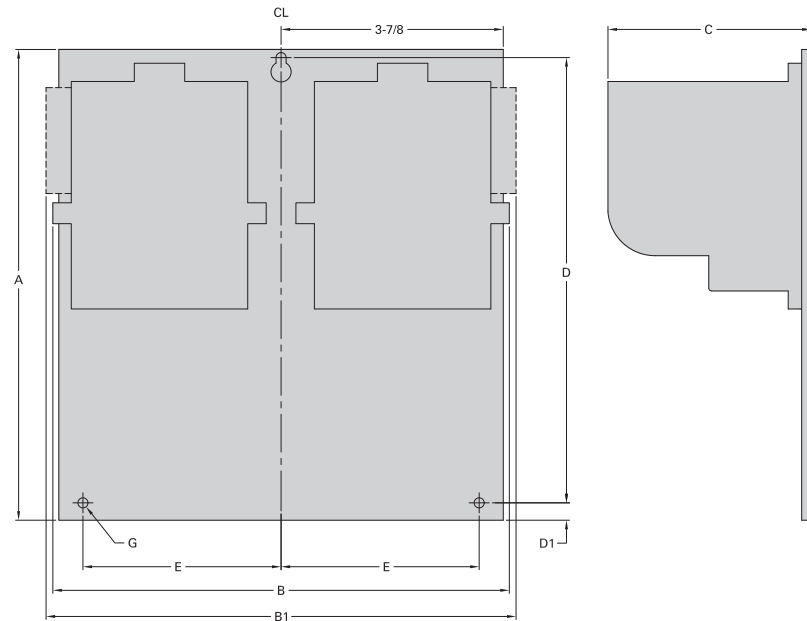
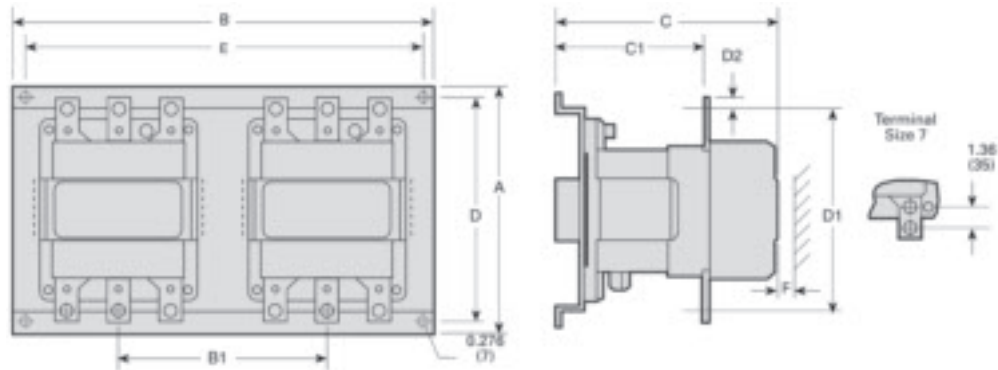


Figure 2



Open Type Horizontal Mounted

Size	Fig.	Outline Dimensions					Mounting Dimensions				Mounting Screw
		A	B	B1	C	C1	D	D1	E	F	
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)	—

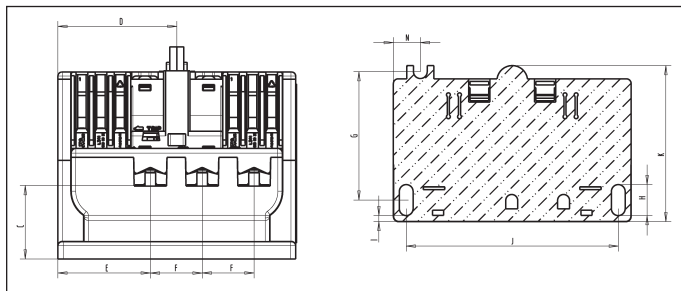
Note: Dimensions for reference, not for construction.
Contact sales office for dimensions not listed.
Dimensions are in inches (mm).

Overload Relays & Current Transformers

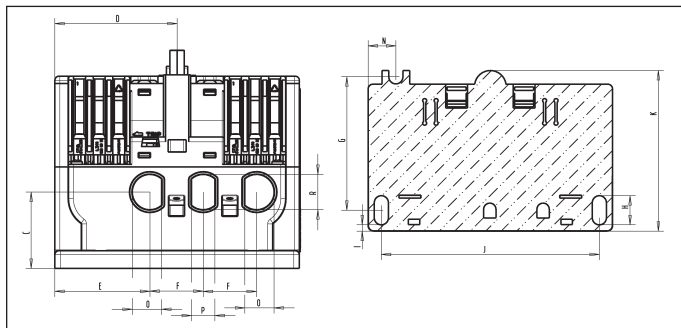
Solid State Overload

Dimensions

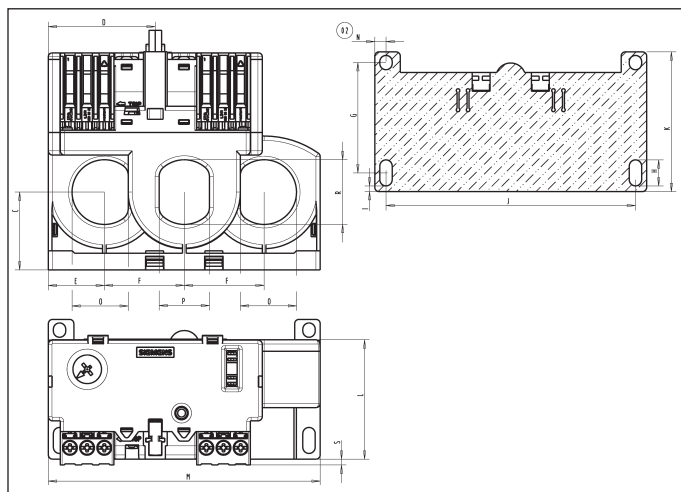
Dimensions "A" Frame—ESP200 Solid State Overload



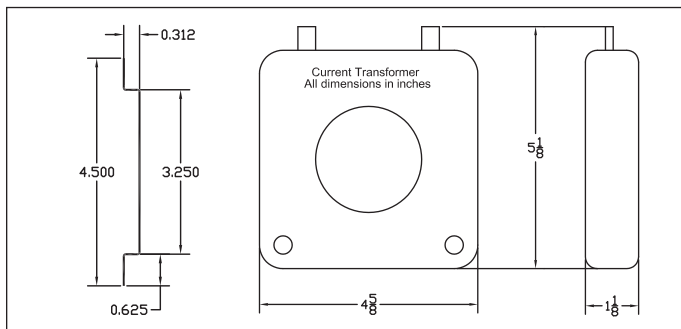
Dimensions "A1" Frame—ESP200 Solid State Overload



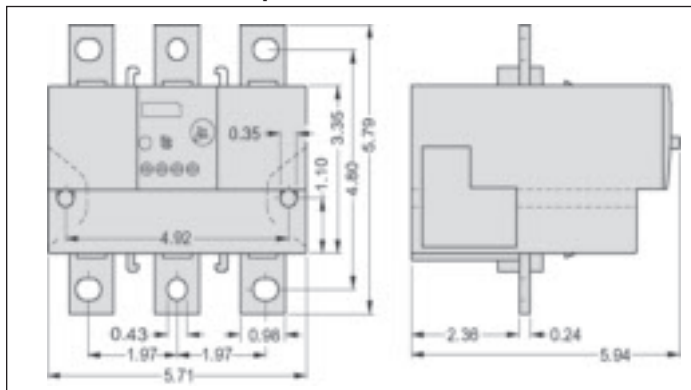
Dimensions "B" Frame—ESP200 Solid State Overload



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

Figure 1

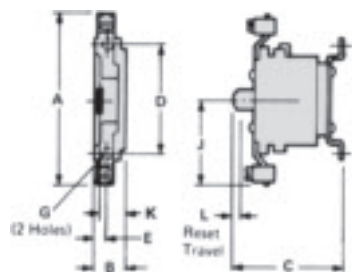


Figure 2

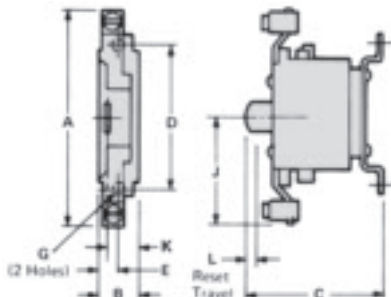


Figure 3

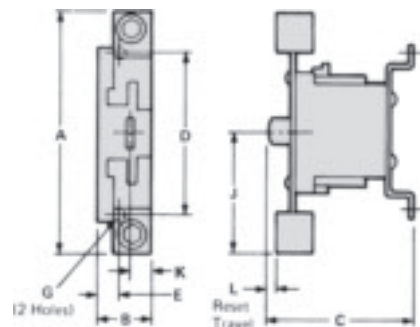


Figure 4

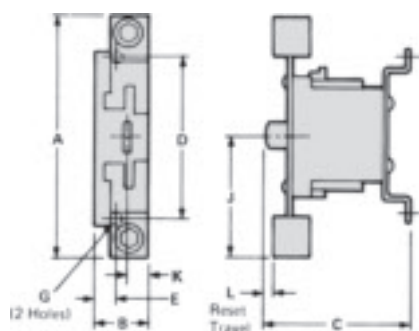


Figure 5

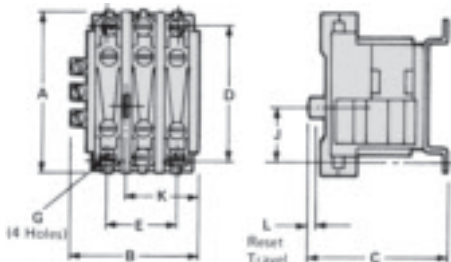


Figure 6

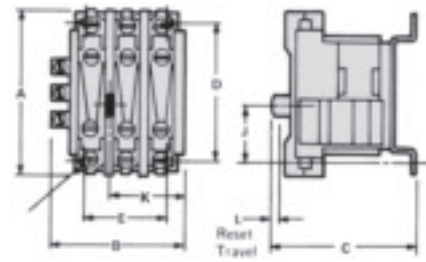


Figure 7

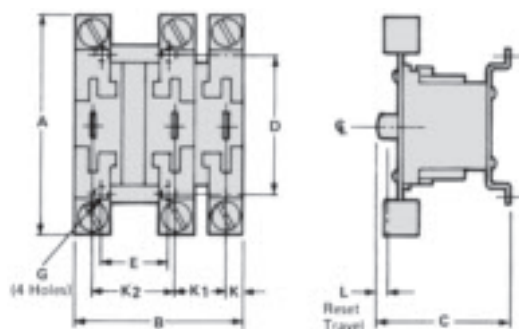
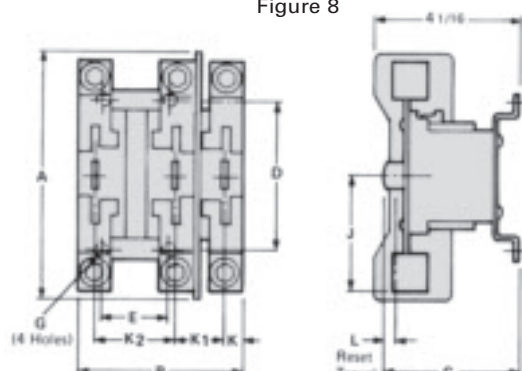


Figure 8



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 1/2 (89)	7/8 (22)	3 1/8 (81)	3 (76)	1/2 (13)	1 3/4 (44)	3/4 (19)	1/8 (3)	#10	8	2 (1)	D51820
Bimetal	60	2	4 1/8 (124)	7/8 (22)	3 1/8 (81)	3 (76)	1/2 (13)	2 1/8	3/4 (19)	1/8 (3)	#10	1	2 (1)	D51830
Ambient	100	3	4 1/8 (124)	1 1/4 (32)	3 1/8 (90)	3 1/2 (89)	5/16 (14)	2 1/8	1/2 (13)	1/8 (3)	#10	00	3 (1)	D51833
Compensated	180	4	5 1/8 (151)	1 1/4 (32)	3 1/8 (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 1/8 (46)	—	—	3/8 (5)	#10	8	3 (1)	D54791
Bimetal	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 1/8 (46)	—	—	3/8 (5)	#10	2	3 (1)	D54823
Ambient	100	7	4 7/8 (124)	4 1/8 (113)	3 1/8 (90)	3 1/2 (89)	1 1/2 (41)	2 1/8 (62)	1/8 (14)	1 1/8 (49)	2 (51)	1/8 (3)	#10	00	4 (2)	D51868
Compensated	180	8	6 1/2 (165)	4 1/8 (113)	3 1/8 (90)	3 1/2 (89)	1 1/2 (41)	3 (76)	1/8 (14)	1 1/8 (49)	2 (51)	1/8 (3)	#10	250 MCM	5 (2)	D52038

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

Figure 1

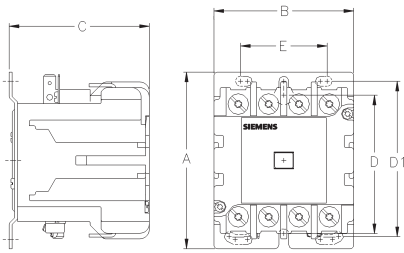


Figure 2

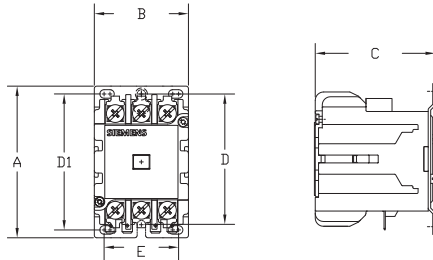


Figure 3

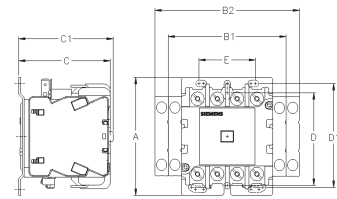


Figure 4

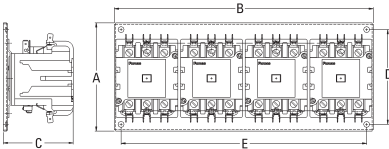


Figure 5

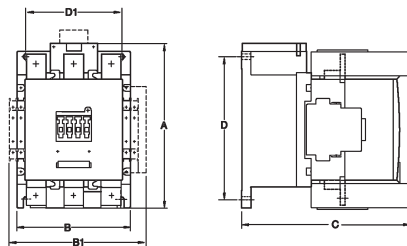
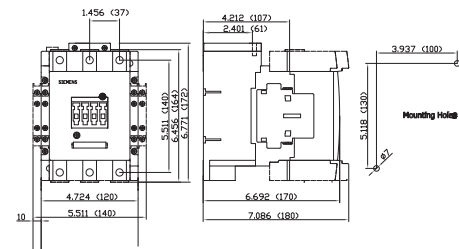


Figure 6



Open Type Lighting and Heating Contactors

Contact Rating Amps	Poles	Figure	Outline Dimensions						Mounting Dimensions			Mounting Screw
			A	B	B1	B2	C	C1	D	D1	E	
20-30	2	2	3.36	2	—	—	2.69	—	1.63	—	1.63	#10
20-30	3	2	3.97	2.25	—	—	2.88	—	3.13	3.25	1.81	#10
20	4	1	3.62	2.87	—	—	2.88	—	3.13	3.25	1.78	#10
20	8	3	3.62	—	3.71	—	2.88	2.97	3.13	3.25	1.78	#10
20	12	3	3.62	—	—	4.55	2.88	2.97	3.13	3.25	1.78	#10
60	3	2	4.06	2.88	—	—	3.06	—	3.13	3.25	2.25	#10
30-60	6	4	3.87	6.15	—	—	3.06	—	3.18	—	—	#10
30-60	9-12	4	5.25	18.62	—	—	3.31	—	4.62	—	18.00	0.281
100	3	6	5.19	4.00	—	—	4.75	—	4.63	4.37	2.88	#10
200	3	5	6.77	4.72	5.91	—	7.09	—	5.12	3.94	—	0.28
300	3	5	8.27	5.71	6.89	—	8.54	—	7.09	4.72	—	0.35
400	3	5	8.43	6.3	7.48	—	9.29	—	7.09	5.12	—	0.35

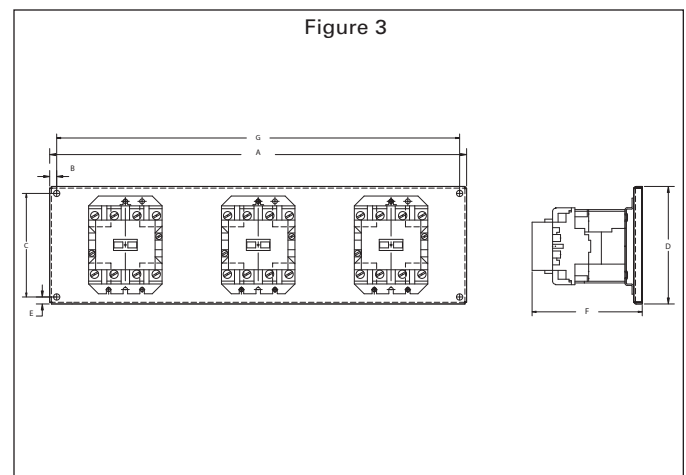
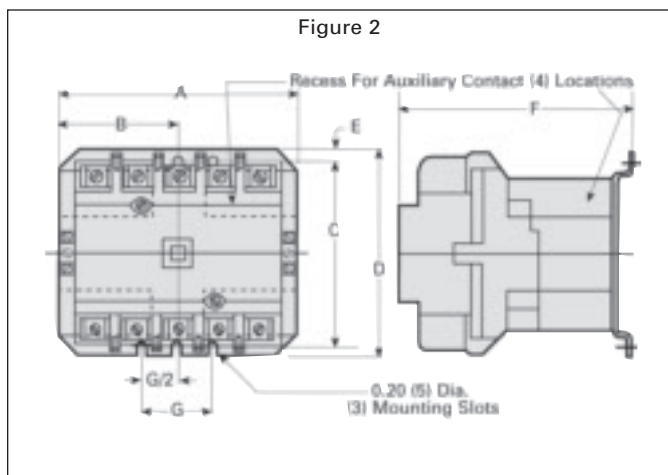
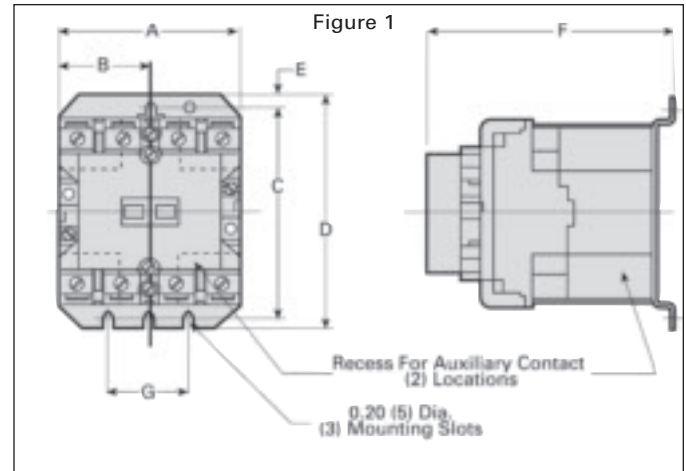
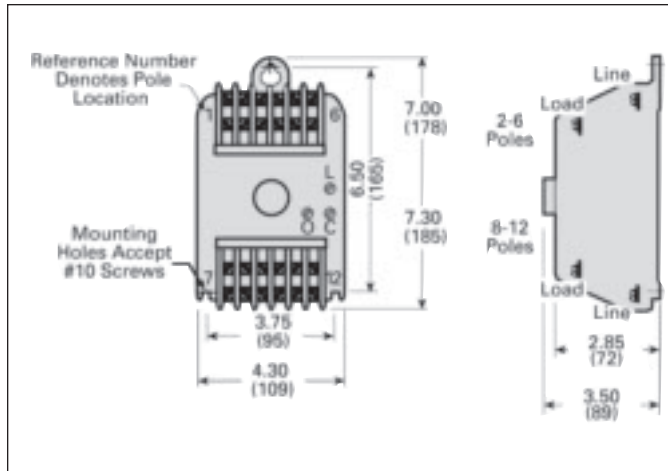
Note: Dimensions for reference, not for construction.
Dimensions in inches (mm).

Lighting & Heating Contactors

Mechanically / Magnetically Held Lighting Contactors, Class CLM

Dimensions

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)
	1	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)
	2	60	4, 5	5.06 (129)	2.53 (64)	3.95 (100)	4.38 (111)	0.23 (6)	4.94 (125)	1.50 (38)
	2	100	2, 3	4.62 (117)	2.31 (59)	6.00 (152)	6.62 (168)	0.38 (10)	6.75 (171)	1.88 (48)
	2	100	4, 5	7.25 (184)	3.62 (92)	6.00 (152)	6.62 (168)	0.38 (10)	6.75 (171)	1.88 (48)
	2	200	2, 3	4.62 (117)	2.31 (59)	6.00 (152)	6.62 (168)	0.38 (10)	6.75 (171)	1.88 (48)
	2	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, 60	6-12	18.62	0.312	4.62	5.25	0.312	4.98	18.00

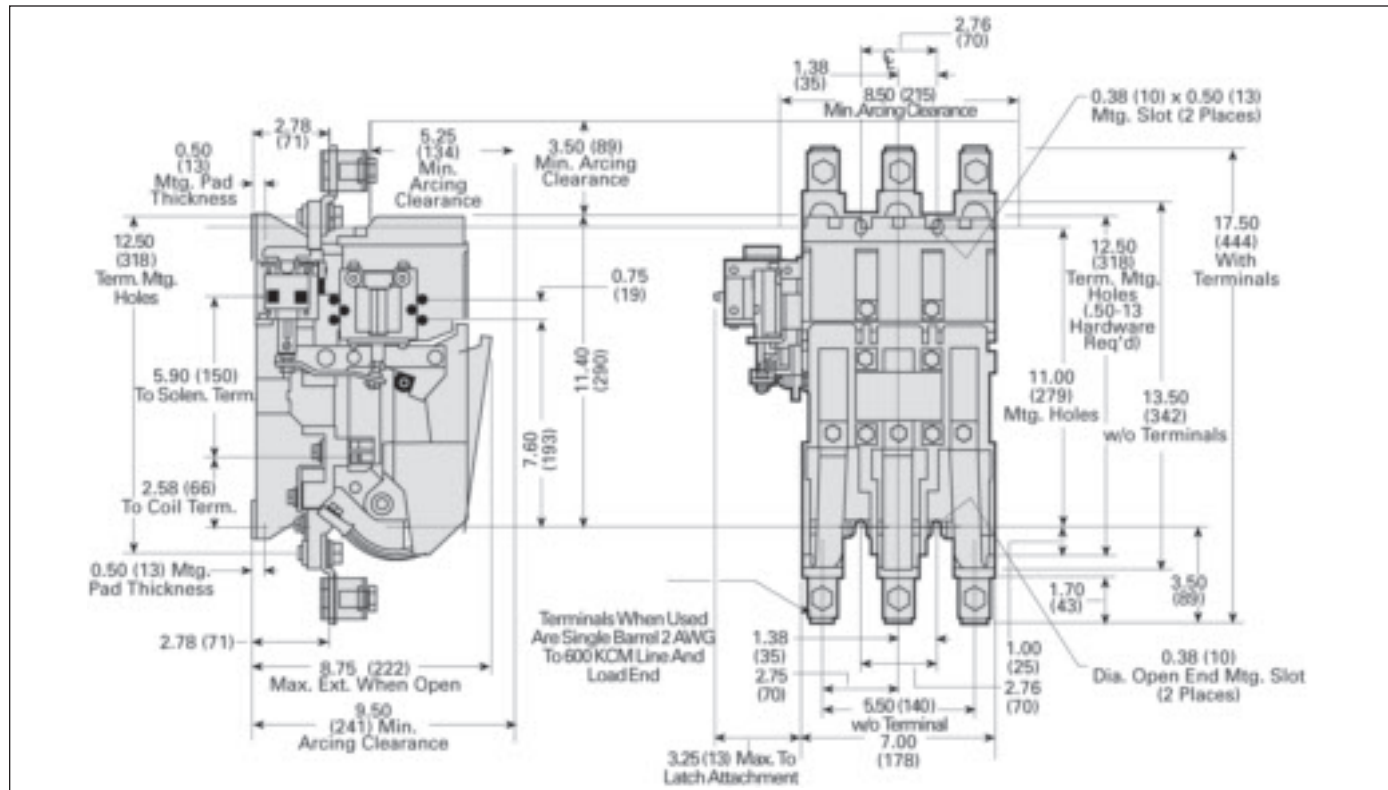
Note: Dimensions for reference, not for construction.
Dimensions in inches (mm).

Lighting Control

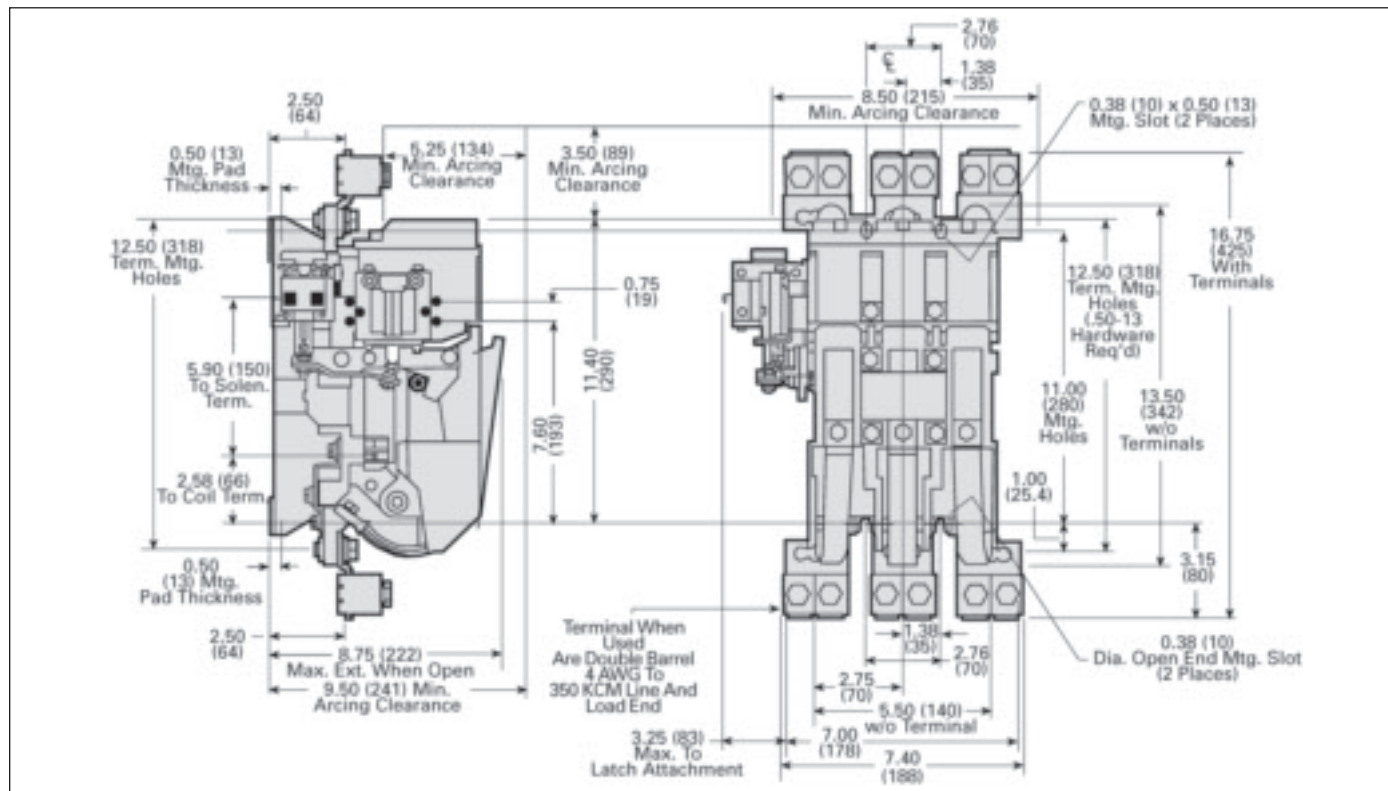
Mechanically Latched 300 and 400 Amps, Class CLM

Dimensions

CLM Contactors 300 Amp



CLM Contactors 400 Amp

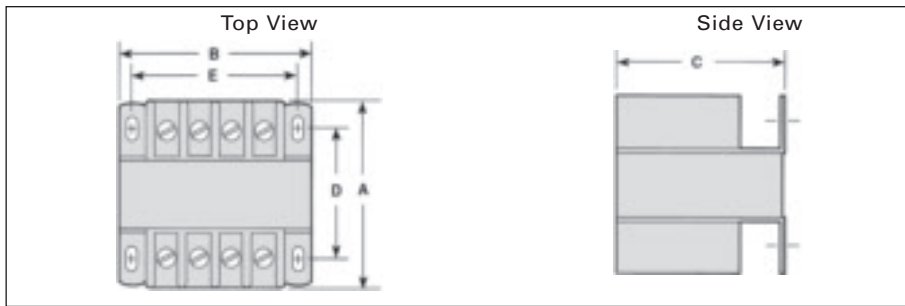


Note: Dimensions for reference, not for construction.
Dimensions in inches (mm).

Industrial Control Power Transformers

Class MT

Dimensions



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

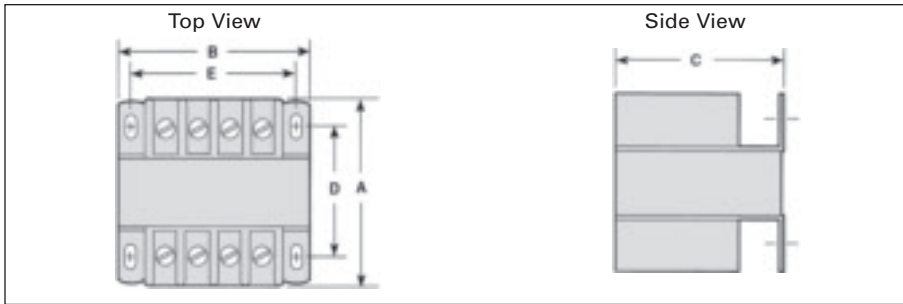
Dimension "C" does not include the added height required for secondary fuse clips—0.50 in. (13 mm) maximum for type "K" clips.

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.

① A 2-pole Primary Class CC Fuse Block Kit is available for field installation. See page 8/77 for details.
Catalog Number KCCFPX2R

Class MT

VA Rating	Voltage Letters	Approximate Dimensions Inches (mm)		Approx		Mounting Slots	Ship Wt Lbs (Kg)
		A	B	C	D		
50 ^①	A, B, C, D, E, F, I, M	3.00 (76)	3.00 (76)	2.56 (65)	2.00 (51)	2.50 (64)	13/64 (5) X 3/8 (10)
	G	3.13 (79)	3.00 (76)	2.56 (65)	2.13 (54)	2.50 (64)	13/64 (5) X 3/8 (10)
	H	3.00 (76)	3.00 (76)	3.00 (76)	2.56 (65)	2.50 (64)	13/64 (5) X 3/8 (10)
	J	3.25 (83)	3.00 (76)	2.56 (65)	2.25 (57)	2.50 (64)	13/64 (5) X 3/8 (10)
	L	4.00 (102)	3.38 (86)	2.88 (73)	2.44 (62)	2.81 (71)	13/64 (5) X 3/8 (10)
75 ^①	A, B, C, D, E, F, I, M	3.50 (89)	3.00 (76)	2.56 (65)	2.50 (64)	2.50 (64)	13/64 (5) X 3/8 (10)
	G	3.38 (86)	3.38 (86)	2.88 (73)	2.38 (60)	2.81 (71)	13/64 (5) X 3/8 (10)
	H	3.13 (79)	3.38 (86)	2.88 (73)	2.38 (60)	2.81 (71)	13/64 (5) X 3/8 (10)
	J	3.50 (89)	3.38 (86)	2.88 (73)	2.50 (64)	2.81 (71)	13/64 (5) X 3/8 (10)
100 ^①	A, B, C, D, E, F, I, M	3.38 (86)	3.38 (86)	2.88 (73)	2.38 (60)	2.81 (71)	13/64 (5) X 3/8 (10)
	G	3.69 (94)	3.38 (86)	2.88 (73)	2.69 (68)	2.81 (71)	13/64 (5) X 3/8 (10)
	H	3.88 (98)	3.38 (86)	2.88 (73)	2.88 (73)	2.81 (71)	13/64 (5) X 3/8 (10)
	J	3.63 (92)	3.75 (95)	3.19 (81)	2.50 (64)	3.13 (79)	13/64 (5) X 3/8 (10)
	L	4.63 (117)	3.38 (86)	3.19 (81)	3.06 (78)	3.13 (79)	13/64 (5) X 3/8 (10)
150 ^①	A, B, C, D, E, F, I, M	4.00 (102)	3.75 (95)	3.19 (81)	2.88 (73)	3.13 (79)	13/64 (5) X 3/8 (10)
	G	4.19 (106)	3.75 (95)	3.19 (81)	3.06 (78)	3.13 (79)	13/64 (5) X 3/8 (10)
	H	4.25 (108)	3.75 (95)	3.19 (81)	3.25 (83)	3.13 (79)	13/64 (5) X 3/8 (10)
	J	4.38 (111)	3.75 (95)	3.19 (81)	3.25 (83)	3.13 (79)	13/64 (5) X 3/8 (10)
200 ^①	A, B, C, D, E, F, I, M	4.44 (113)	4.50 (114)	3.81 (97)	2.88 (73)	3.75 (95)	13/64 (5) X 3/8 (10)
	G	4.00 (102)	4.50 (114)	3.81 (97)	2.50 (64)	3.75 (95)	13/64 (5) X 3/8 (10)
	H	4.25 (108)	4.50 (114)	3.81 (97)	2.75 (70)	3.75 (95)	13/64 (5) X 3/8 (10)
	J	4.50 (114)	4.50 (114)	3.81 (97)	3.00 (76)	3.75 (95)	13/64 (5) X 3/8 (10)
	L	4.38 (111)	4.50 (114)	3.81 (97)	2.88 (73)	3.75 (95)	13/64 (5) X 3/8 (10)
250 ^①	A, B, C, D, E, F, I, M	4.75 (121)	4.50 (114)	3.81 (97)	3.25 (83)	3.75 (95)	13/64 (5) X 3/8 (10)
	G	4.75 (121)	4.50 (114)	3.81 (97)	3.19 (81)	3.75 (95)	13/64 (5) X 3/8 (10)
	H	4.75 (121)	4.50 (114)	3.81 (97)	3.19 (81)	3.75 (95)	13/64 (5) X 3/8 (10)
	J	5.25 (133)	4.50 (114)	3.81 (97)	3.75 (95)	3.75 (95)	13/64 (5) X 3/8 (10)
	L	5.86 (149)	4.50 (114)	3.81 (97)	4.38 (111)	3.75 (95)	13/64 (5) X 3/8 (10)
300 ^①	A, B, C, D, E, F, I, M	4.75 (121)	4.50 (114)	3.81 (97)	3.25 (83)	3.75 (95)	13/64 (5) X 3/8 (10)
	G	5.25 (133)	4.50 (114)	3.81 (97)	3.75 (95)	3.75 (95)	13/64 (5) X 3/8 (10)
	H	5.13 (130)	4.50 (114)	3.81 (97)	3.63 (92)	3.75 (95)	13/64 (5) X 3/8 (10)
	J	5.13 (130)	5.25 (133)	4.75 (121)	3.88 (98)	4.38 (111)	5/16 (8) X 11/16 (17)
350 ^①	A, B, C, D, E, F, I, M	5.25 (133)	4.50 (114)	3.81 (97)	3.75 (95)	3.75 (95)	13/64 (5) X 3/8 (10)
	G	8.25 (149)	4.50 (114)	3.81 (97)	4.38 (111)	3.75 (95)	13/64 (5) X 3/8 (10)
	H	5.00 (127)	4.50 (114)	3.81 (97)	3.75 (95)	4.38 (111)	13/64 (5) X 3/8 (10)
	J	5.38 (137)	5.25 (133)	4.75 (121)	4.13 (105)	4.38 (111)	5/16 (8) X 11/16 (17)
	L	5.63 (143)	5.25 (133)	4.44 (113)	4.75 (121)	4.38 (111)	5/16 (8) X 11/16 (17)
500 ^①	A, B, C, D, E, F, I, M	5.50 (140)	5.25 (133)	4.75 (121)	4.25 (108)	4.38 (111)	5/16 (8) X 11/16 (17)
	G	6.00 (152)	5.25 (133)	4.75 (121)	4.75 (121)	4.38 (111)	5/16 (8) X 11/16 (17)
	H	5.88 (149)	5.25 (133)	4.75 (121)	4.63 (117)	4.38 (111)	5/16 (8) X 11/16 (17)
	J	6.86 (175)	5.25 (133)	4.75 (121)	5.25 (133)	4.38 (111)	5/16 (8) X 11/16 (17)
	L	7.00 (178)	5.25 (133)	4.44 (113)	6.13 (156)	4.38 (111)	5/16 (8) X 11/16 (17)
750	A, B, E, F, I	7.00 (178)	5.25 (133)	4.75 (121)	5.75 (146)	4.38 (111)	5/16 (8) X 11/16 (17)
	G	7.38 (187)	5.25 (133)	4.75 (121)	5.75 (146)	4.38 (111)	5/16 (8) X 11/16 (17)
	H	7.00 (178)	5.25 (133)	4.75 (121)	5.75 (146)	4.38 (111)	5/16 (8) X 11/16 (17)
	L	5.63 (143)	6.75 (171)	5.75 (146)	4.13 (105)	6.06 (154)	5/16 (8) X 9/16 (14)
1000	A, E, I	7.86 (200)	5.25 (133)	4.44 (113)	5.50 (140)	4.38 (111)	9/32 (7) X 13/32 (10)
	G	7.13 (181)	6.38 (162)	5.38 (137)	4.50 (114)	5.19 (132)	5/16 (8) X 11/16 (17)
	H	7.50 (191)	6.38 (162)	5.38 (137)	4.50 (114)	5.19 (132)	5/16 (8) X 11/16 (17)
1500	A, I	6.75 (171)	6.75 (171)	5.69 (144)	3.56 (90)	6.06 (154)	9/32 (7) X 9/16 (14)
	G	7.50 (191)	6.75 (171)	5.69 (144)	4.44 (113)	6.06 (154)	9/32 (7) X 9/16 (14)
	H	8.25 (210)	6.75 (171)	5.69 (144)	5.25 (133)	6.06 (154)	9/32 (7) X 9/16 (14)
2000	A, I	7.00 (178)	6.75 (171)	5.69 (144)	4.44 (113)	6.06 (154)	9/32 (7) X 9/16 (14)
	G	8.25 (210)	6.75 (171)	5.69 (144)	5.25 (133)	6.06 (154)	9/32 (7) X 9/16 (14)
	H	7.56 (192)	9.00 (229)	7.31 (186)	4.56 (116)	6.50 (165)	9/32 (7) X 9/16 (14)
3000	A, I	7.50 (191)	9.00 (229)	7.56 (192)	4.04 (103)	6.50 (165)	7/16 (11) X 3/4 (19)
	G	8.00 (203)	9.00 (229)	7.56 (192)	4.63 (117)	6.50 (165)	7/16 (11) X 3/4 (19)
	H	8.63 (219)	9.00 (229)	7.56 (192)	5.25 (133)	6.50 (165)	7/16 (11) X 3/4 (19)
5000	A	10.0 (254)	9.00 (229)	7.56 (192)	7.50 (190)	7.20 (183)	7/16 (11) X 3/4 (19)
	G	10.50 (267)	9.00 (229)	10.19 (259)	6.50 (165)	6.50 (165)	7/16 (11) X 3/4 (19)
	H	13.50 (343)	9.00 (229)	10.56 (268)	8.25 (210)	6.50 (165)	7/16 (11) X 3/4 (19)



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

Dimension "C" does not include the added height required for secondary fuse clips—0.50 in. (13 mm) maximum for type "K" clips.

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.

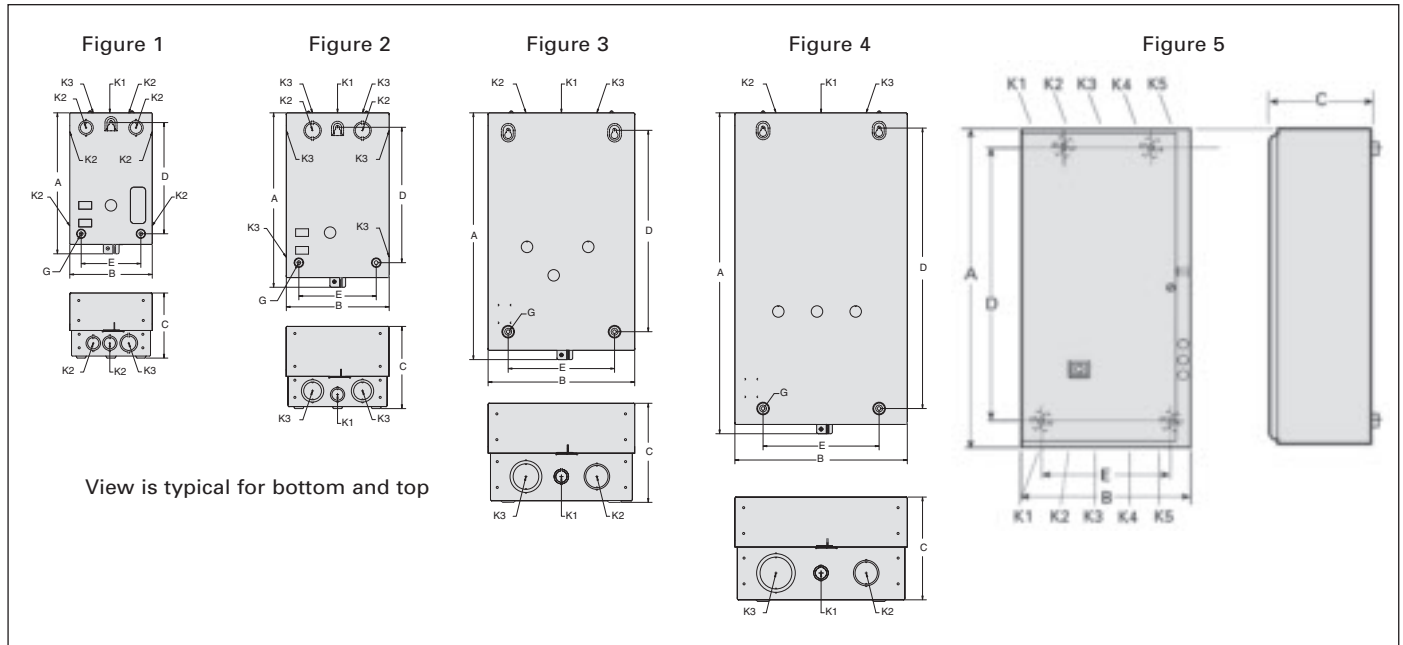
Class MTG

VA Rating	Voltage Letters	Approximate Dimensions Inches (mm)					Mounting Slots	Approx Ship Wt Lbs (Kg)
		A	B	C	D	E		
50	A	3.38 (86)	3.00 (76)	3.00 (76)	2.50 (64)	2.50 (64)	13/64 (5) X 15/32 (12)	3.5 (2)
	B, C, P	3.25 (83)	3.00 (76)	3.00 (76)	2.25 (57)	2.50 (64)	13/64 (5) X 15/32 (12)	3.4 (2)
	E, I	3.38 (86)	3.00 (76)	3.00 (76)	2.50 (64)	2.50 (64)	13/64 (5) X 15/32 (12)	3.5 (2)
	J	3.25 (83)	3.38 (86)	3.25 (83)	2.25 (57)	2.81 (71)	13/64 (5) X 15/32 (12)	4.2 (2)
75	A	3.50 (89)	3.38 (86)	3.25 (83)	2.50 (64)	2.81 (71)	13/64 (5) X 15/32 (12)	4.8 (2)
	B, C, P	3.25 (83)	3.38 (86)	3.25 (83)	2.25 (57)	2.81 (71)	13/64 (5) X 15/32 (12)	4.2 (2)
	E, I	3.50 (89)	3.38 (86)	3.25 (83)	2.50 (64)	2.81 (71)	13/64 (5) X 15/32 (12)	4.8 (2)
	J	3.63 (92)	3.75 (95)	3.50 (89)	2.50 (64)	3.13 (79)	13/64 (5) X 15/32 (12)	5.9 (3)
100	A	3.63 (92)	3.75 (95)	3.50 (89)	2.50 (64)	3.13 (79)	13/64 (5) X 15/32 (12)	5.9 (3)
	B, C, P	3.63 (92)	3.75 (95)	3.50 (89)	2.50 (64)	3.13 (79)	13/64 (5) X 15/32 (12)	5.9 (3)
	E, I	3.63 (92)	3.75 (95)	3.50 (89)	2.50 (64)	3.13 (79)	13/64 (5) X 15/32 (12)	5.9 (3)
	J	4.38 (111)	3.75 (95)	3.50 (89)	3.19 (81)	3.13 (79)	13/64 (5) X 15/32 (12)	7.9 (4)
150	A	4.00 (102)	4.50 (114)	4.00 (102)	2.50 (64)	3.75 (95)	13/64 (5) X 15/32 (12)	8.5 (4)
	B, C, P	4.00 (102)	4.50 (114)	4.00 (102)	2.50 (64)	3.75 (95)	13/64 (5) X 15/32 (12)	8.5 (4)
	E, I	4.00 (102)	4.50 (114)	4.00 (102)	2.50 (64)	3.75 (95)	13/64 (5) X 15/32 (12)	8.5 (4)
	J	4.00 (102)	4.50 (114)	4.00 (102)	2.81 (71)	3.75 (95)	13/64 (5) X 15/32 (12)	8.5 (4)
200	A	4.50 (114)	4.50 (114)	4.00 (102)	3.19 (81)	3.75 (95)	13/64 (5) X 15/32 (12)	10.6 (5)
	B, C, P	4.38 (111)	4.50 (114)	4.00 (102)	2.81 (71)	3.75 (95)	13/64 (5) X 15/32 (12)	10.0 (5)
	E, I	4.50 (114)	4.50 (114)	4.00 (102)	3.19 (81)	3.75 (95)	13/64 (5) X 15/32 (12)	10.6 (5)
	J	5.00 (127)	4.50 (114)	4.00 (102)	3.50 (89)	3.75 (95)	13/64 (5) X 15/32 (12)	10.6 (5)
250	A	4.38 (111)	4.50 (114)	4.00 (102)	3.19 (81)	3.75 (95)	13/64 (5) X 15/32 (12)	11.3 (5)
	B, C, P	4.75 (121)	4.50 (114)	4.00 (102)	3.19 (81)	3.75 (95)	13/64 (5) X 15/32 (12)	11.3 (5)
	E, I	4.75 (121)	4.50 (114)	4.00 (102)	3.19 (81)	3.75 (95)	13/64 (5) X 15/32 (12)	11.3 (5)
	J	5.50 (140)	4.50 (114)	4.00 (102)	4.06 (103)	3.75 (95)	13/64 (5) X 15/32 (12)	15.2 (7)
300	A	5.13 (130)	4.50 (114)	4.00 (102)	3.75 (95)	3.75 (95)	13/64 (5) X 15/32 (12)	13.2 (6)
	B, C, P	5.13 (130)	4.50 (114)	4.00 (102)	3.75 (95)	3.75 (95)	13/64 (5) X 15/32 (12)	13.2 (6)
	E, I	5.13 (130)	4.50 (114)	4.00 (102)	3.75 (95)	3.75 (95)	13/64 (5) X 15/32 (12)	13.2 (6)
	J	5.38 (137)	5.25 (133)	4.50 (114)	4.25 (108)	4.38 (111)	5/16 (8) X 11/16 (17)	16.8 (8)
350	A	5.00 (127)	5.25 (133)	4.50 (114)	3.75 (95)	4.38 (111)	5/16 (8) X 11/16 (17)	14.9 (7)
	B, C, P	5.00 (127)	5.25 (133)	4.50 (114)	3.75 (95)	4.38 (111)	5/16 (8) X 11/16 (17)	14.9 (7)
	E, I	5.00 (127)	5.25 (133)	4.50 (114)	3.75 (95)	4.38 (111)	5/16 (8) X 11/16 (17)	14.9 (7)
	J	5.50 (140)	5.25 (133)	4.50 (114)	4.25 (108)	4.38 (111)	5/16 (8) X 11/16 (17)	19.2 (9)
500	A	6.00 (152)	5.25 (133)	4.50 (114)	4.75 (121)	4.38 (111)	5/16 (8) X 11/16 (17)	21.0 (9)
	B, C, P	5.50 (140)	5.25 (133)	4.50 (114)	4.25 (108)	4.38 (111)	5/16 (8) X 11/16 (17)	19.2 (9)
	E, I	6.00 (152)	5.25 (133)	4.50 (114)	4.75 (121)	4.38 (111)	5/16 (8) X 11/16 (17)	21.0 (9)
	J	7.25 (184)	5.25 (133)	4.50 (114)	6.00 (153)	4.38 (111)	5/16 (8) X 11/16 (17)	27.0 (12)
750	A	7.38 (187)	5.25 (133)	4.50 (114)	5.75 (146)	4.38 (111)	5/16 (8) X 11/16 (17)	30.0 (14)
	B, C, P	7.00 (178)	5.25 (133)	4.50 (114)	5.38 (137)	4.38 (111)	5/16 (8) X 11/16 (17)	28.1 (13)
	E, I	7.38 (187)	5.25 (133)	4.50 (114)	5.75 (146)	4.38 (111)	5/16 (8) X 11/16 (17)	30.0 (14)
	J	5.56 (141)	6.38 (162)	7.19 (183)	4.38 (111)	5.31 (135)	5/16 (8) X 11/16 (17)	30.0 (14)
1000	A	5.31 (135)	6.38 (162)	5.31 (135)	4.06 (103)	5.31 (135)	5/16 (8) X 11/16 (17)	26.3 (12)
	B, C	5.56 (141)	6.38 (162)	7.19 (183)	4.31 (110)	5.31 (135)	5/16 (8) X 11/16 (17)	26.3 (12)
	J	7.00 (178)	6.38 (162)	7.19 (183)	5.75 (146)	5.31 (135)	5/16 (8) X 11/16 (17)	40.0 (18)
1500	A	6.13 (156)	6.75 (171)	7.50 (191)	4.94 (125)	6.13 (156)	9/32 (7) X 9/16 (14)	40.0 (18)
2000	A	6.44 (164)	6.75 (171)	7.50 (191)	5.25 (133)	6.13 (156)	9/32 (7) X 9/16 (14)	45.1 (21)
3000	A	6.25 (159)	9.00 (229)	9.38 (238)	4.56 (116)	6.50 (165)	7/16 (11) X 3/4 (19)	65.2 (30)
5000	A	8.75 (222)	9.00 (229)	9.38 (238)	6.50 (165)	6.50 (165)	7/16 (11) X 3/4 (19)	104.8 (48)

Heavy Duty Motor Starters & Contactors

Enclosed, Class 14, 40

Dimensions



NEMA 1 General Purpose Enclosure (Standard width for use with or without CPT)^①

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 ³ / ₃₂ (279)	6 ³ / ₃₂ (163)	5 ¹ / ₃₂ (128)	8 ¹ / ₃₂ (209)	4 ¹ / ₈ (117)	¼	½	½-¾	¾-1	—	—	10 (5)	D68870
2-2½	w/o CPT	2	13 ¹ / ₃₂ (344)	7 ³ / ₃₂ (202)	6 ³ / ₈ (162)	10 ¹ / ₄ (260)	6 (152)	¼	½-¾	¾-1	1-1¼	—	—	15 (7)	D68870
3-3½	(100VA)	3	19 ¹ / ₈ (486)	11 ¹ / ₈ (289)	7 ¹ / ₁₆ (195)	15 ¹ / ₈ (397)	8 ¹ / ₄ (210)	¼	½-¾	1-1¼	1½-2	—	—	26 (12)	D68870
4	(300VA)	4	24 ¹ / ₈ (632)	13 ³ / ₈ (340)	8 ³ / ₈ (206)	21 ¹ / ₄ (552)	9 (229)	¼	½-¾	1¼-1½	2-2½	—	—	37 (17)	D68870
5	(300VA)	5	40 (1016)	20 (508)	11 (279)	37 ¹ / ₈ (956)	15 ¹ / ₄ (387)	¼	2-3	1¼-1½	½-¾	1¼-1½	2-3	135 (36)	D65608
6, 7	(300VA)	5	48 (1219)	20 (508)	12 ¹ / ₂ (317)	45 ¹ / ₁₆ (1148)	10 (254)	¼	2-2½	1¼-1½	½-¾	1¼-1½	2-2½	150 (44)	D65608013

NEMA 1 General Purpose Enclosure (Extra wide for use with CPT)^①

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	19 ¹ / ₈ (486)	11 ³ / ₈ (289)	7 ¹ / ₁₆ (195)	15 ¹ / ₈ (397)	8 ¹ / ₄ (210)	¼	½-¾	1-1¼	1½-2	—	—	26 (12)	D68870
2-2½	(200VA)	3	19 ¹ / ₈ (486)	11 ¹ / ₈ (289)	7 ¹ / ₁₆ (195)	15 ¹ / ₈ (397)	8 ¹ / ₄ (210)	¼	½-¾	1-1¼	1½-2	—	—	26 (12)	D68870
3-3½	(250VA)	4	24 ¹ / ₈ (632)	13 ³ / ₈ (340)	8 ³ / ₈ (206)	21 ¹ / ₄ (552)	9 (229)	¼	½-¾	1-1¼-1½	2-2½	—	—	37 (17)	D68870

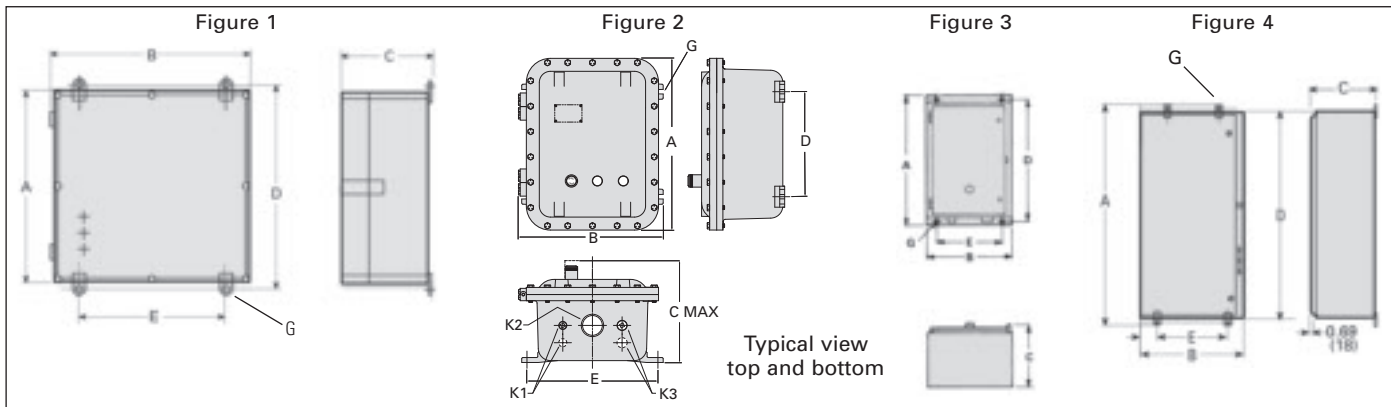
Note: Dimensions in inches (millimeters). Dimensions for reference, not for construction. Contact Sales Office for dimensions not listed.

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

Heavy Duty Motor Starters & Contactors

Enclosed, Class 14, 40

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		K1	K2	K3		
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		K1	K2	K3		
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		K1	K2	K3		
0-2½ ^①	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		K1	K2	K3		
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		K1	K2	K3		
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

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		K1	K2	K3		
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		K1	K2	K3		
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)	13.125 (333)	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

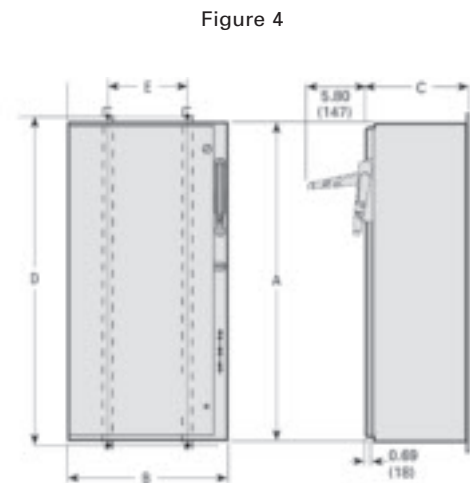
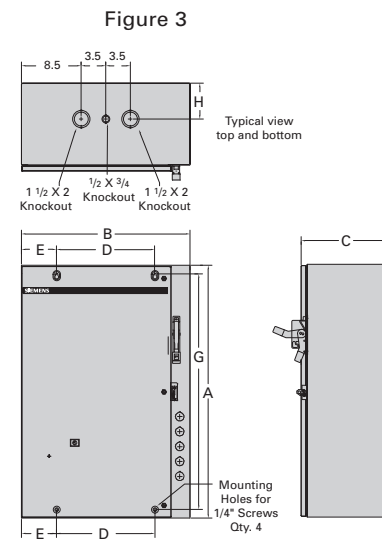
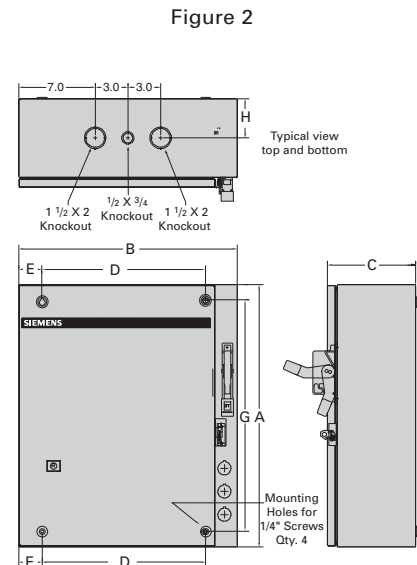
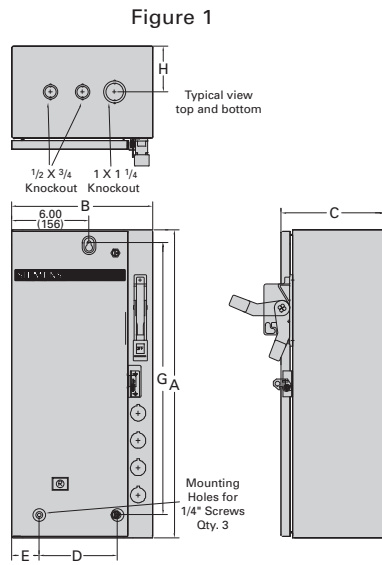
Note: Dimensions in inches (millimeters). Dimensions for reference, not for construction. Contact Sales Office for dimensions not listed.

① 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



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	2	24 (610)	20 (508)	8 (203)	15.00 (381)	2.125 (54)	21.00 (533)	3.50 (90)	48 (22)	D68774002
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

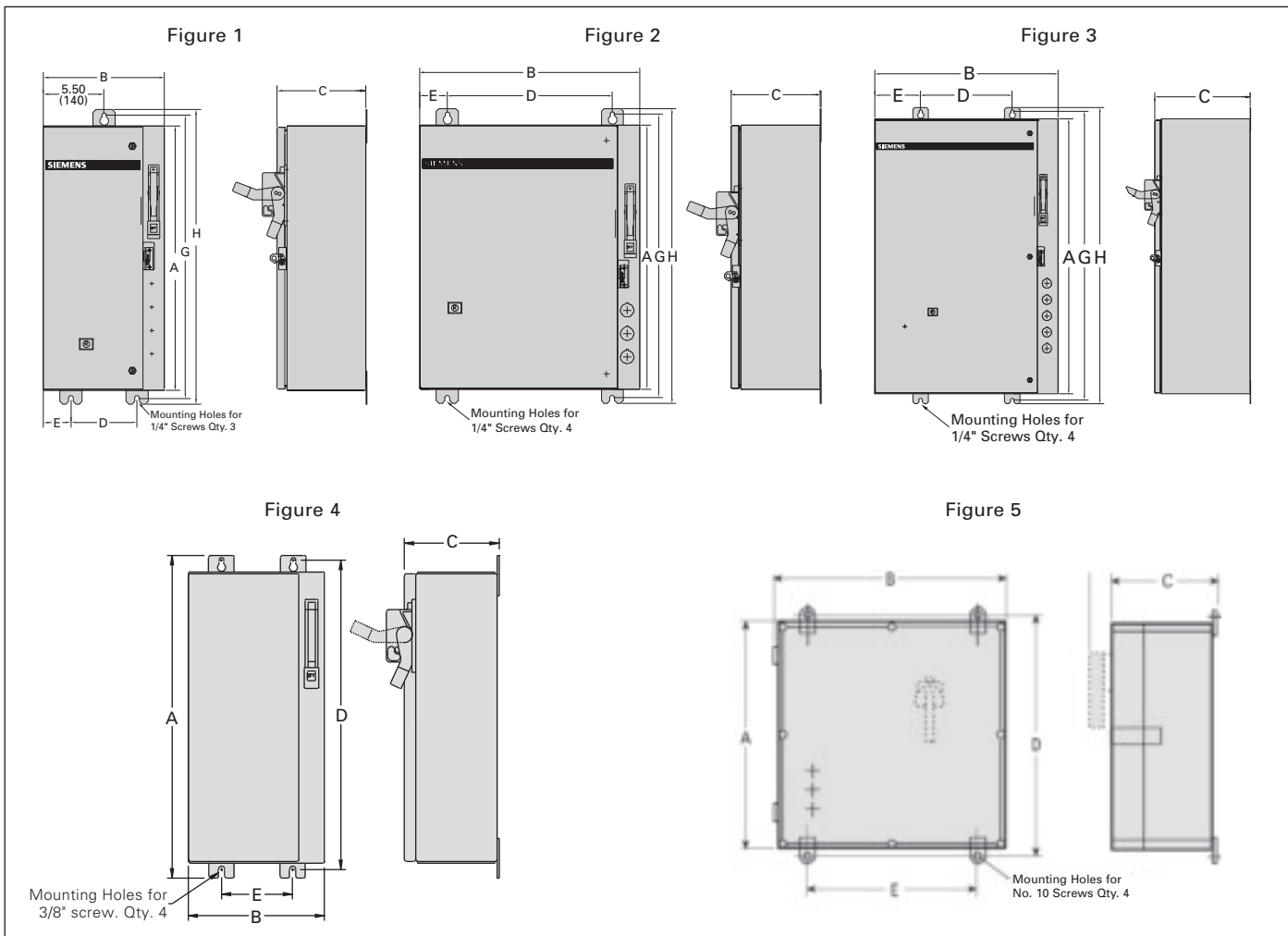
Size	Figure	Outline Dimensions			Mounting Dimensions				Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E	G	H		
0-2	2	24 (610)	20 (508)	8 (203)	15.00 (381)	2.125 (54)	21.00 (533)	3.50 (90)	48 (22)	D68774002
2 1/2, 3	3	36 (914)	24 (610)	8 (203)	14.00 (356)	5.00 (127)	33.50 (851)	5.00 (127)	101 (46)	D68774003

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

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
2½, 3	2	24 (610)	20 (508)	8 (203)	15.00 (381)	2.50 (64)	25.75 (654)	26.75 (680)	48 (22)	D56033
3½, 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
2½, 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

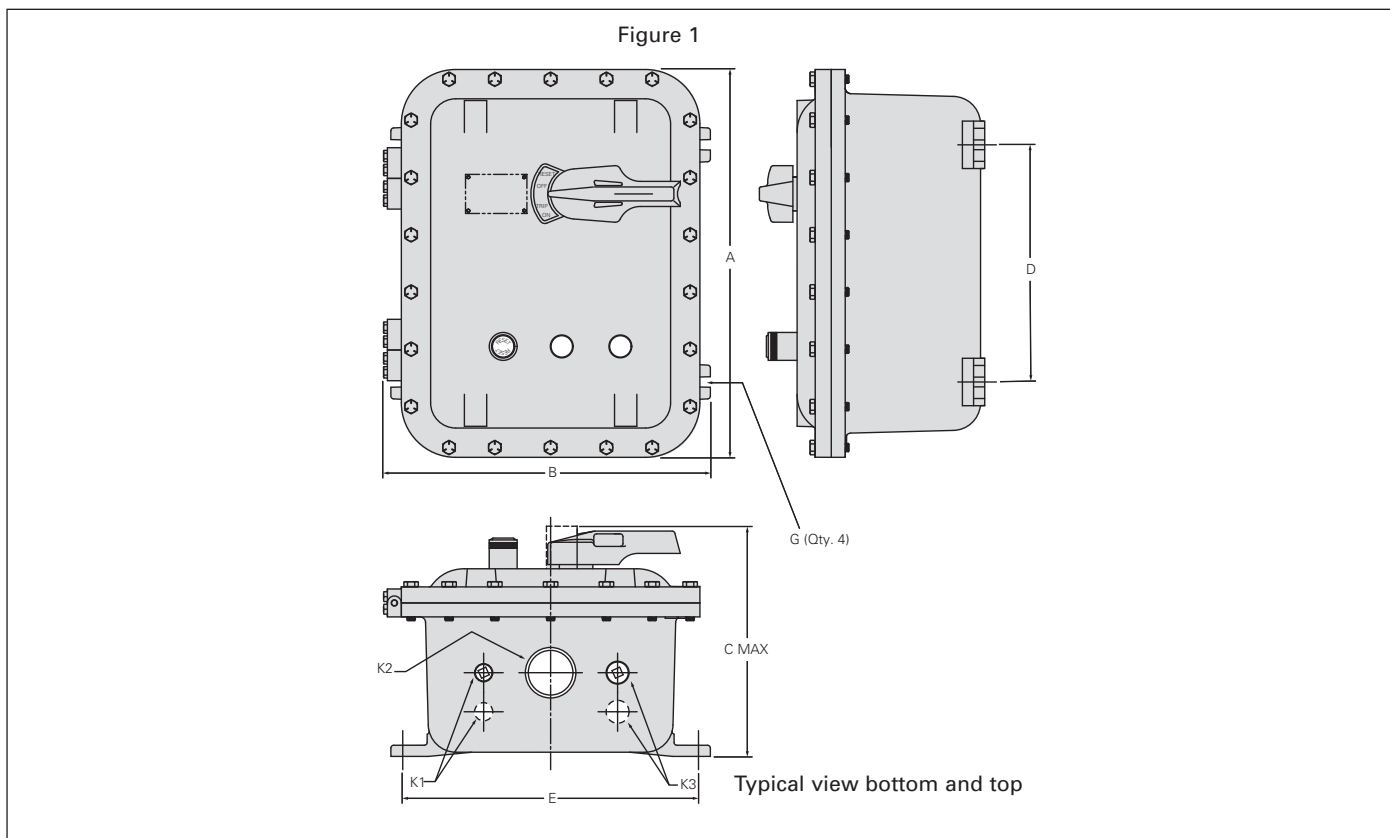
Size	Figure	Outline Dimensions			Mounting Dimensions				Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E	G	H		
0-1½	5	23.75 (603)	14.62 (371)	7.12 (181)	24.09 (612)	12.20 (310)	—	—	42 (19)	—
2-3½	5	23.75 (603)	23.75 (603)	8.50 (216)	24.06 (611)	21.30 (541)	—	—	44 (20)	—
4	5	39.37 (1000)	29.52 (750)	12.20 (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

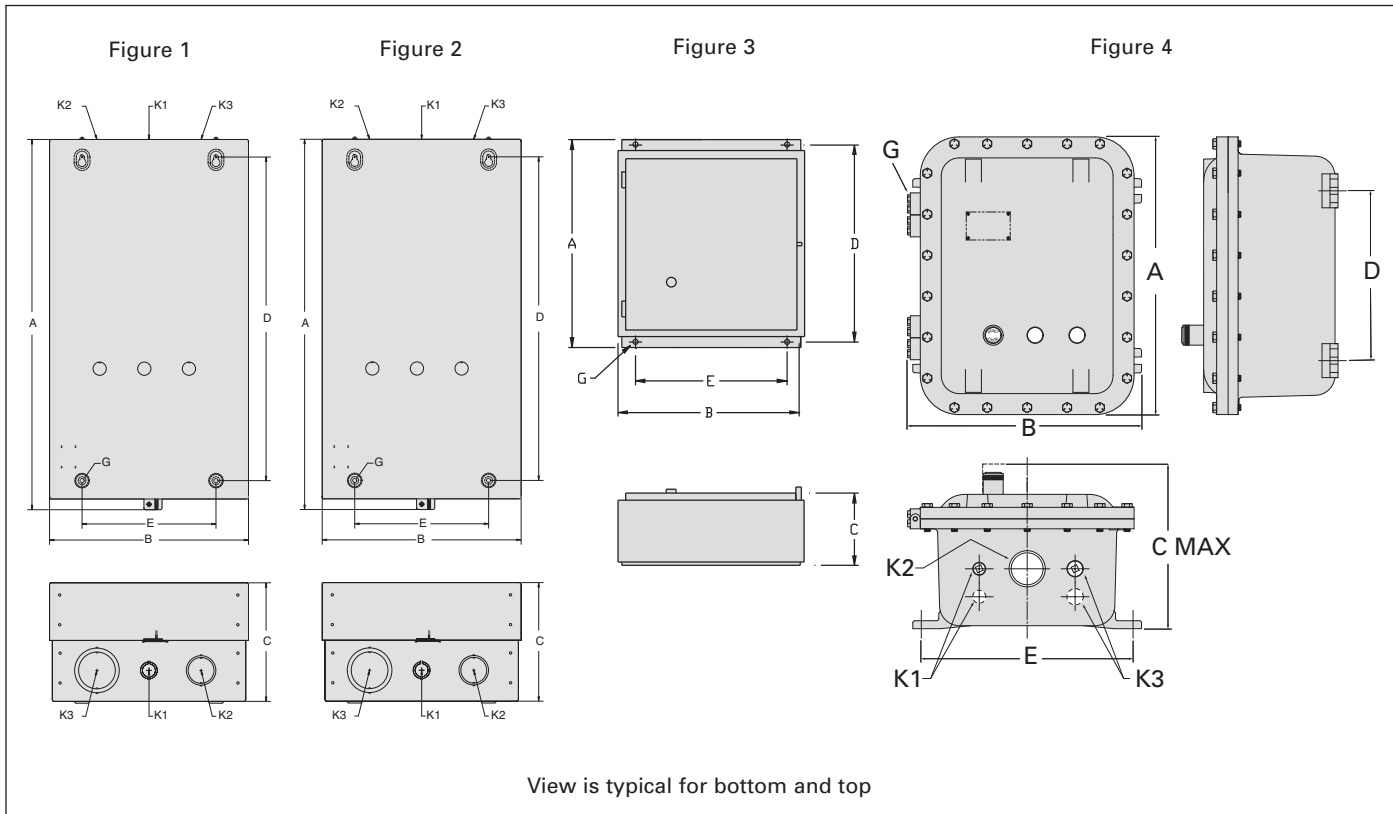
Size	Figure	Outline Dimensions			Mounting Dimensions		Mounting Screw	Conduit Size			Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E		K1	K2	K3		
0-1 $\frac{3}{4}$	1	17.38 (441)	14.69 (373)	10.38 (264)	10.63 (270)	13.25 (337)	$\frac{3}{8}$	$\frac{3}{4}$	2	$\frac{1}{2}$	60 (27)	24-139-865-003
2-3 $\frac{1}{2}$	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		K1	K2	K3	K4		
00-2½ (200 VA)	1	19½ (486)	11½ (289)	7½ (195)	15½ (397)	8¼ (210)	¼	½-¾	1-1½	1½-2	—	30 (14)	D68870
3-4 (300 VA)	2	24½ (632)	13½ (340)	8½ (206)	21½ (552)	9 (229)	¼	½-¾	1¼-1½	2-2½	—	52 (24)	D68870
5 (300 VA)		40 (1016)	20 (508)	11 (279)	37½ (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)	45½ (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		K1	K2	K3		
0-1¼	3	13 (330)	12½ (321)	5½ (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)	3	29 (737)	23¾ (589)	9¼ (235)	27½ (699)	20 (508)	¾	—	—	—	64 (29)	D43292
4												
5 (Painted)		40 (1016)	20 (508)	11 (279)	41 (1041)	10 (254)	¾	—	—	—		D65608007
6, 7 (Painted)		48 (1219)	20 (508)	12½ (317)	49 (1244)	10 (254)	¾	—	—	—		D65608009

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

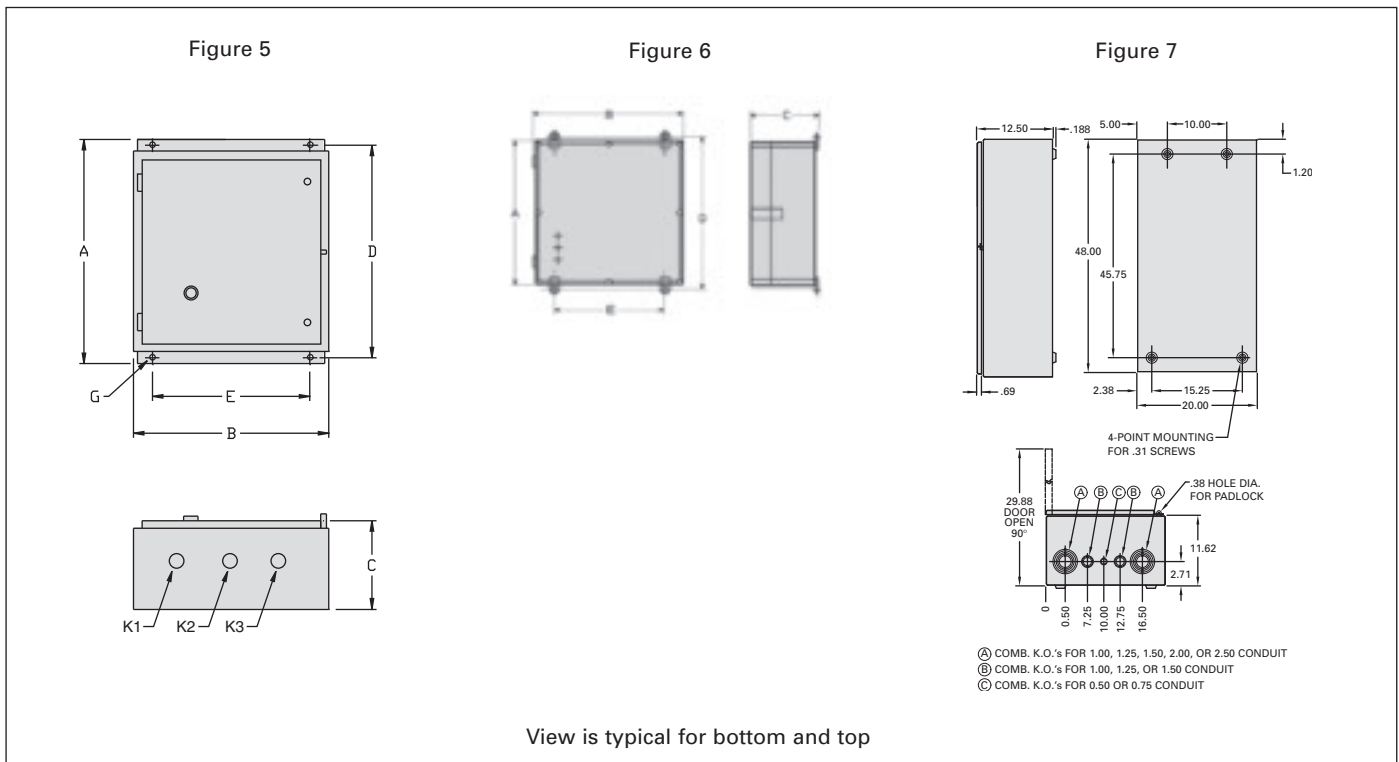
Size	Figure	Outline Dimensions			Mounting Dimensions		Mtg Screw	Conduit Size			Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E		K1	K2	K3		
0-2½	4	28¼ (718)	16¼ (413)	9¼ (235)	18¾ (467)	15¼ (400)	½	½	3	¾	140	24-139-865-004
3-4	4	32¼ (819)	18¼ (464)	9¾ (243)	22½ (572)	17¾ (451)	½	½	3	¾	150	24-139-865-005

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

Reversing Heavy Duty Starters & Contactors

Enclosed, Class 22, 43

Dimensions



NEMA 12/3R 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		K1	K2	K3		
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	25¼ (637)	17¾ (437)	7¾ (187)	24¾ (618)	14 (356)	¼	—	—	—	53 (24)	D17150
3-3½ (w/ CPT)	5	29¼ (738)	23¾ (589)	9¼ (235)	27¾ (700)	20 (508)	⅝	—	—	—	64 (29)	D17150
4												
5	7	40 (1016)	20 (508)	11 (279)	41 (1041)	10 (254)	¾	—	—	—		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		K1	K2	K3		
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

Figure 1

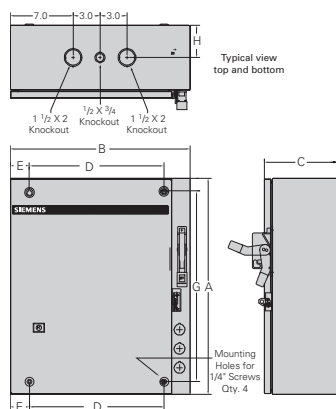


Figure 2

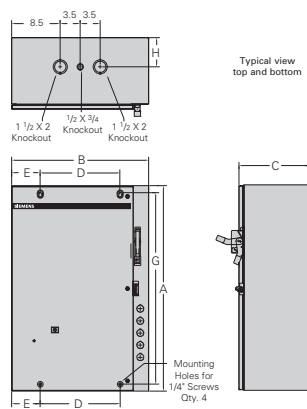


Figure 3

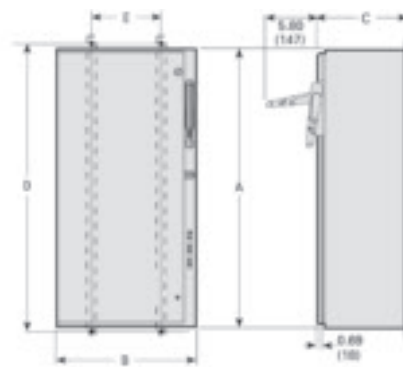


Figure 4

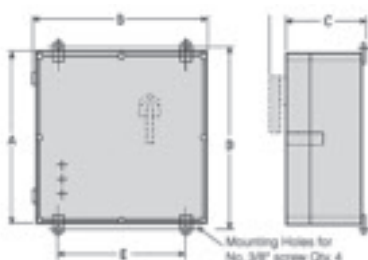


Figure 5

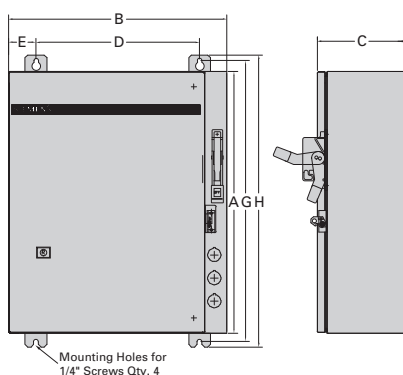
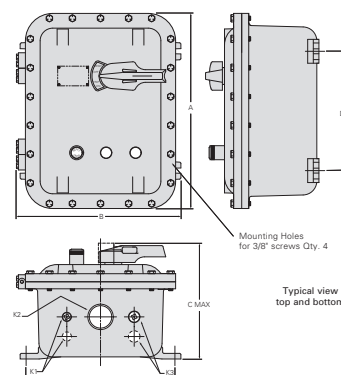


Figure 6



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 12/3R/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		K1	K2	K3		
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												

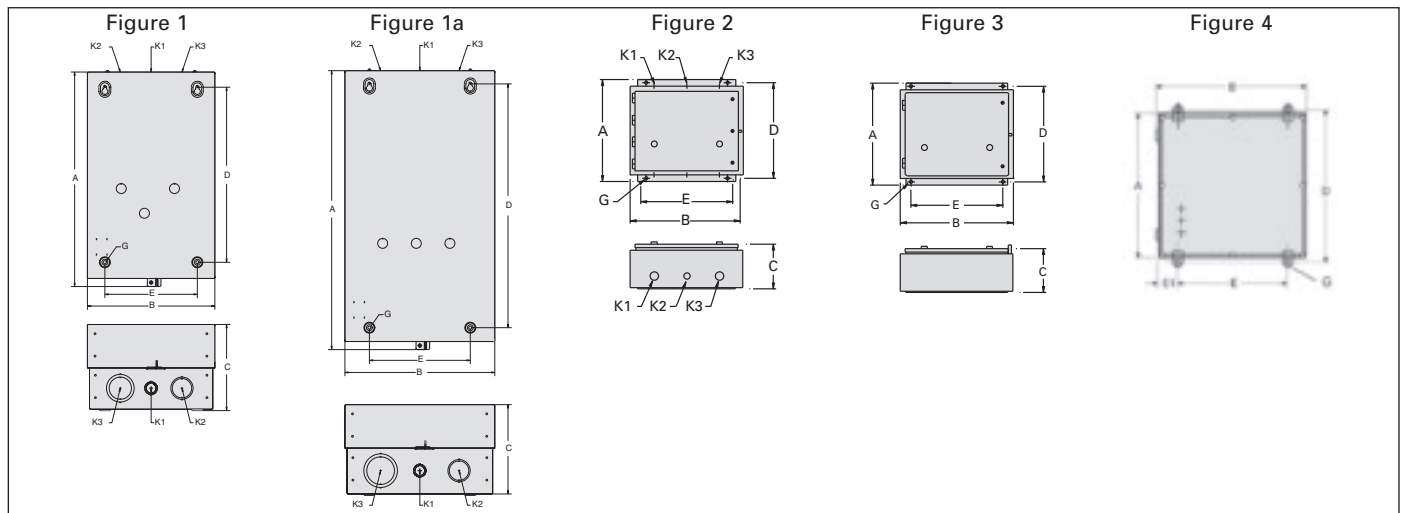
Contact Sales Office

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)														
		Outline Dimensions			Mounting Dimensions		Mtg Screw	Conduit Size			Approx Ship Wt Lbs (Kg)	Ref Dwg		
Size	Fig	A	B	C	D	E	G	K1	K2	K3				
0-1 ¾ w/o CPT	1	19 ⅞ (486)	11 ⅜ (289)	7 ⅞ (195)	15 ⅜ (397)	8 ¼ (210)	¼	½-¾	1-1 ¼	1 ½-2	26 (12)	D68870		
0-1 ¾ (200 VA)	1a	24 ⅞ (632)	13 ⅜ (340)	8 ⅞ (206)	21 ¾ (552)	9 (229)	¼	½-¾	1 ¼-1 ½	2-2 ½	52 (24)	D68870		
2-2 ½	2	16 (406)	17.13 (435)	7.63 (194)	15.25 (387)	14 (355)	¼	½-¾	1 ¼-1 ½	1 ¼-1 ½	39 (20)	D42932001		
3-3 ½	2	18.31 (465)	21.19 (538)	7.38 (187)	17.56 (446)	18 (457)	¼	1 ¼-1 ½	½-¾	1 ½-2	60 (27)	D72956002		
4	3	29 (737)	23 ⅞ (589)	9 ¼ (235)	27 ½ (699)	20 (508)	⅝	—	—	—	61 (28)	D43292001		
NEMA 4/4X Stainless Steel Enclosure (Standard width for use with or without CPT)														
0-1 ¾ w/o CPT	3	13 (330)	12 ⅞ (321)	5 ⅜ (137)	12 ¼ (311)	10 (254)	¼	—	—	—	34 (15)	D41917000		
0-1 ¾ w/ CPT	3	16 (406)	17 ⅞ (435)	7 ⅞ (194)	15 ¼ (387)	14 (355)	¼	—	—	—	47 (21)			
2-2 ½ w/o CPT	3	16 (406)	17 ⅞ (435)	7 ⅞ (194)	15 ¼ (387)	14 (355)	¼	—	—	—	47 (21)			
2-2 ½ w/ CPT	3	25 ⅞ (637)	17 ⅞ (437)	7 ⅞ (187)	24 ⅞ (618)	14 (355)	¼	—	—	—	55 (25)			
3-3 ½	3	29 (737)	23 ⅞ (589)	9 ¼ (235)	27 ½ (699)	20 (508)	⅝	—	—	—	61 (28)	D43292001		
4	3	29 (737)	23 ⅞ (589)	9 ¼ (235)	27 ½ (699)	20 (508)	⅝	—	—	—	61 (28)	D43292001		
NEMA 12/3R Industrial Use Enclosure (Standard width for use with or without CPT)														
0-1 ¾ w/o CPT	3	13 (330)	12 ⅞ (321)	5 ⅜ (137)	12 ¼ (311)	10 (254)	¼	—	—	—	34 (15)			
0-1 ¾ w/ CPT	3	16 (406)	17 ⅞ (435)	7 ⅞ (194)	15 ¼ (387)	14 (355)	¼	—	—	—	47 (21)	D17150010		
2-2 ½ w/o CPT	3	16 (406)	17 ⅞ (435)	7 ⅞ (194)	15 ¼ (387)	14 (355)	¼	—	—	—	47 (21)	D17150010		
2-2 ½ w/ CPT	3	25 ⅞ (637)	17 ⅞ (437)	7 ⅞ (187)	24 ⅞ (618)	14 (355)	¼	—	—	—	55 (25)			
3-4	3	29 (737)	23 ⅞ (589)	9 ¼ (235)	27 ½ (699)	20 (508)	⅝	—	—	—	61 (28)	D19673000		
NEMA 4X Fiberglass Enclosure (Standard width for use with or without CPT)														
0-2 ½	4	23.780 (604)	23.780 (604)	6.890 (175)	—	—	¼	—	—	—	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 ½ w/o CPT	1	19 ⅞ (486)	11 ⅜ (289)	7 ⅞ ₁₆ (195)	15 ⅜ (397)	8 ¼ (210)	¼	½-¾	1-1 ¼	1 ½-2	30 (14)	D68870
0-2 ½ (200 VA)	1a	24 ⅞ (632)	13 ⅜ (340)	8 ⅞ (206)	21 ¾ (552)	9 (229)	¼	½-¾	1 ¼-1 ½	2-2 ½	52 (24)	D68870
3-4 w/o CPT	1a	24 ⅞ (632)	13 ⅜ (340)	8 ⅞ (206)	21 ¾ (552)	9 (229)	¼	½-¾	1 ¼-1 ½	2-2 ½	52 (24)	D68870
NEMA 4/4X Stainless Steel Enclosure (Standard width for use with or without CPT)												
0-1 ¾ w/o CPT	3	13 (330)	12 ⅞ (321)	5 ⅜ (137)	12 ¼ (311)	10 (254)	¼	—	—	—	34 (15)	D43292001
0-1 ¾ w/ CPT	3	16 (406)	17 ⅞ (435)	7 ⅞ (194)	15 ¼ (387)	14 (355)	¼	—	—	—	41 (19)	
2-2 ½ w/o CPT	3	16 (406)	13 ¼ (337)	6 (152)	15 ¼ (387)	11 (279)	¼	—	—	—	41 (19)	
2-2 ½ w/ CPT	3	16 (406)	17 ⅞ (435)	7 ⅞ (194)	15 ¼ (387)	14 (355)	¼	—	—	—	41 (19)	
3-3 ½ w/o CPT	3	25 ⅞ ₁₆ (637)	17 ⅞ ₁₆ (187)	7 ⅞ (187)	24 ⅞ ₁₆ (618)	14 (355)	¼	—	—	—	55 (25)	
3-3 ½ w/ CPT	3	29 (737)	23 ⅞ ₁₆ (589)	9 ¼ (235)	27 ½ (699)	20 (508)	⅞ ₁₆	—	—	—	61 (28)	
4	3	29 (737)	23 ⅞ ₁₆ (589)	9 ¼ (235)	27 ½ (699)	20 (508)	⅞ ₁₆	—	—	—	61 (28)	
NEMA 12/3R Industrial Use Enclosure (Standard width for use with or without CPT)												
0-1 ¾ w/o CPT	3	13 (330)	12 ⅞ (321)	5 ⅜ (137)	12 ¼ (311)	10 (254)	¼	—	—	—	34 (15)	D17150010
0-1 ¾ w/CPT	3	16 (406)	17 ⅞ (435)	7 ⅞ (194)	15 ¼ (387)	14 (355)	¼	—	—	—	41 (19)	
2-2 ½ w/o CPT	3	16 (406)	13 ¼ (337)	6 ⅞ (156)	15 ¼ (387)	11 (279)	¼	—	—	—	41 (19)	
2-2 ½ w/CPT	3	16 (406)	17 ⅞ (435)	7 ⅞ (194)	15 ¼ (387)	14 (355)	¼	—	—	—	41 (19)	D17150010
3-3 ½ w/o CPT	3	25 ⅞ ₁₆ (637)	17 ⅞ ₁₆ (187)	7 ⅞ (187)	24 ⅞ ₁₆ (618)	14 (355)	¼	—	—	—	55 (25)	
3-4 w/CPT	3	29 ⅞ ₁₆ (738)	23 ⅞ ₁₆ (589)	9 ¼ (235)	27 ⅞ ₁₆ (700)	20 (508)	⅞ ₁₆	—	—	—	61 (28)	D19673000
NEMA 4X Fiberglass Enclosure (Standard width for use with or without CPT)												
0-2 ½	4	23.780 (604)	23.780 (604)	6.890 (175)	—	—	¼	—	—	—	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

Figure 1

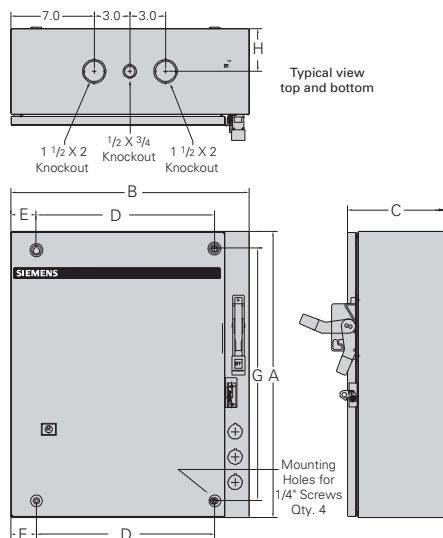


Figure 2

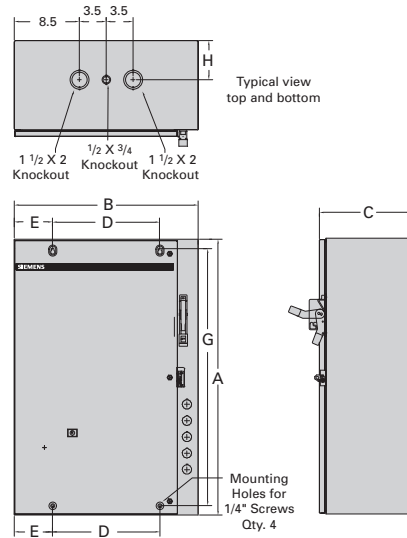


Figure 3

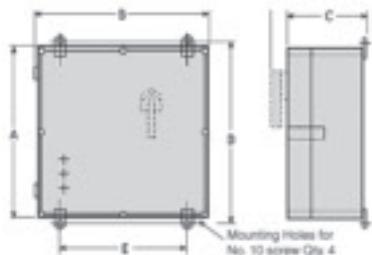
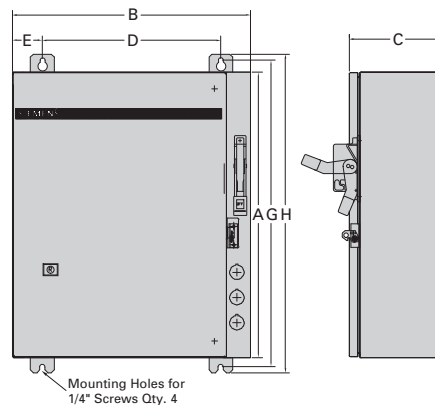


Figure 4



NEMA 1 Standard Width 0-4

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

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

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

Nema 4X Fiberglass 0-4

Size	Figure	Outline Dimensions			Mounting Dimensions		Mtg Screw	Conduit Size			Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E		K1	K2	K3		
0-1 $\frac{3}{4}$	3	23.780 (604)	14.680 (373)	6.890 (175)	24.125 (613)	12.250 (311)	$\frac{1}{4}$	—	—	—	18 (8)	—
2-4	3	23.780 (604)	23.780 (604)	6.890 (175)	24.125 (613)	21.250 (540)	$\frac{1}{4}$	—	—	—	28 (13)	—

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

Reduced Voltage Starters

Class 36, 37

Dimensions

Figure 1

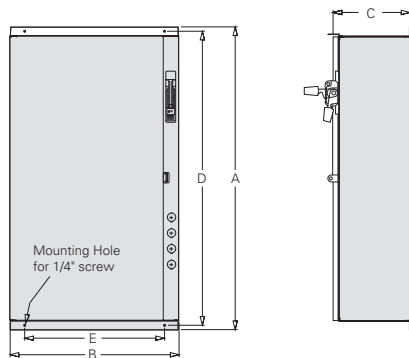
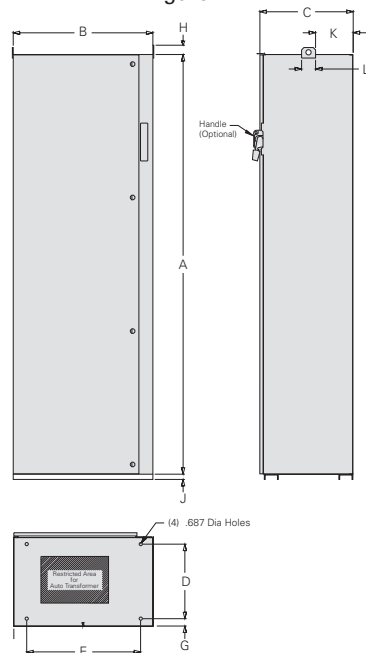
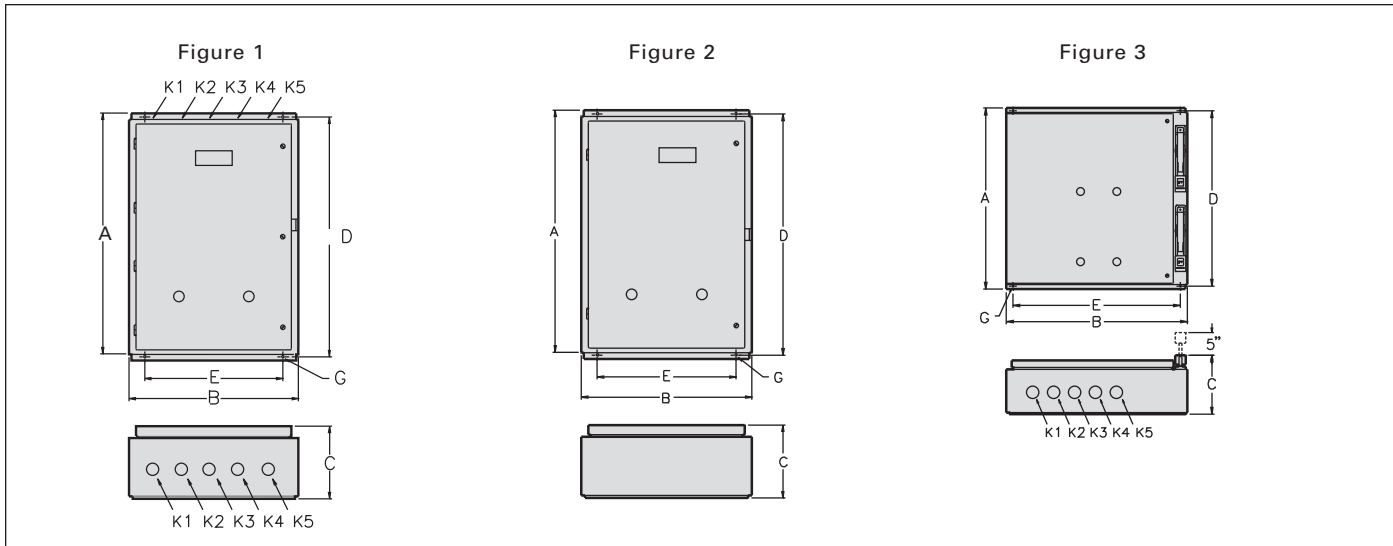


Figure 2



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

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



Class 83 Non-Combination Type

Enclosure Type	Size	Outline Dimensions				Mounting Dimensions		Mounting Screw	Conduit Size					Approx Ship Wt Lbs
		Figure	A	B	C	D	E		K1	K2	K3	K4	K5	
NEMA 1	0-1¼	1	19½	16⅞	6½	18¾	13	¼	1¼-1½	½-¾	½	½-¾	1¼-1½	20
	2, 2½	1	25⅞	17⅞	7⅞	24⅞	14	¼	1¼-1½	½-¾	½-¾	1¼-1½	1½-2	57
	3-4	1	29⅞	23⅞	9¼	27⅞	20	⅝	2-2½	1¼-1½	½-¾	1¼-1½	2-2½-3	93
NEMA 12	0-1¼	2	19½	16⅞	6½	18¾	13	¼	—	—	—	—	—	20
	2, 2½	2	25⅞	17⅞	7⅞	24⅞	14	¼	—	—	—	—	—	57
	3-4	2	29⅞	23⅞	11¼	27⅞	20	⅝	—	—	—	—	—	93
NEMA 4/4X ^②	0-1¼	2	19½	16⅞	6½	18¾	13	¼	—	—	—	—	—	20
	2, 2½	2	25⅞	17⅞	7⅞	24⅞	14	¼	—	—	—	—	—	57
	3-4	2	29⅞	23⅞	9¼	27⅞	20	⅝	—	—	—	—	—	93

Class 84 Combination Type

Enclosure Type	Size	Outline Dimensions				Mounting Dimensions		Mounting Screw	Conduit Size					Approx Ship Wt Lbs
		Figure	A	B	C	D	E		K1	K2	K3	K4	K5	
NEMA 1	0-2½	3	34⅞	24⅞	7⅞	33	20	⅝	⅞-1⅞	⅞-1⅞	1⅞-1⅞	1⅞-1⅞	1⅞-1⅞	70
	3-4	3	56	28½	9⅞	54⅞	24¼	⅝	—	—	—	—	—	106
NEMA 4/4X/12 ^③	0-4	3	34⅞	24⅞	7⅞	33	20	⅝	—	—	—	—	—	—

① Dimensions may vary for size 3 & 4 stainless steel enclosures.

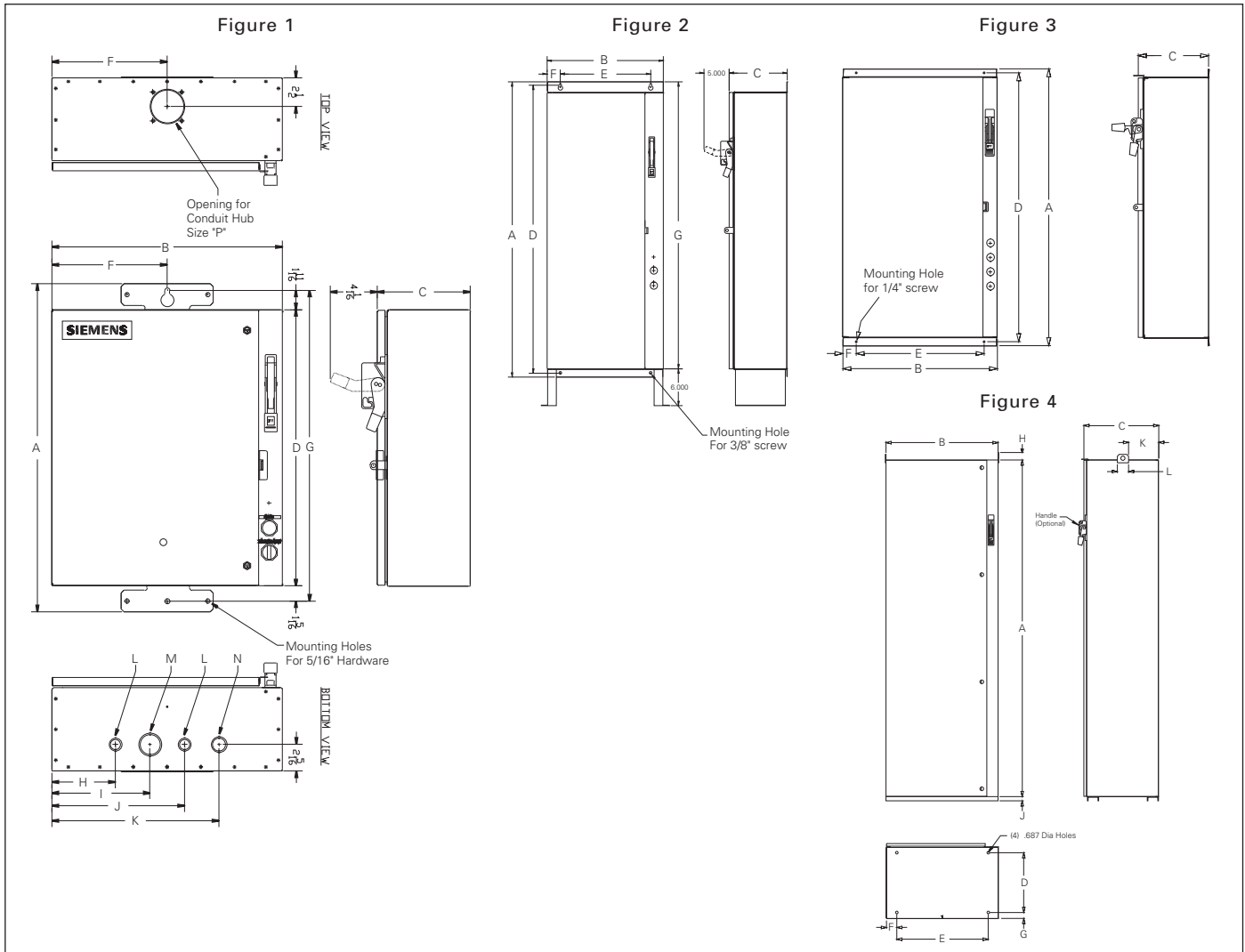
② NEMA 4 Painted, 4X Stainless Steel.

Pump Control Panels

Class 81, 87, 88

Dimensions

Outline Drawings



Class 81 Pump Panel

Size	Figure	A	B	C	D	E	F	G	H	I	J	K	Conduit Knockout			Hub
													L	M	N	P
25-50 Amp	1	28 ¹ / ₂	11	8 ¹ / ₁₆	24	7	5 ¹ / ₂	27	3	5 ¹ / ₂	8	14 ¹ / ₂	1 ¹ / ₄ x 1	1 ¹ / ₂ x 3/4	1 ¹ / ₂ x 3/4	1 ¹ / ₂
>50 Amp	1	28 ¹ / ₂	20	8 ¹ / ₁₆	24	7	10	27	5 ¹ / ₂	8 ¹ / ₂	11 ¹ / ₂	14 ¹ / ₂	1 ¹ / ₂ x 3/4	1 ¹ / ₄ x 1	3/4 x 1	1 ¹ / ₂

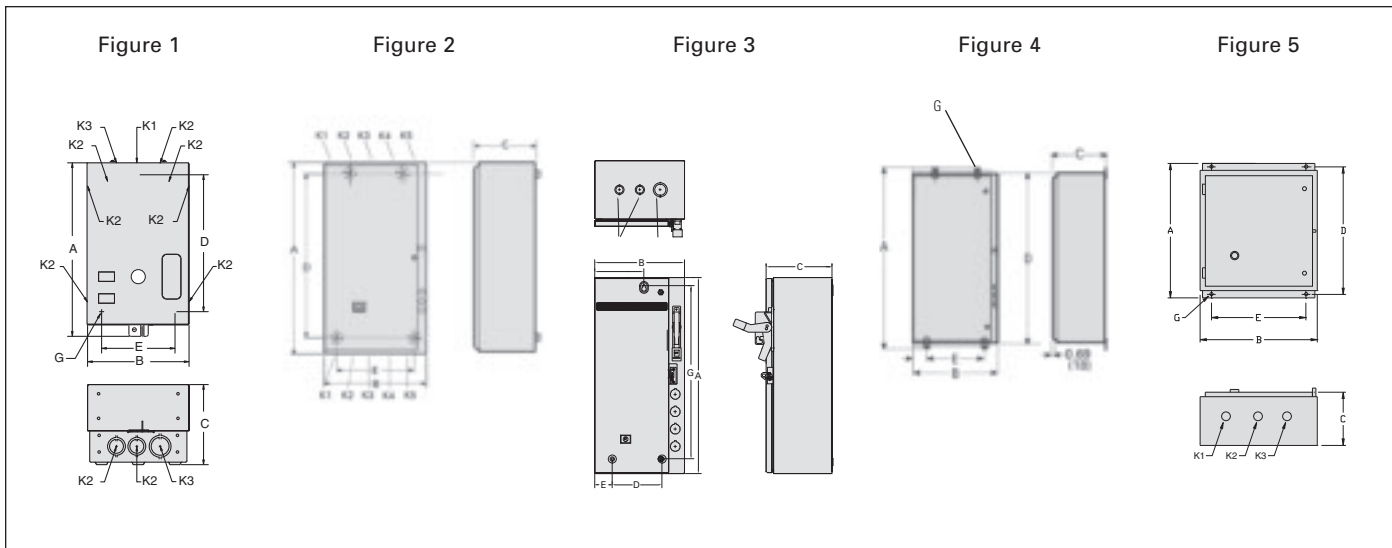
Class 87 Standard and Vacuum Starter Pump Panel

Size	Figure	A	B	C	D	E	F	G	H	I	J	K	Conduit Knockout			Hub
													L	M	N	P
1-2 ¹ / ₂	1	28 ¹ / ₂	20	8 ¹ / ₁₆	24	—	10	27	5 ¹ / ₂	8 ¹ / ₂	11 ¹ / ₂	14 ¹ / ₂	1 ¹ / ₂ x 3/4	1 ¹ / ₄ x 1	3/4 x 1	1 ¹ / ₂
3-4	1	40 ¹ / ₂	24	8 ³ / ₃₂	36	—	12	39	8 ¹ / ₁₆	11 ¹⁵ / ₁₆	15 ⁷ / ₁₆	—	1 ³ / ₃₂ x 2 ⁵ / ₃₂	7/8 x 1 ¹ / ₈	—	2 ¹ / ₂
5	2	72 ⁵ / ₃₂	20	10	71	16	2 ¹ / ₈	70 ²⁹ / ₃₂	—	—	—	—	—	—	—	—
6	2	79 ¹ / ₈	22	12 ¹⁵ / ₁₆	78	18	2 ¹ / ₈	77 ¹ / ₈	—	—	—	—	—	—	—	—
4 (Vac)	2	55 ³ / ₃₂	24 ³ / ₈	9 ²² / ₃₂	54 ²⁶ / ₃₂	20 ¹ / ₄	2 ¹ / ₈	54 ²³ / ₃₂	26 ³ / ₁₆	—	5	27 ¹⁴ / ₃₂	—	—	—	—

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												
2-2 ¹ / ₂	1-2	1-2 ¹ / ₂	3	43 ⁵ / ₁₆	24 ⁵ / ₃₂	11	42 ¹¹ / ₃₂	20	2 ¹ / ₁₆	—	—	—	—	—
3-3 ¹ / ₂	2 ¹ / ₂ -3 ¹ / ₂	3-3 ¹ / ₂	3	55 ⁵ / ₁₆	28 ⁹ / ₃₂	11	54 ¹¹ / ₃₂	24	2 ¹ / ₈	—	—	—	—	—
4	4	4	3	74 ²¹ / ₃₂	28 ⁹ / ₃₂	11	73 ¹³ / ₃₂	24	2 ¹ / ₈	—	—	—	—	—
5, 6	5, 6	5, 6	4	90	30	20	16	24 ⁷ / ₁₆	2 ³ / ₄	1 ¹ / ₂	—	1 ¹ / ₈	8 ¹ / ₁₆	3

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



Enclosed Class LE, CLM, CM

Non-Combination	LE Lighting Rating	CLM Lighting Rating	Fig	Outline Dimensions			Mounting Dimensions		Mtg Screw	Conduit Size				
				A	B	C	D	E		K1	K2	K3	K4	K5
NEMA 1	without CPT	20A (2-12p), 30-60A (3p)	1	10 ³ / ₂	6 ¹ / ₂	5 ¹ / ₂	8 ¹ / ₂	4 ¹ / ₂	1/4"	1/2"	1/2-3/4"	1/2-1"	—	—
		—	1	13 ¹ / ₂	7 ¹ / ₂	6 ¹ / ₂	10 ¹ / ₂	6	1/4"	1/2-3/4"	1/2-1"	1-1 ¹ / ₂	—	—
		30-60A (6-12p), 100A (3p)	3	16	17 ¹ / ₂	7 ¹ / ₂	15 ¹ / ₂	14	1/4"	1/2-3/4"	1-1 ¹ / ₂	1-1 ¹ / ₂	—	—
		—	1	19 ¹ / ₂	11 ¹ / ₂	7 ¹ / ₂	15 ¹ / ₂	8 ¹ / ₂	1/4"	1/2-3/4"	1-1 ¹ / ₂	1-1 ¹ / ₂	—	—
		200A (2-5p)	1	24 ¹ / ₂	13 ¹ / ₂	8 ¹ / ₂	21 ¹ / ₂	9	1/4"	1/2-3/4"	1-1 ¹ / ₂	2 ¹ / ₂	—	—
		200-400A (3p)	5	26	17 ¹ / ₂	12 ¹ / ₂	25 ¹ / ₂	15 ¹ / ₂	1/4"	1/2-3/4"	1-1 ¹ / ₂	1-1 ¹ / ₂	—	—
		300-400A (2-5p)	2	48	20	12 ¹ / ₂	45 ¹ / ₂	10	1/4"	2-2 ¹ / ₂	1-1 ¹ / ₂	1-1 ¹ / ₂	1-1 ¹ / ₂	2-2 ¹ / ₂
	with CPT	20A (2-12p), 30-60A (3-9p), 100A (3p)	1	19 ¹ / ₂	11 ¹ / ₂	7 ¹ / ₂	15 ¹ / ₂	8 ¹ / ₂	1/4"	1/2-3/4"	1-1 ¹ / ₂	1-1 ¹ / ₂	—	—
		30-60A (6-12p)	3	16	17 ¹ / ₂	7 ¹ / ₂	15 ¹ / ₂	14	1/4"	1/2-3/4"	1-1 ¹ / ₂	1-1 ¹ / ₂	—	—
		30-60A (12p)	1	24 ¹ / ₂	13 ¹ / ₂	8 ¹ / ₂	21 ¹ / ₂	9	1/4"	1/2-3/4"	1-1 ¹ / ₂	2-2 ¹ / ₂	—	—
		200-400A (3p)	5	26	17 ¹ / ₂	12 ¹ / ₂	25 ¹ / ₂	15 ¹ / ₂	1/4"	—	1-1 ¹ / ₂	1-1 ¹ / ₂	—	—
NEMA 12/3R & 4/4X	without CPT	20A (2-12p), 30-60A (3p)	5	16	13 ¹ / ₂	6 ¹ / ₂	15 ¹ / ₂	11	1/4"	—	—	—	—	—
		—	3	16	17 ¹ / ₂	7 ¹ / ₂	15 ¹ / ₂	14	1/4"	—	—	—	—	—
		60-100A (2-5p)	5	16	13	9 ¹ / ₂	15 ¹ / ₂	11	1/4"	—	—	—	—	—
		60A (6-12p)	2	19	22	8								
		30-60A (6-12p), 100A (3p)	5	26	13 ¹ / ₂	7 ¹ / ₂	25 ¹ / ₂	10	1/4"	—	—	—	—	—
		200-400A (3p)	5	26	17 ¹ / ₂	12 ¹ / ₂	23 ¹ / ₂	15 ¹ / ₂	1/4"	—	—	—	—	—
		300-400A (3p)	4	48	20	12 ¹ / ₂	49	10	1/4"	—	—	—	—	—
		300-400A (2-5p)	2	48	20	12 ¹ / ₂	45 ¹ / ₂	10	1/4"	2-2 ¹ / ₂	1-1 ¹ / ₂	1-1 ¹ / ₂	1-1 ¹ / ₂	2-2 ¹ / ₂
	with CPT	20A (2-12p), 30-60A (3p)	5	16	13 ¹ / ₂	6 ¹ / ₂	15 ¹ / ₂	11	1/4"	—	—	—	—	—
		—	3	16	17 ¹ / ₂	7 ¹ / ₂	15 ¹ / ₂	14	1/4"	—	—	—	—	—
		30-60A (6-12p), 100A (3p)	5	26	13 ¹ / ₂	7 ¹ / ₂	25 ¹ / ₂	10	1/4"	—	—	—	—	—
		—	5	16	13	9 ¹ / ₂	15 ¹ / ₂	11	1/4"	—	—	—	—	—
		60-100A (2-5p)	5	16	13	9 ¹ / ₂	15 ¹ / ₂	11	1/4"	—	—	—	—	—
		60A (6-12p)	2	19	22	8								
		200-400A (3p)	5	26	17 ¹ / ₂	12 ¹ / ₂	25 ¹ / ₂	15 ¹ / ₂	1/4"	—	—	—	—	—
		300-400A (3p)	4	48	20	12 ¹ / ₂	49	10	1/4"	—	—	—	—	—

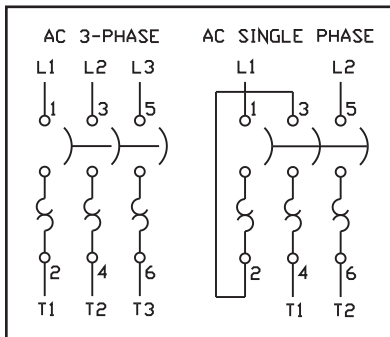
Combination	Type	LE, CM	Fig	Outline Dimensions					G	K1	K2	K3
		Lighting Ratings		A	B	C	D	E				
NEMA 12/3R & 4/4X	with & without CPT	Fusible and Non-fusible Disconnect	20-60A	3	24	11	8					
			100A	3	24	20	8					
			200A	3	46	20	10					
			300A	3	76	22	13					
	Circuit Breaker	20-100A	3	24	11	8						

Manual Control

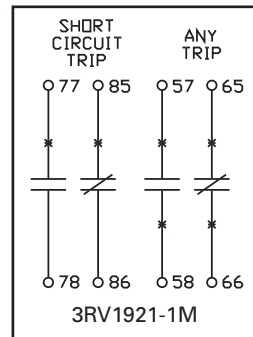
Class 11 - 3RV, SMF, MMS

Wiring Diagrams

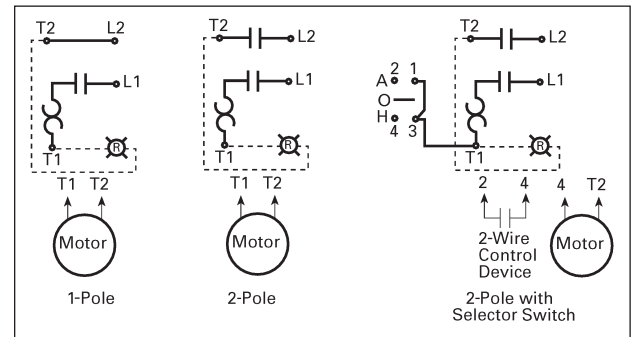
Class 11 - 3RV



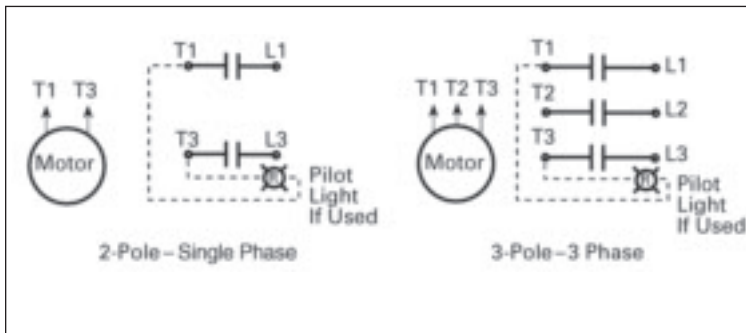
Signaling Contact for Class 11 - 3RV



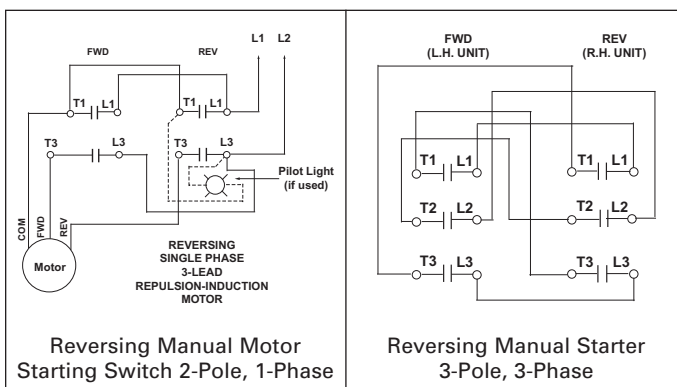
Typical Wiring Diagrams—Class SMF



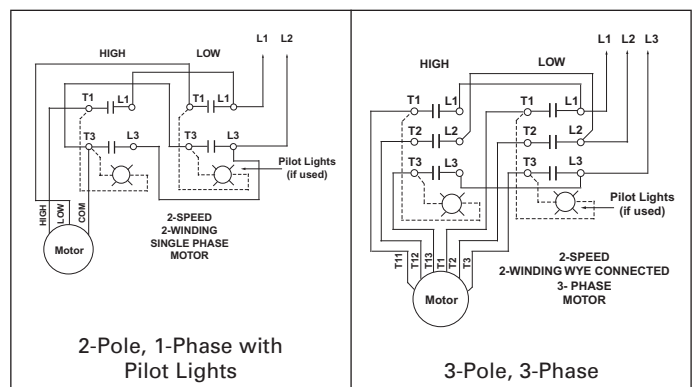
Typical Wiring Diagrams—MMS



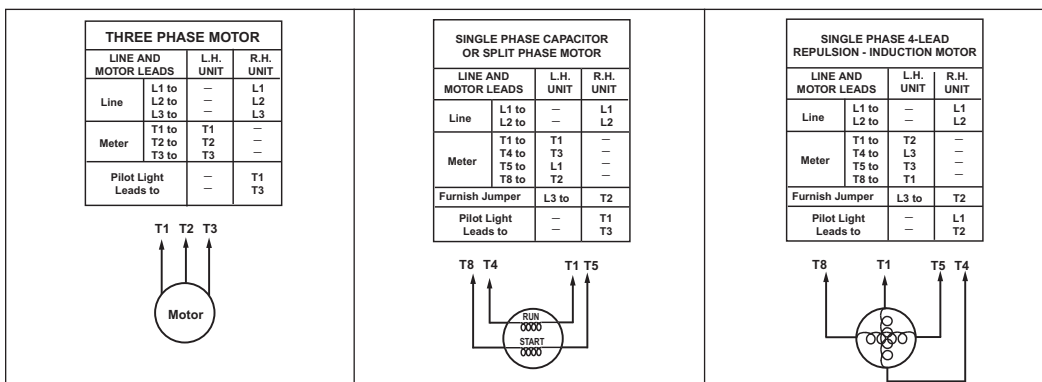
AC Reversing Manual Starter and Manual Motor Starting Switches



AC 2-Speed Manual Motor Starting Switches

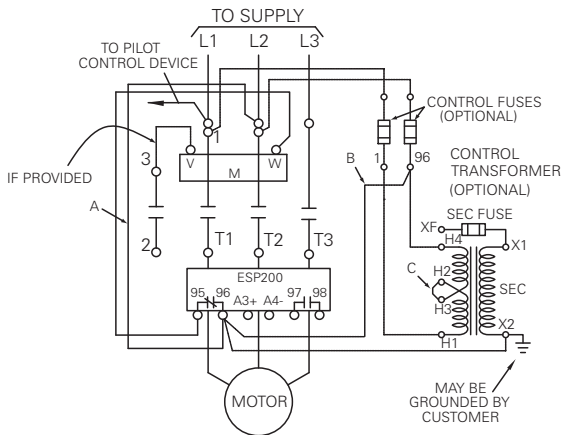


3-Pole Reversing Switches

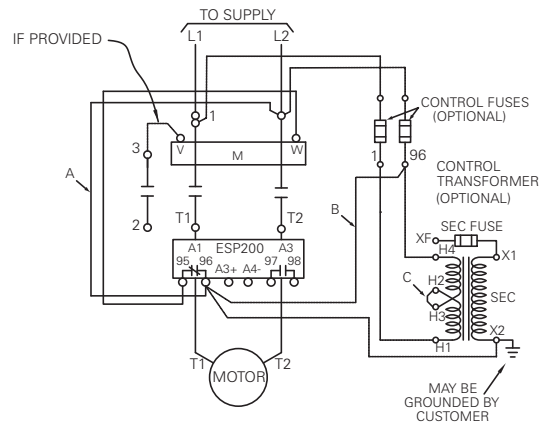


3-Phase and Single Phase Magnetic Starters

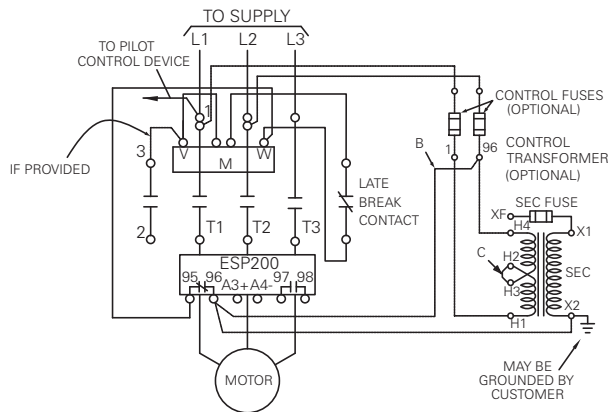
Three Phase Magnetic Starter, Size 00-4



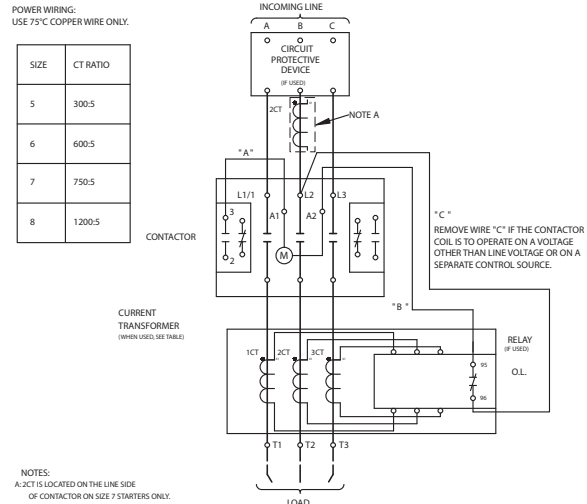
Single Phase Magnetic Starter, Size 00-1①



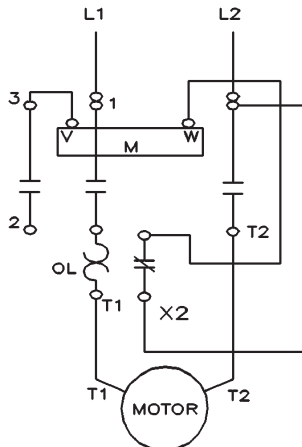
Three Phase Magnetic Starter with DC Coil, Sizes 00-4



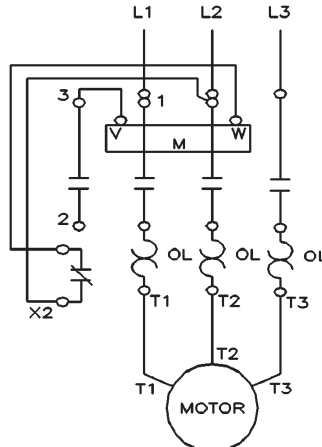
Solid State Overload 3-Phase Sizes 5-8



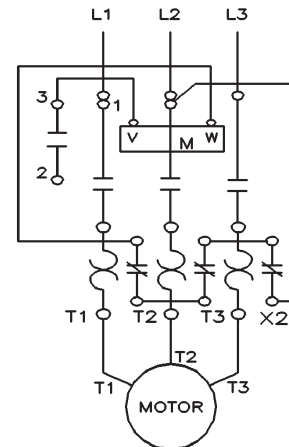
Ambient Compensated Single Phase Sizes 00-2 1/2



Ambient Compensated 3-Phase Sizes 00-2 1/2



Ambient Compensated 3-Phase Sizes 3-4



① 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.

② Full Load Amps (FLA): Adjustment of the ESP200 solid state overload relay accommodates the single phase motor.

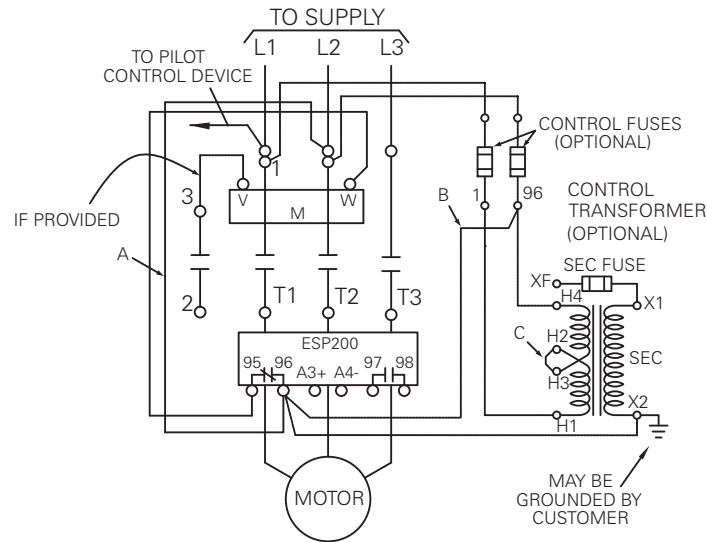
Combination Heavy Duty Starters

Class 17, 18

Wiring Diagrams

3-Phase

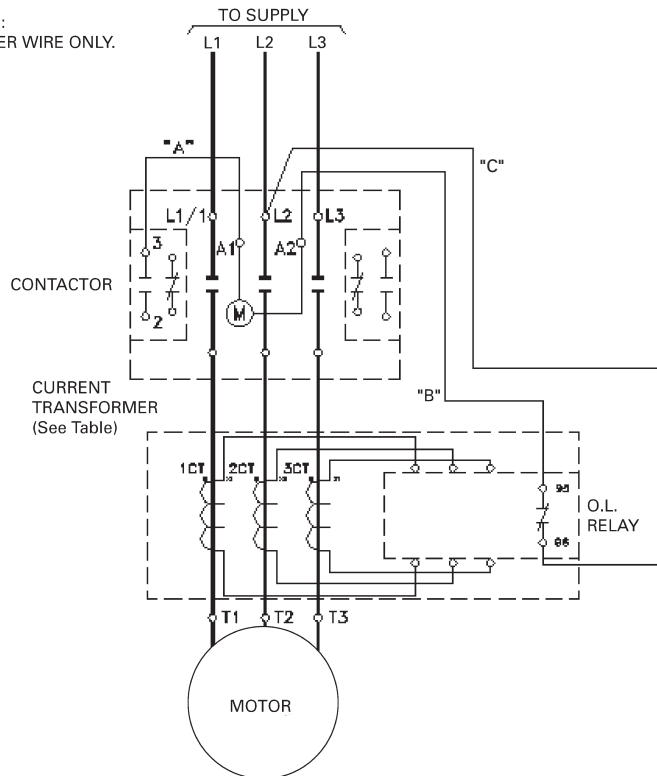
Size 00-4^①



Size 5-8^②

POWER WIRING:
USE 75°C COPPER WIRE ONLY.

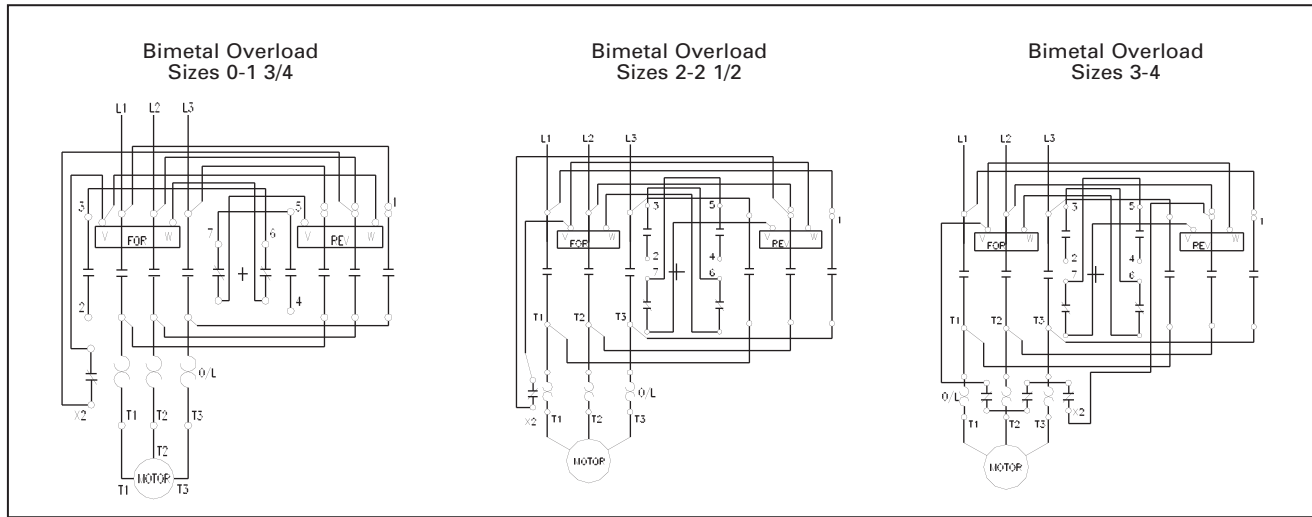
SIZE	CT RATIO
5	300:5
6	600:5
7	750:5
8	1200:5



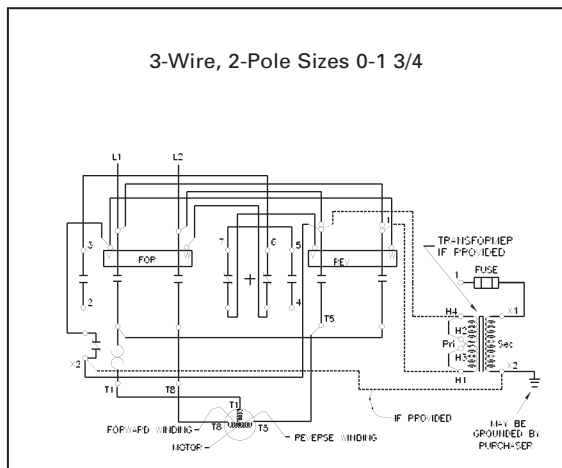
^① Remove wire "C" if control transformer is used. For separate control voltage source, remove jumpers "A" and "B" and connect source to control fuse line terminals.

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

3-Phase Ambient Compensated Overload



Single Phase Ambient Compensated Overload



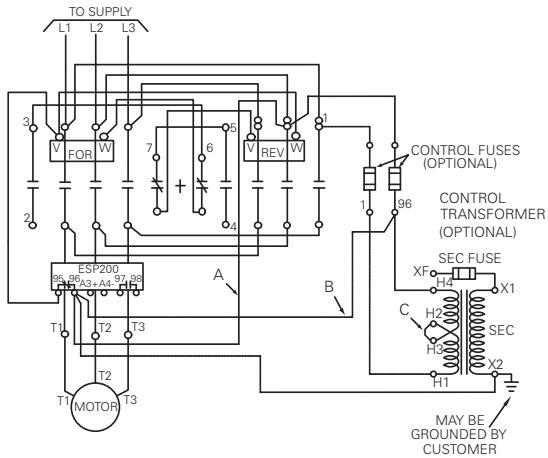
Reversing Heavy Duty Starters

Class 22

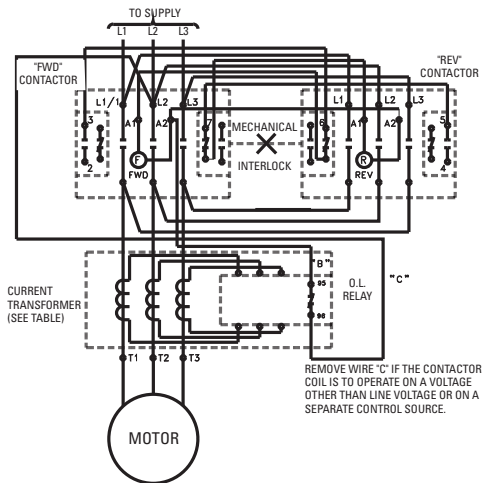
Wiring Diagrams

3-Phase Solid State Overload

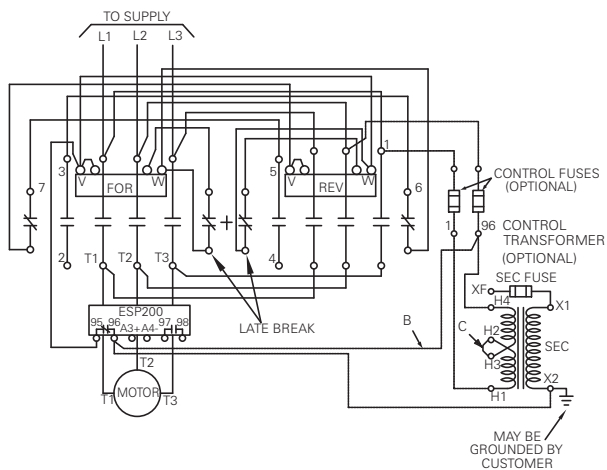
3-Phase Reversing Magnetic Starter
Sizes 00-1 $\frac{1}{4}$



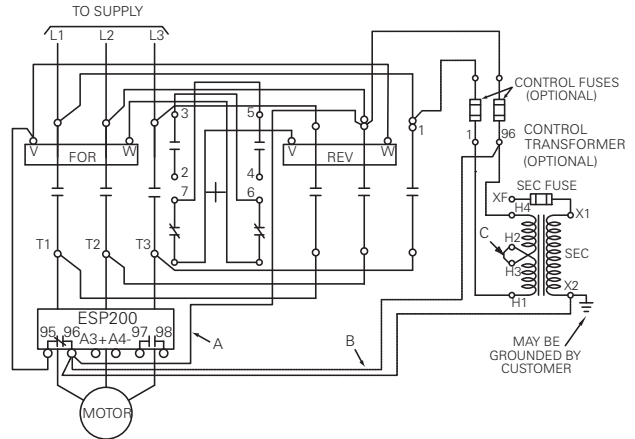
Solid State Overload
Sizes 5-6



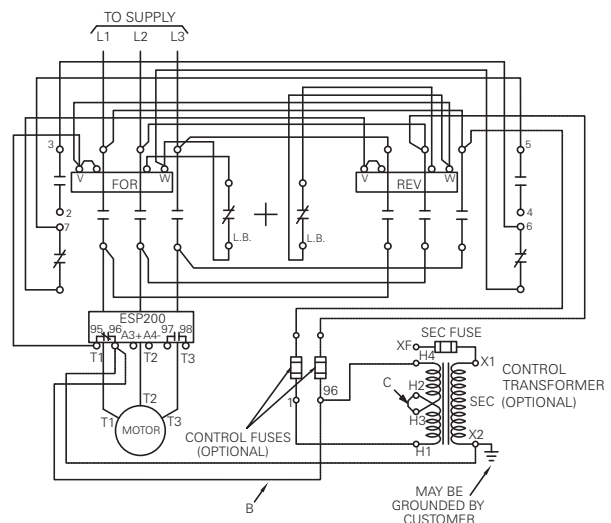
3-Phase Reversing Magnetic Starter
with DC Coil, Sizes 00-1 $\frac{1}{4}$



3-Phase Reversing Magnetic Starter
Sizes 2-4



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



Class 25, 26

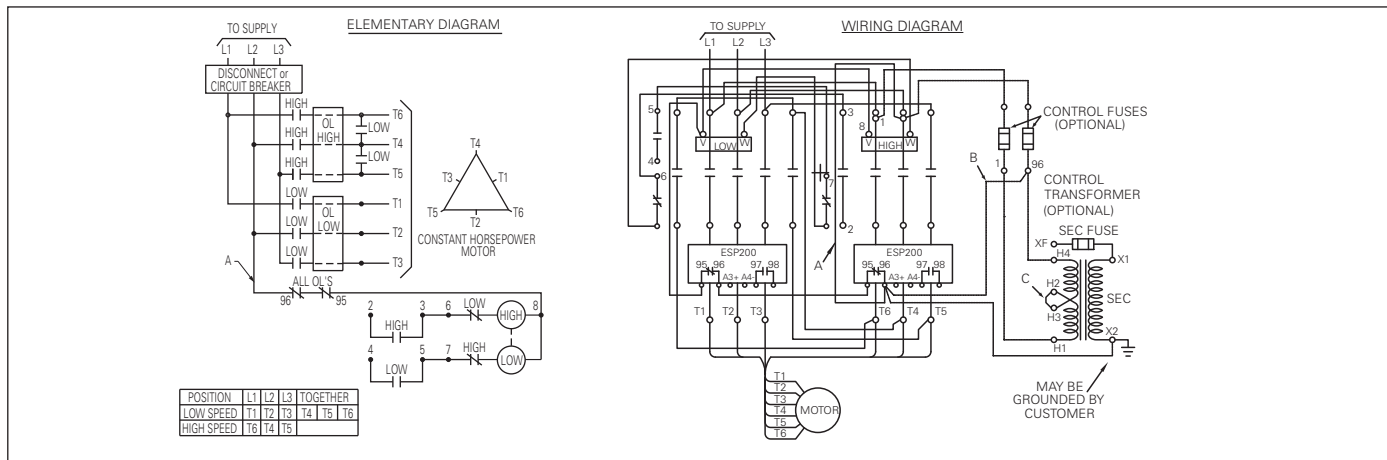
8

Two Speed Heavy Duty Starters

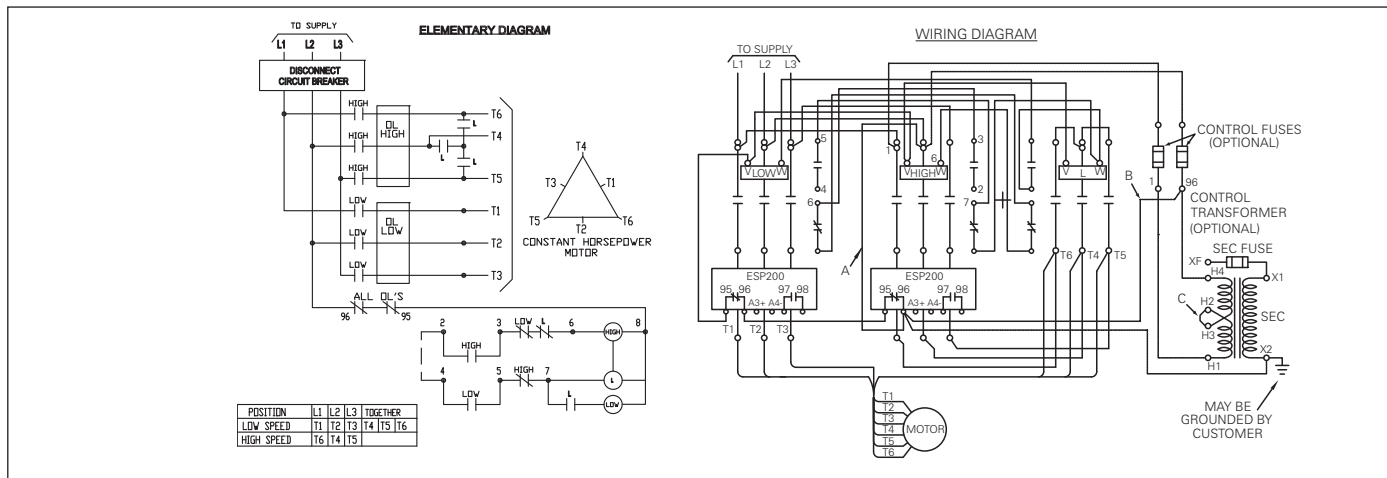
Class 30 & 32 Non-Combination and Combination Starters

Wiring Diagrams

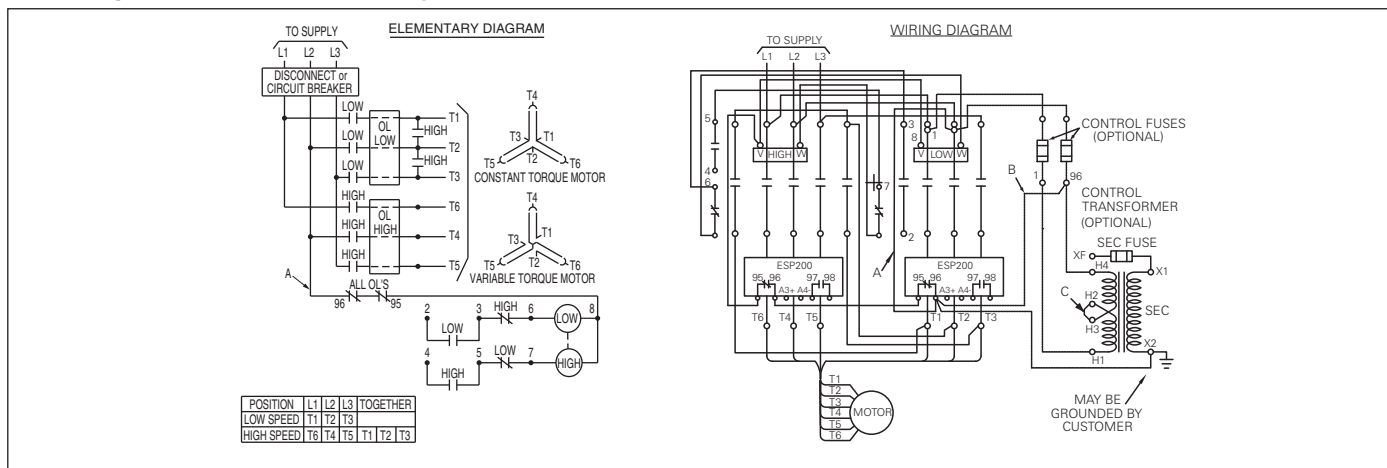
1 Winding Constant Horsepower Size 0-1³/₄



1 Winding Constant Horsepower Size 2-4



1 Winding Constant or Variable Torque Size 0-1³/₄



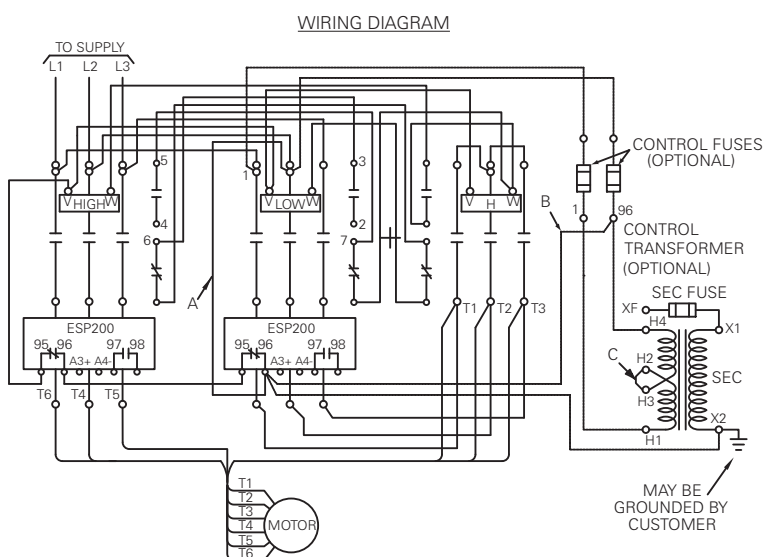
Note: For separate control voltage source, remove jumpers "A" and "B" and connect source to control fuse terminal. Remove jumper "C" if control transformer is used.

Wiring Diagrams

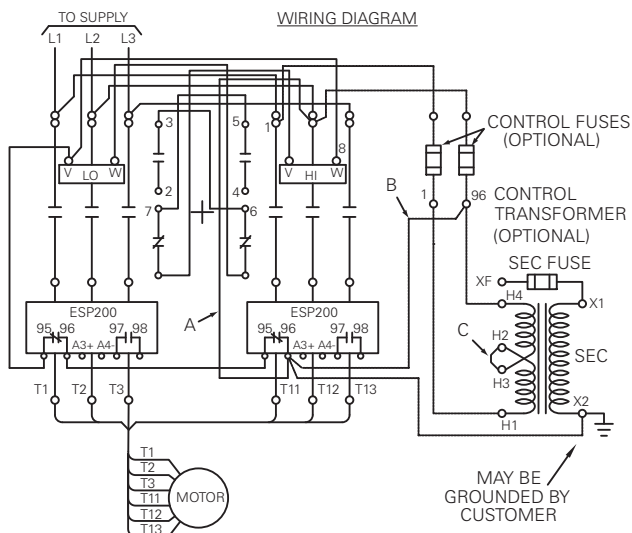
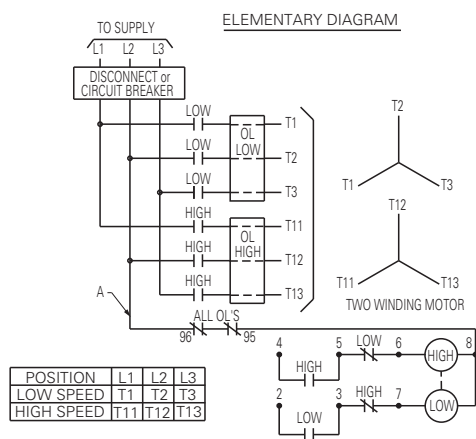
ELEMENTARY DIAGRAM

The diagram illustrates the electrical connections for a motor control system. It includes a power supply section with three lines (L1, L2, L3) and a ground (G). A disconnect or circuit breaker is connected to these lines. The motor is connected to the supply through a series of switches and fuses. The motor is labeled 'CONSTANT TORQUE MOTOR' and 'VARIABLE TORQUE MOTOR'. The motor has six terminals: T1, T2, T3, T4, T5, and T6. The motor is connected to a variable torque motor through a series of switches and fuses. The motor is labeled 'VARIABLE TORQUE MOTOR'.

POSITION	L1	L2	L3	TOGETHER
LOW SPEED	T1	T2	T3	
HIGH SPEED	T6	T4	T5	T1 T2 T3



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

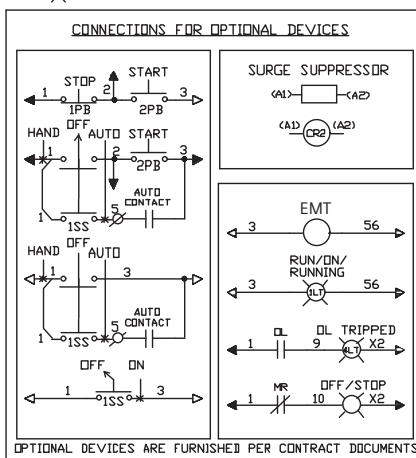
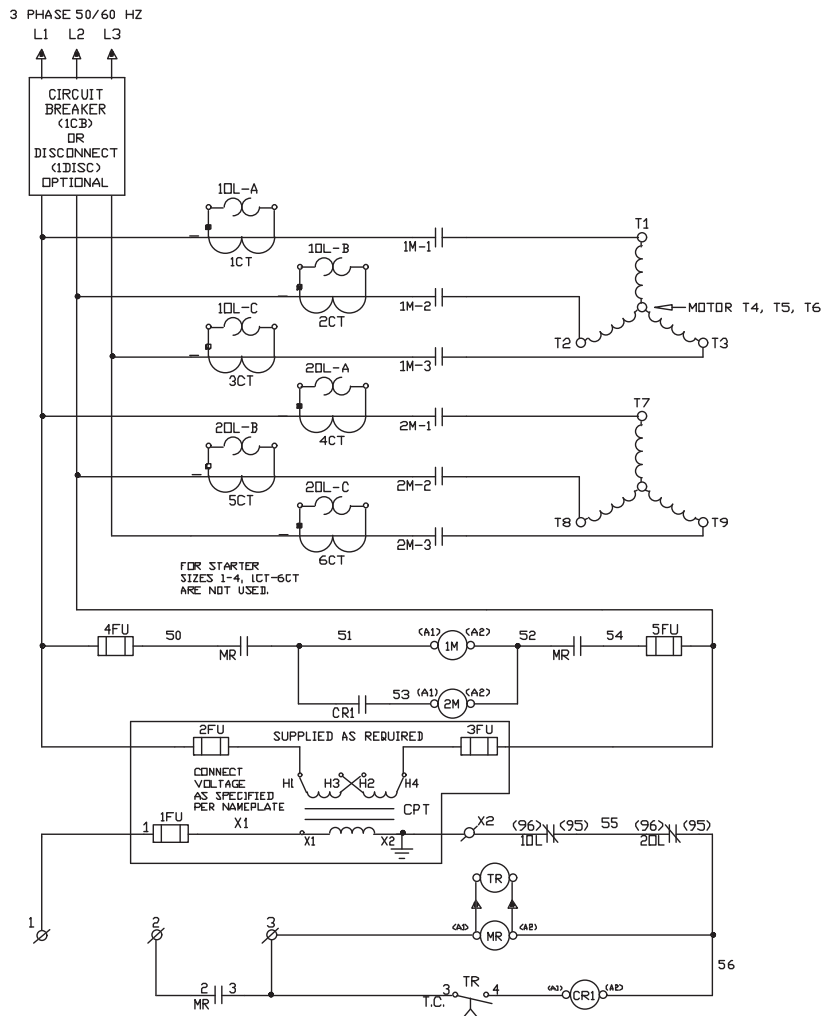


Note: For separate control voltage source, remove jumpers "A" and "B" and connect source to control fuse terminal. Remove jumper "C" if control transformer is used.

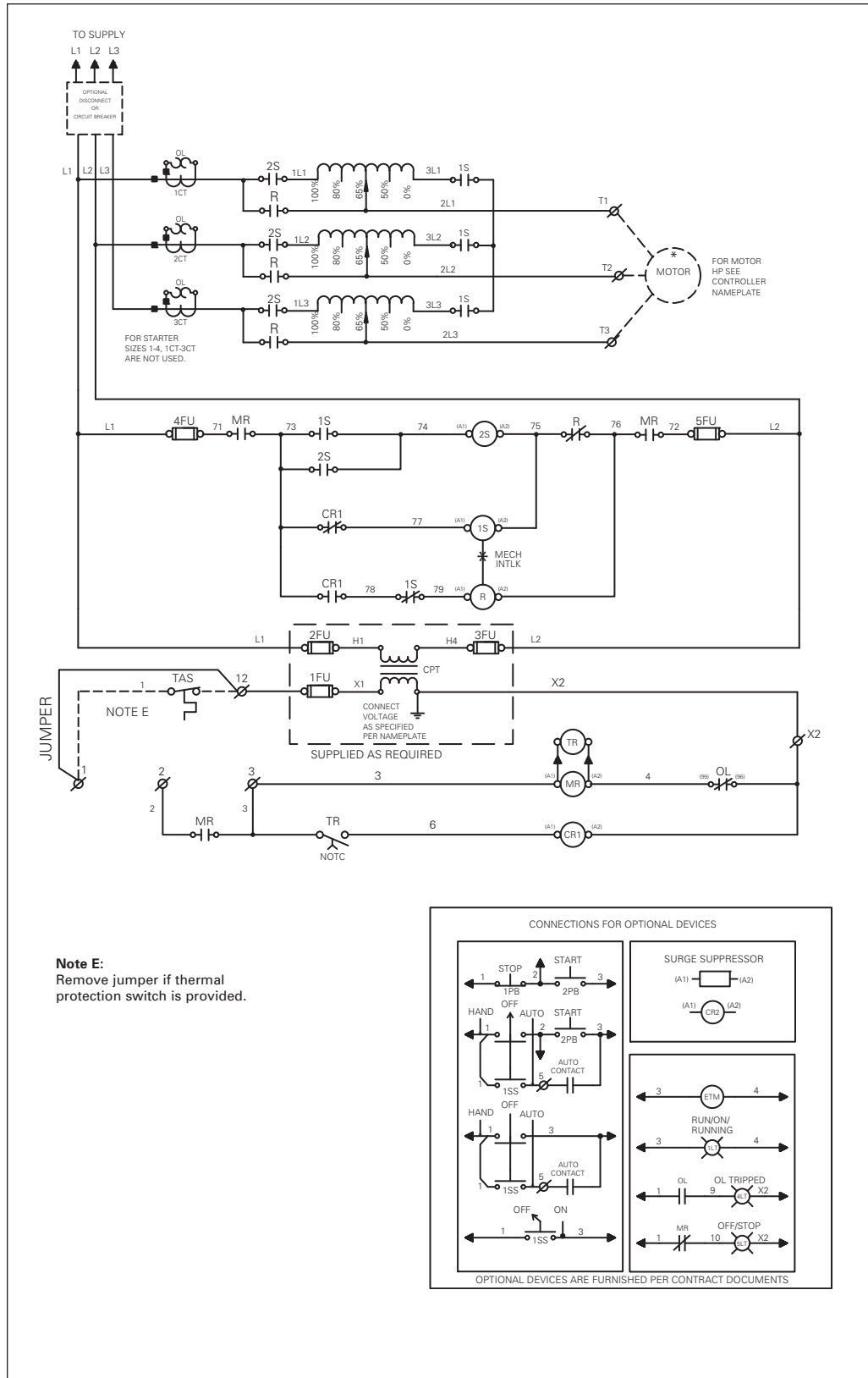
Class 36, 37, 88

Wiring Diagrams

Part Winding



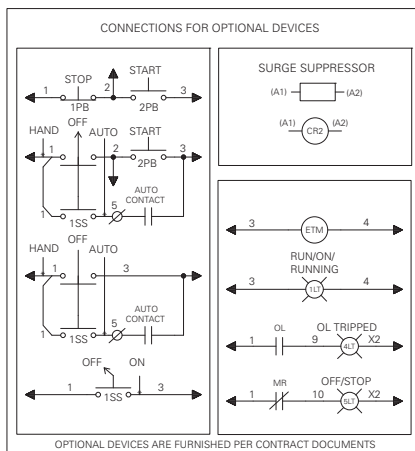
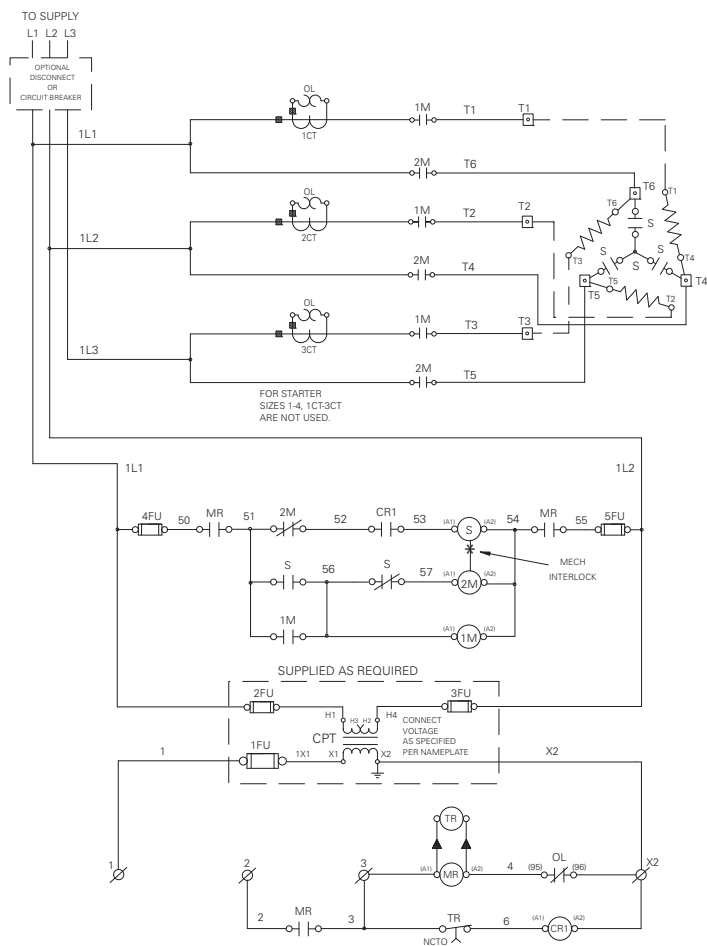
Auto Transformer



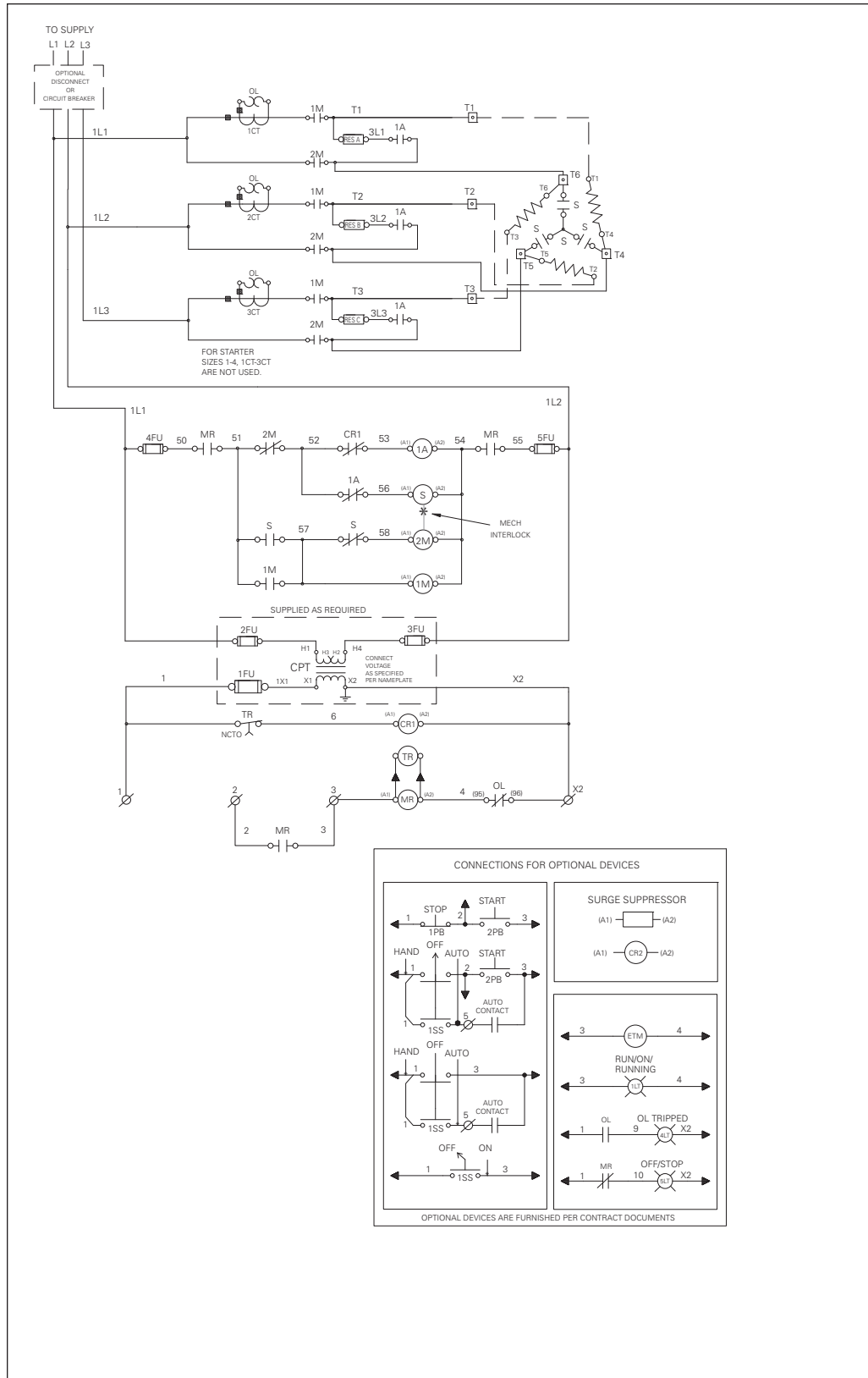
Class 36, 37, 88

Wiring Diagrams

Wye Delta (Open Transition)



Wye Delta (Closed Transition)



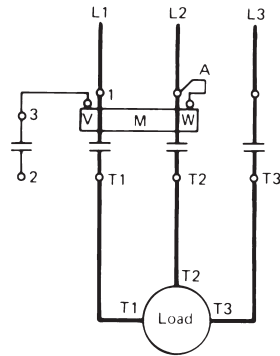
Heavy Duty Contactors and Reversing Contactors

Class 40, 43

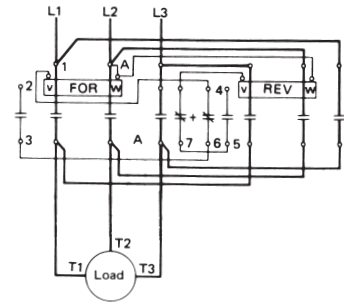
Wiring Diagrams

3-Phase Magnetic Contactors and Reversing Contactors

3-Phase Contactors—Size 00–4

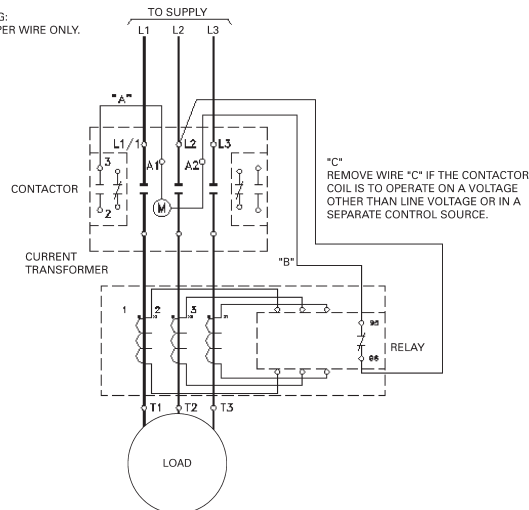


3-Phase Reversing Contactors—Size 00–4

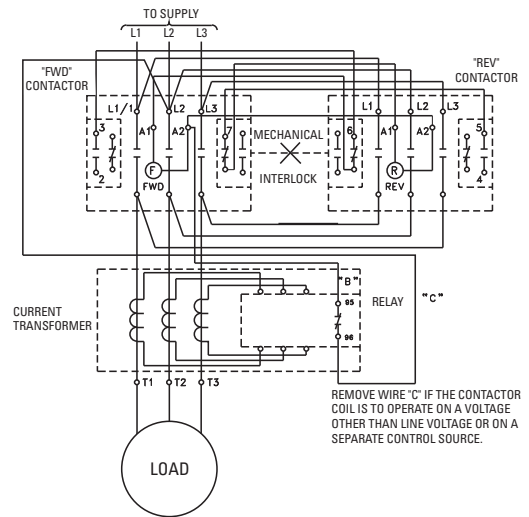


3-Phase Contactors—Size 5, 6

POWER WIRING:
USE 75°C COPPER WIRE ONLY.

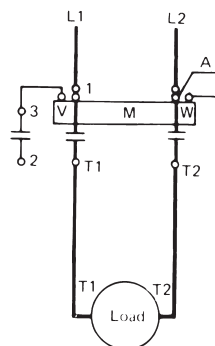


3-Phase Reversing Contactors—Size 5, 6

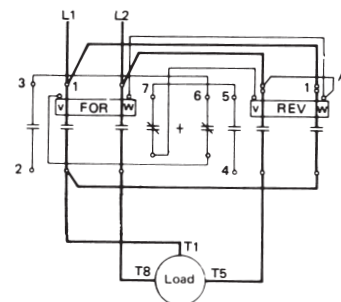


Single Phase Magnetic Contactors and Reversing Contactors

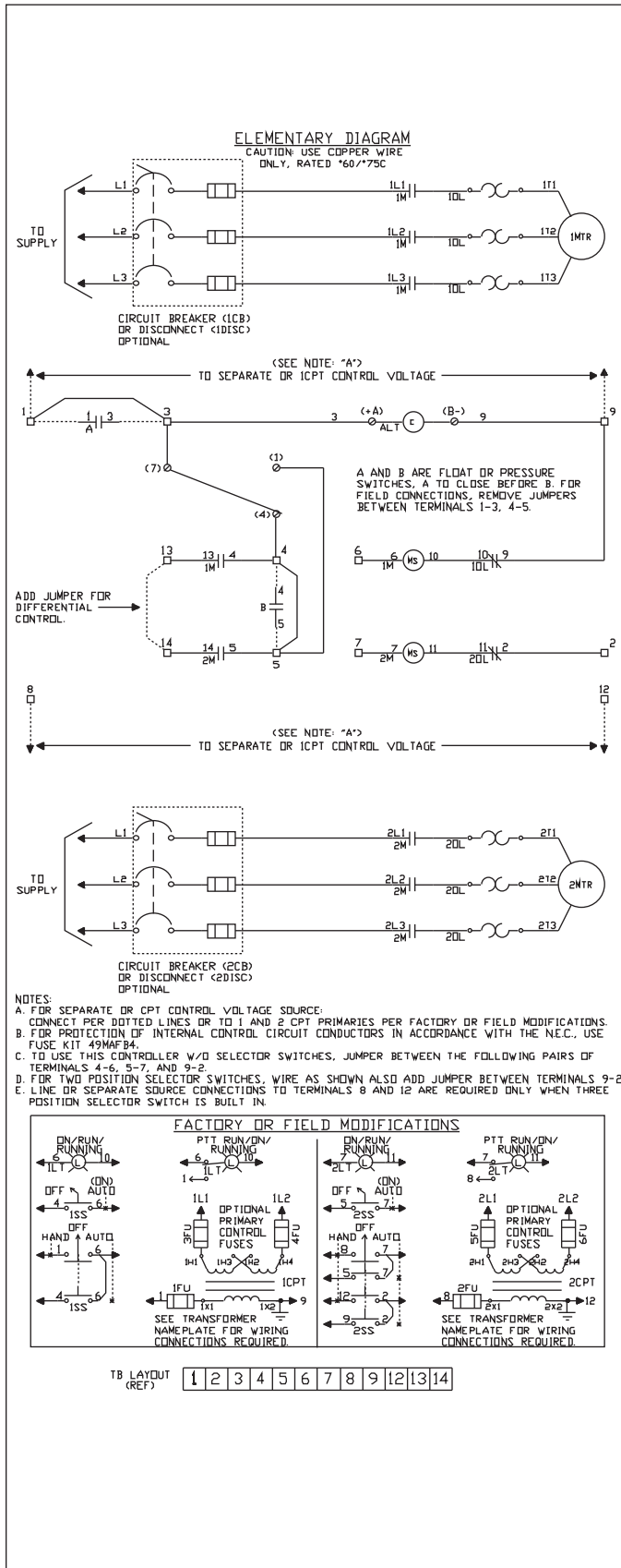
Single Phase Contactors—Size 00–4



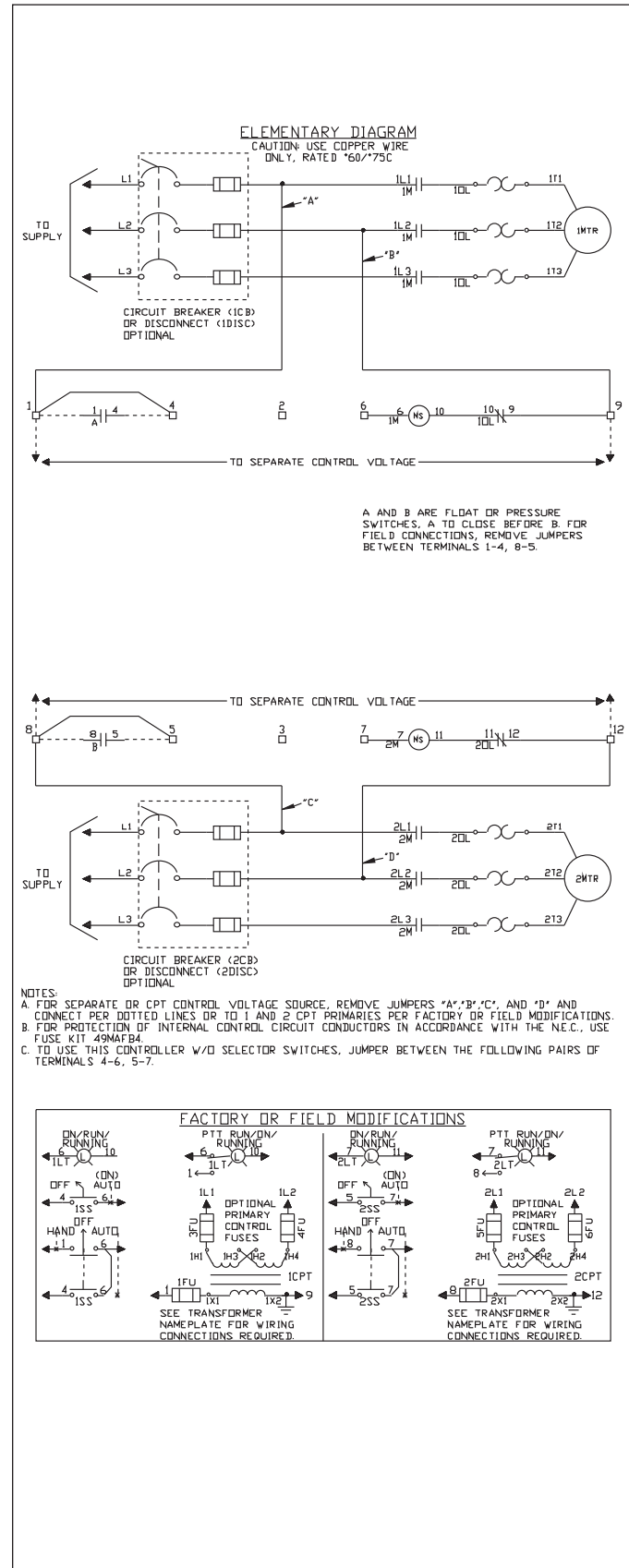
Single Phase Reversing Contactors—Size 00–1P



Standard Duplex Pump Panel (92)

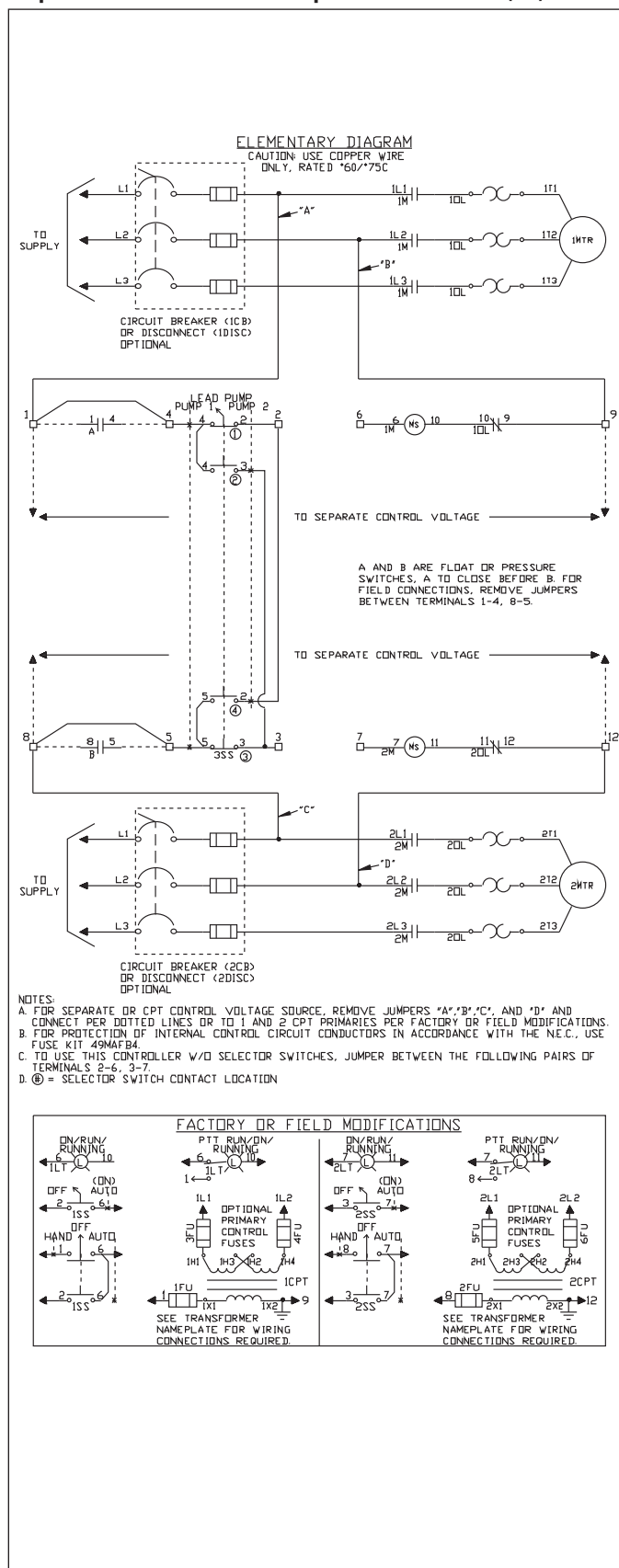


Duplex Panel w/o alternator (95)

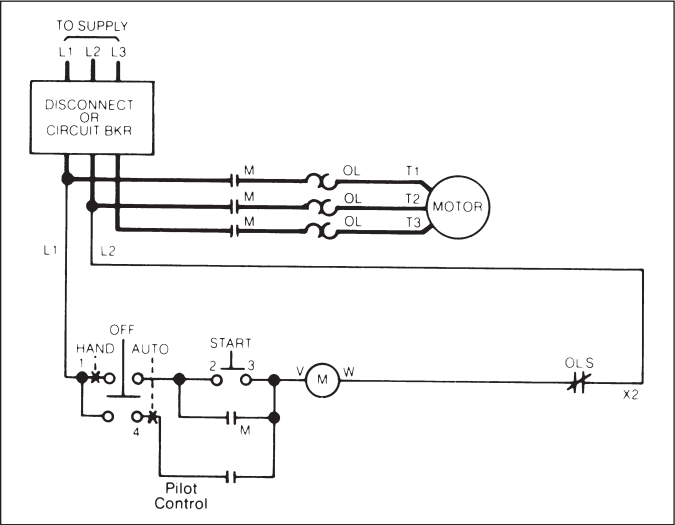


Wiring Diagrams

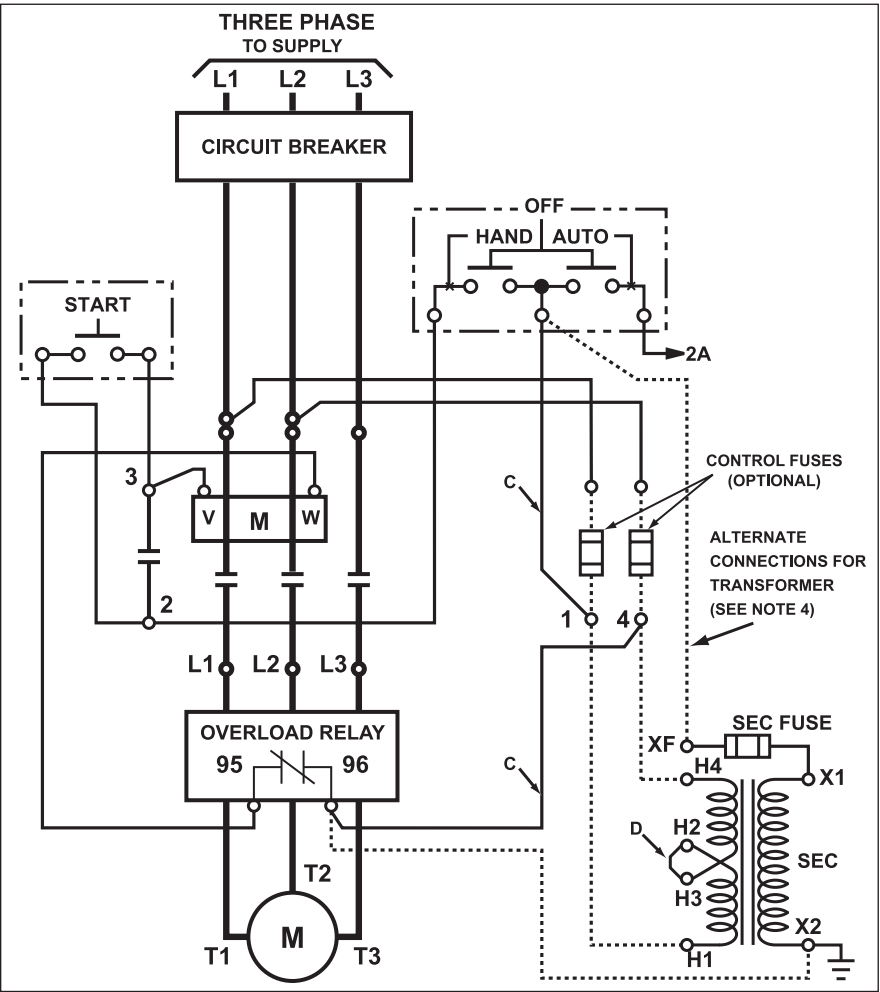
Duplex Panel with Lead Pump Transfer Switch (94)



Standard Class 87 Pump Panel



Irrigation Class 81 Pump Panel

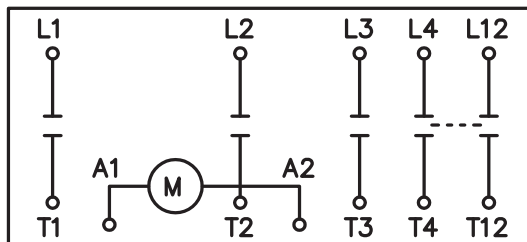


Lighting and Heating Contactors

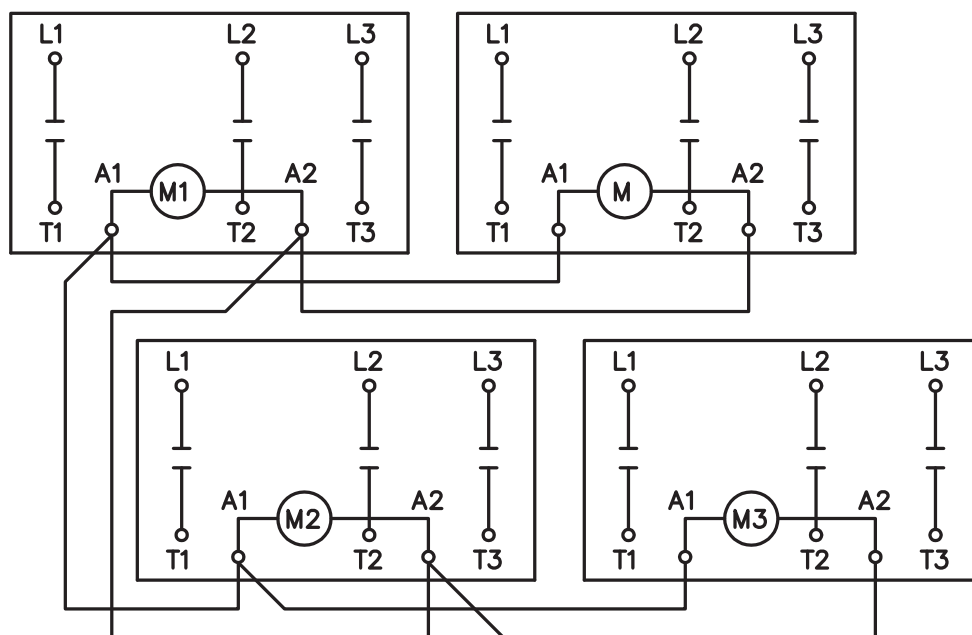
Electrically Held, Class LE

Wiring Diagrams

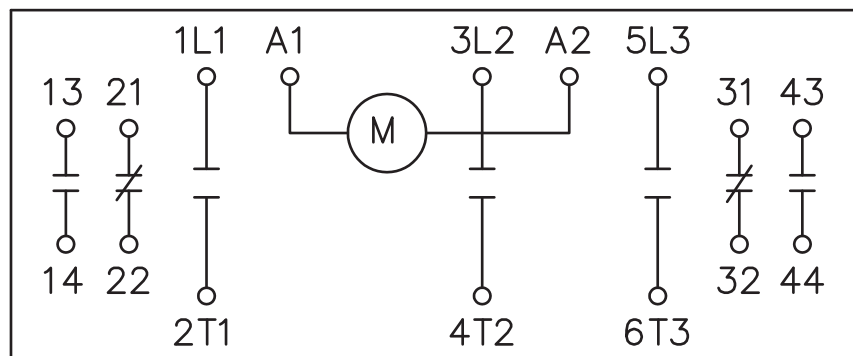
20 AMP



30 – 100 AMP



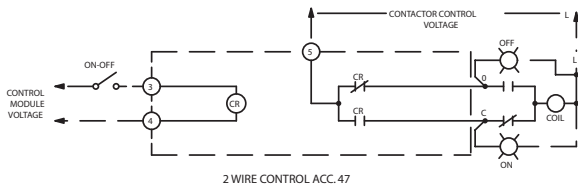
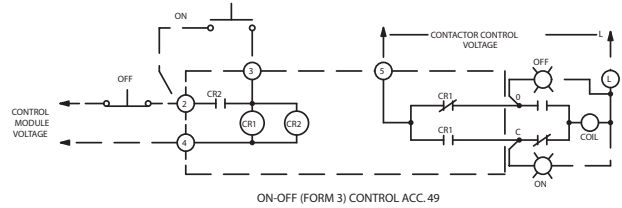
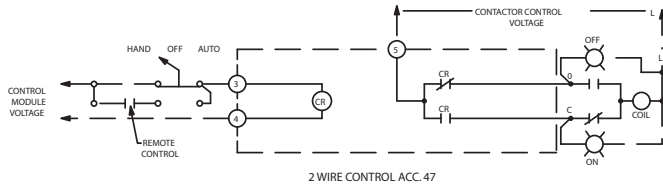
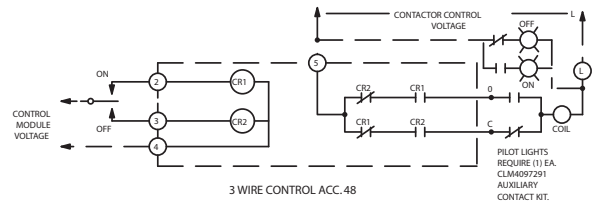
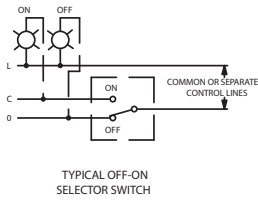
200 – 400 AMP



Lighting and Heating Contactors

Mechanically Latched 20 Amp, Class CLM

Wiring Diagrams



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

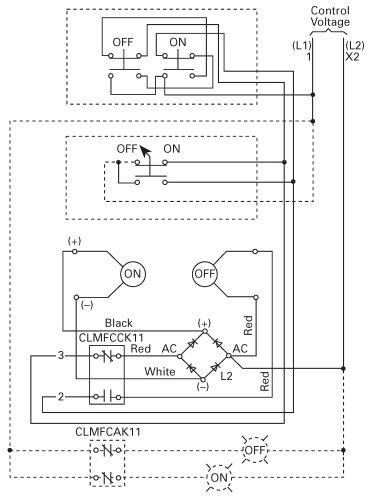
* FOR 24 VDC CONTROL MODULES
CONNECT TERMINAL 4 TO NEGATIVE (-)

Lighting and Heating Contactors

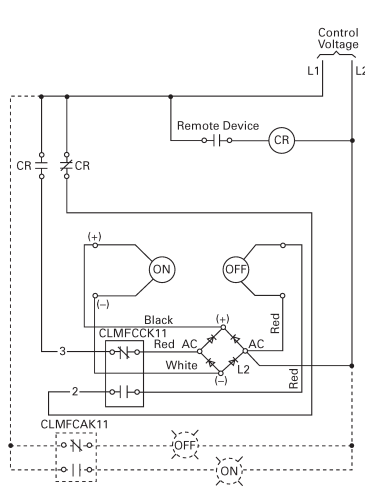
Mechanically Latched 30–40 Amps, Class CLM

Wiring Diagrams

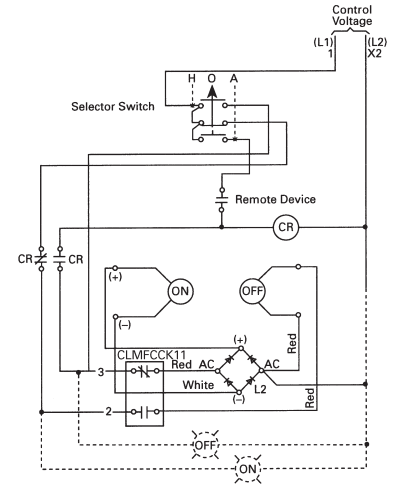
Mechanically Latched, CLM 30–200 Amps^①



Connection Diagram for Common/Separate Control with Momentary Pushbutton or ON-OFF Selector Switch **CLMOC, CLMOD, CLMOE, and CLMOF**

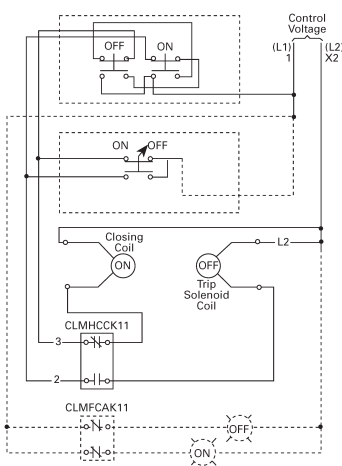


Connection for 2-Wire Control **CLMOC, CLMOD, CLMOE, and CLMOF**

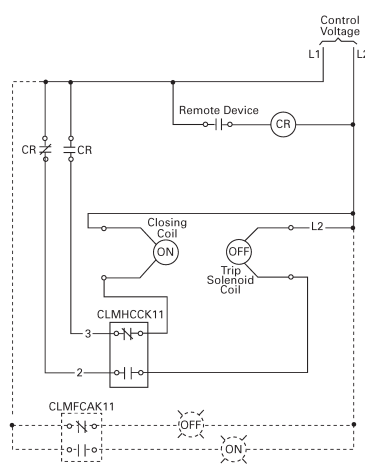


Connection for Hand/Off/Auto Control **CLMOC, CLMOD, CLMOE, and CLMOF**

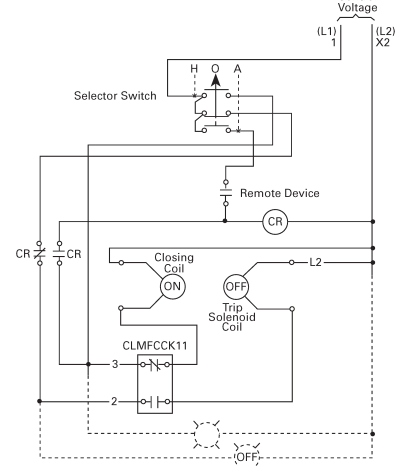
Mechanically Latched Type CLM 300 and 400 Amp^①



Connection Diagram for Common/Separate Control with Momentary Pushbutton or ON-OFF Selector Switch **CLMOG and CLMOH**



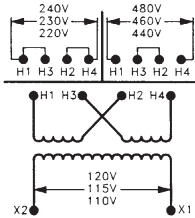
Connection for 2-Wire Control **CLMOG and CLMOH**



Connection for Hand/Off/Auto Control **CLMOG and CLMOH**

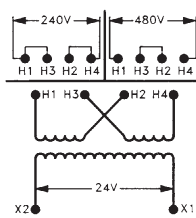
^① Control relay is required for 2-wire and Hand/Off/Auto Control, as shown in diagram.

**Voltage Letter
A①③**



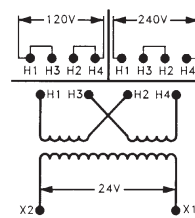
When secondary fuse clips are installed,
Terminal X1 becomes XF

**Voltage Letter
B②③**



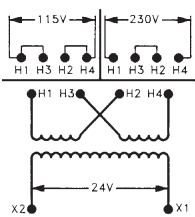
When secondary fuse clips are installed,
Terminal X1 becomes XF

**Voltage Letter
C②③**



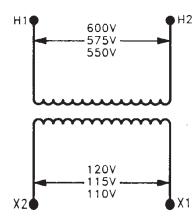
When secondary fuse clips are
installed, Terminal X1 becomes XF

**Voltage Letter
D②**



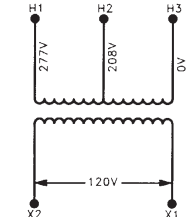
When secondary fuse clips are installed,
Terminal X1 becomes XF

**Voltage Letter
E①③**



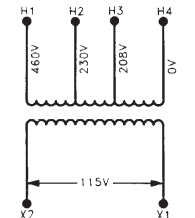
When secondary fuse clips are installed,
Terminal X1 becomes XF

**Voltage Letter
F①**



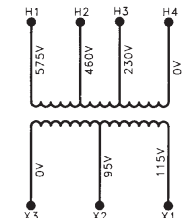
When secondary fuse clips are
installed, Terminal X1 becomes XF

**Voltage Letter
G①**



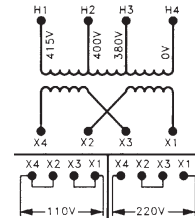
When secondary fuse clips are installed,
Terminal X1 becomes XF

**Voltage Letter
H**



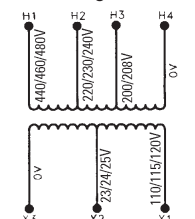
Does not include secondary fuse clips

**Voltage Letter
I**



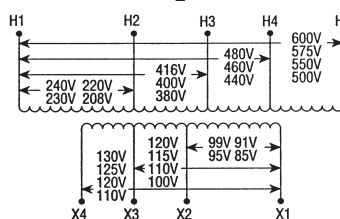
Does not include secondary fuse
clips

**Voltage Letter
J②③**



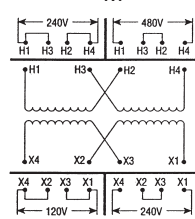
When secondary fuse clips are installed,
Terminal X3 becomes XF

**Voltage Letter
L**



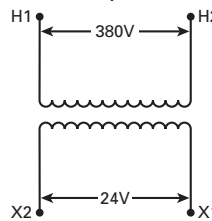
Does not include secondary fuse clips

**Voltage Letter
M①**



When secondary fuse clips are
installed, Terminal X1 becomes XF

**Voltage Letter
P**



Does not include secondary fuse clips

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.

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
15	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	1800	3.22	2.80	1.40	1.12	1.70	
	1200	4.09	3.56	1.78	1.42	2.06	
	900	4.32	3.76	1.88	1.50	2.28	
2	1800	4.95	4.30	2.15	1.72	2.60	
	1200	5.01	4.36	2.18	1.74	2.69	
	900	5.59	4.86	2.43	1.94	2.94	
3	1800	6.07	5.28	2.64	2.11	3.20	
	1200	6.44	5.60	2.80	2.24	3.39	
	900	6.44	5.60	2.80	2.24	3.39	
4	1800	6.44	5.60	2.80	2.24	3.39	
	1200	7.36	6.40	3.20	2.56	3.84	
	900	7.87	6.84	3.42	2.74	4.14	
5	1800	9.09	7.90	3.95	3.16	4.77	
	1200	9.59	8.34	4.17	3.34	5.02	
	900	10.8	9.40	4.70	3.76	5.70	
7 1/2	1800	11.7	10.2	5.12	4.10	6.20	
	1200	13.1	11.4	5.70	4.55	6.80	
	900	15.5	13.5	5.76	5.41	8.20	
10	1800	16.6	14.4	7.21	5.78	8.74	
	1200	18.2	15.8	7.91	6.32	9.59	
	900	18.3	15.9	7.92	6.33	9.60	
15	1800	22.4	19.5	9.79	7.81	11.50	
	1200	24.7	21.5	10.7	8.55	13.00	
	900	25.1	21.8	10.9	8.70	13.20	
20	1800	26.5	23.0	11.5	9.19	13.90	
	1200	29.2	25.4	12.7	10.1	15.40	
	900	30.8	25.8	13.4	10.7	16.30	
25	1800	32.2	28.0	14.0	11.2	16.90	
	1200	35.1	30.5	15.2	12.2	18.50	
	900	41.9	36.4	18.2	14.5	22.00	
30	1800	45.1	39.2	19.6	15.7	23.70	
	1200	47.6	41.4	20.7	16.5	25.00	
	900	51.2	44.5	22.2	17.8	26.90	
40	1800	58.0	50.4	25.2	20.1	30.50	
	1200	58.9	51.2	25.6	20.5	31.00	
	900	60.7	52.8	26.4	21.1	31.90	
50	1800	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	
30	3600	77.4	67.3	33.7	27.0	40.70	
	1800	84.8	73.7	36.8	29.4	—	
	1200	86.9	75.6	37.8	30.2	45.70	
40	3600	90.6	78.8	39.4	31.5	47.60	
	1800	94.1	81.8	40.9	32.7	49.50	
	1200	111	96.4	48.2	38.5	—	
50	3600	116	101	50.4	40.3	61.00	
	1800	117	102	50.6	40.4	61.20	
	1200	121	105	52.2	41.7	63.20	
60	3600	138	120	60.1	48.2	—	
	1800	143	124	62.2	49.7	75.20	
	1200	145	126	63.0	50.4	76.20	
75	3600	150	130	65.0	52.0	78.50	
	1800	164	143	71.7	57.3	—	
	1200	171	149	74.5	59.4	90.00	
100	3600	173	150	75.0	60.0	91.10	
	1800	177	154	77.0	61.5	93.10	
	1200	206	179	89.6	71.7	—	
125	3600	210	183	91.6	73.2	111.00	
	1800	212	184	92.0	73.5	112.00	
	1200	222	193	96.5	77.5	117.00	
150	3600	266	231	115	92.2	—	
	1800	271	236	118	94.8	144.00	
	1200	275	239	120	95.6	145.00	
200	3600	290	252	126	101	153.00	
	1800	—	292	146	116	—	
	1200	—	293	147	117	177.00	
250	3600	—	298	149	119	180.00	
	1800	—	305	153	122	186.00	
	1200	—	343	171	137	—	
300	3600	—	348	174	139	210.00	
	1800	—	350	174	139	210.00	
	1200	—	365	183	146	211.00	
400	3600	—	458	229	184	—	
	1800	—	452	226	181	274.00	
	1200	—	460	230	184	276.00	
500	3600	—	482	241	193	279.00	
	1800	—	559	279	223	—	
	1200	—	568	284	227	343.00	
600	3600	—	573	287	229	345.00	
	1800	—	600	300	240	347.00	
	1200	—	278	339	271	392.00	
800	3600	—	684	342	274	395.00	
	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

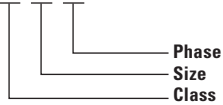
Selection of Heater Elements for Overload Relays

General

To Select Heater Catalog Number Use

- Product Class
- Controller Size
- Motor Amp
- Phase

Catalog No 14 C P 3 2 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	All	—	See Page 8/152			
	Magnetic						
14, 22	Non-reversing, Reversing	00-4	B-J	213	233	313	332
17, 18 25, 26 30, 32 ^① 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.

① 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 8/150. 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	

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.

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 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

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 1¼	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	
—	—	—	—	106–115	E102	
—	—	—	—	116–130	E103	
—	—	—	—	—	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

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	—	K21	
2.06–2.35	2.06–2.35	—	K22	
2.36–2.64	2.36–2.64	—	K24	
2.65–2.96	2.65–2.96	—	K27	
2.97–3.31	2.97–3.31	—	K28	
3.32–3.51	3.32–3.51	—	K29	
3.52–3.87	3.52–3.87	—	K31	
3.88–4.31	3.88–4.31	—	K32	
4.32–4.79	4.32–4.79	—	K33	
4.80–5.21	4.80–5.21	—	K34	
5.22–5.75	5.22–5.75	—	K36	
5.76–6.11	5.76–6.11	—	K37	
6.12–6.95	6.12–6.95	—	K39	
6.96–7.73	6.96–7.73	—	K41	
7.74–8.47	7.74–8.47	—	K42	
8.48–9.52	8.48–9.52	—	K43	
9.53–10.4	9.53–10.4	—	K49	
10.5–11.1	10.5–11.1	—	K50	
11.2–12.4	11.2–12.4	—	K52	
12.5–13.5	12.5–13.5	—	K53	
13.6–15.1	13.6–15.1	—	K54	
15.2–16.6	15.2–16.6	—	K55	
16.7–17.6	16.7–17.6	—	K57	
17.7–18.8	17.7–18.8	18.7–19.7	K58	
18.9–21.6	18.9–21.6	19.8–21.3	K60	
21.7–22.7	21.7–22.7	21.4–22.8	K61	
22.8–25.3	22.8–25.3	22.9–24.2	K62	
—	25.4–26.6	24.3–26.5	K63	
—	26.7–30.1	26.6–29.3	K64	
—	30.2–33.0	29.4–32.0	K67	
—	33.1–34.1	32.1–35.6	K68	
—	—	35.7–37.9	K69	
—	—	38.0–40.3	K70	
—	—	40.4–44.3	K72	
—	—	44.4–49.5	K73	
—	—	49.6–52.1	K74	
—	—	52.2–53.7	K75	
—	—	53.8–60.0	K76	

Table 316 for Class 48

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

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	

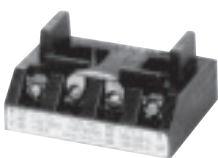
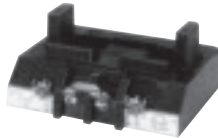
Table 335 for Class 48

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	75ZAF1650-70①	

① Set of 2 coils. Recommend to change printed circuit board when changing coils. 49ZP1650 see page 8/158.

Replacement Parts

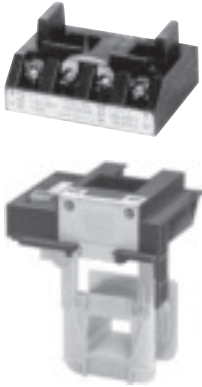
Starters and Contactors – DC Coils, Late Break Aux Contacts, Rectifiers, Contact Kits

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

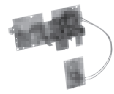
	Size	Model	Volts DC	Catalog Number	List Price \$
	00-2½	P U (ESP200)	12 24 32 48 125 250	75D73070R 75D73070S 75D73070T 75D73070U 75D73070V 75D73070W	
	3, 3½	P U (ESP200)	12 24 32 48 125 250	75D73251R 75D73251S 75D73251T 75D73251U 75D73251V 75D73251W	
	4	G U (ESP200)	48 125 250	75D70131U 75D70131V 75D70131W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

Note: For sizes 7 & 8 contactors the AC coils are used for DC see page 16-155.

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^①

Description	Size	Number of Poles in Kit	Model (4th position in part number)	Catalog Number	List Price \$
	Internal Aux Contact (00-1-¾) 00 0		P, U P, U P, U	75AF14 75BF14 75CF14	
	1 1¼-1P	1	P, U P, U	75DF14 75EF14	
	2	1	P, U	75FP14	
	2½	1	P, U	75GP14	
	3 3½	1	P, U P, U	75HF14 75IF14	
	4 4 (Vacuum)	1 3 (Bottles)	G, T V, C	75JG14 3RT1964-6V	
	5 5 (Vacuum)	3 3 (Bottles)	P V, C	3RT1966-6A 3RT1966-6V	
	6 6 (Vacuum)	3 3 (Bottles)	P V, C	3RT1976-6A 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	6	625
	—	30	—	2-5	40	410
	—	60	—	2-3	40	410
	—	60	—	4-5	40	600
	—	100 - 200	—	2-3	200	900
	—	100 - 200	—	4-5	130	1300
	—	300 - 400	—	3	550	1600
Lighting Contactor Electrically Held (LE)	—	20	24	3	49.6	6.9
	—	20	120	3	51.3	6.57
	—	20	208	3	75.79	11.94
	—	20	240	3	86.78	14.25
	—	20	277	3	79.1	11.97
	—	20	480	3	83.7	12.9
	—	20	600	3	84.1	13.2
	—	20	24	12	73.31	12.66
	—	20	120	12	75.1	13.1
	—	20	208	12	73.97	13.25
	—	20	240	12	89.15	14.85
	—	20	277	12	78.55	12.77
	—	20	480	12	84	12.9
	—	20	600	12	81.9	13.4
	—	30	24	3	49.67	7.08
	—	30	120	3	51.94	6.48
	—	30	208	3	76.57	11.78
	—	30	240	3	64.44	8.99
	—	30	277	3	77.85	14.2
	—	30	480	3	83.6	13.1
	—	30	600	3	82.1	13.4
	—	60	24	3	74.94	13.16
	—	60	120	3	75.77	13.59
	—	60	208	3	78.73	12.05
	—	60	240	3	89.92	14.42
	—	60	277	3	84.89	12.93
	—	60	480	3	87.6	12.7
	—	60	600	3	85.4	13.8
	—	100	24	3	182.28	32.85
	—	100	120	3	191.42	32.26
	—	100	208	3	187.78	31.15
	—	100	240	3	215.32	35.63
	—	100	277	3	175.92	30.62
	—	100	480	3	198.2	34.8
	—	100	600	3	171.1	29.6
	—	200	All Voltages Electrically Held	3	300	5.8
	—	300		3	590	6.7
	—	400		3	830	9.2

Overload Relays^{①②} – 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			
—	1¼	P	3	48EC38AA3		48EC39AA3	
2	—	P	1 3	48GC18AA3 48GC38AA3		48GC39AA3	
—	2½	P	1 3	48GC18AA3 48GC38AA3		48GC39AA3	
3	—	P	3	48HC38AA3			
—	3½	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 8/81.

① For replacement Solid State overload relays, please see the Overload Relay section found starting on page 8/49.

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

Replacement Parts

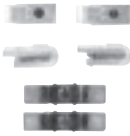
Lighting and Heating Contactors, Type LE, CLM, CMF, CMN

Selection

AC Coils – 20-400 Amps

 3RT1955-5AF31	Type	Contactor Size	Catalog Number							List Price \$
			24VAC	120VAC	208VAC	240VAC	277VAC	480VAC	600VAC	
	LE	20, 30, 60 Amp	75D70646J	75D70646F	75D70646D	75D70646G	75D70646L	75D70646H	75D70646E	
		100 Amp	75D54772J	75D54772F	75D54772D	75D54772G	75D54772L	75D54772H	75D54772E	
		200 Amp ^①	3RT1955-5AB31	3RT1955-5AF31	3RT1955-5AM31	3RT1955-5AP31	3RT1955-5AU31	3RT1955-5AR31	3RT1955-5AT31	
		300 Amp ^①	3RT1965-5AB31	3RT1965-5AF31	3RT1965-5AM31	3RT1965-5AP31	3RT1965-5AU31	3RT1965-5AR31	3RT1965-5AT31	
		400 Amp ^①	3RT1975-5AB31	3RT1975-5AF31	3RT1975-5AM31	3RT1975-5AP31	3RT1975-5AU31	3RT1975-5AR31	3RT1975-5AT31	

Main Contacts (Includes 3 Moving and 6 Fixed Contacts)

 3RT1965-6A	Type	Contactor Size	Catalog Number	List Price \$
	LE	20–100 Amp	Not Replaceable	—
		200 Amp	3RT1956-6A ^①	
		300 Amp	3RT1965-6A ^①	
		400 Amp	3RT1975-6A ^①	

Lighting Contact Assembly - 20 Amp (Power Poles)

	Type	Contactor Size	Catalog Number (Verify catalog number on side of contact assembly)	List Price \$
	LE	20 Amp	49LN02A, 2 NC Contacts Non-Stackable	
			49LN20A, 2 NO Contacts Non-Stackable	
			49LS20A, 2 NO Contacts Stackable	
			49LS10A, 1 NO Contact Stackable	

AC Coils 20 Amps^②

 CLM4097341	Type	Contactor Size	Number of Poles	120V, 60Hz 110V, 50Hz	List Price \$	240V, 60Hz 208V, 50Hz	List Price \$	277V 50/60Hz	List Price \$	480V, 60Hz 440V, 50Hz	List Price \$
	CLM	20 Amp	2–12	CLM4097341		CLM4097342		CLM4097343		CLM4097344	

AC Coils 30–400 Amps^③

 CLMC4C120 CLMGU3C120	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	
	CLM†C	30 Amp	2–3-Pole	CLMC4C024	CLMC4C120	CLMC4C208	CLMC4C240	CLMC4C277	CLMC4C480	CLMC4C600	
			4-Pole	CLMC4C024	CLMC4C120	CLMC4C208	CLMC4C240	CLMC4C277	CLMC4C480	CLMC4C600	
			5-Pole	CLMC5C024	CLMC5C120	CLMC5C208	CLMC5C240	CLMC5C277	CLMC5C480	CLMC5C600	
	CLM†D	60 Amp	2–3-Pole	CLMD3C024	CLMD3C120	CLMD3C208	CLMD3C240	CLMD3C277	CLMD3C480	CLMD3C600	
			4-Pole	CLMD5C024	CLMD5C120	CLMD5C208	CLMD5C240	CLMD5C277	CLMD5C480	CLMD5C600	
			5-Pole	CLMD5C024	CLMD5C120	CLMD5C208	CLMD5C240	CLMD5C277	CLMD5C480	CLMD5C600	
	CLM†E	100, 200 Amp	2–3-Pole	CLME3C024	CLME3C120	CLME3C208	CLME3C240	CLME3C277	CLME3C480	CLME3C600	
			4-Pole	CLME5C024	CLME5C120	CLME5C208	CLME5C240	CLME5C277	CLME5C480	CLME5C600	
			5-Pole	CLME5C024	CLME5C120	CLME5C208	CLME5C240	CLME5C277	CLME5C480	CLME5C600	
	CLM†G Latching Coil Unlatch Coil	300 Amp	2–3-Pole 2–3-Pole	— —	CLMGL3C120 CLMGU3C120	CLMGL3C208 CLMGU3C208	CLMGL3C240 CLMGU3C240	CLMGL3C277 CLMGU3C277	CLMGL3C480 CLMGU3C480	CLMGL3C600 CLMGU3C600	
	CLM†H Latching Coil Unlatch Coil	400 Amp	2–3-Pole 2–3-Pole	— —	CLMHL3C120 CLMHU3C120	CLMHL3C208 CLMHU3C208	CLMHL3C240 CLMHU3C240	CLMHL3C277 CLMHU3C277	CLMHL3C480 CLMHU3C480	CLMHL3C600 CLMHU3C600	

Control Module Rectifier^③

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.

Replacement Parts

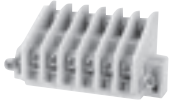
Lighting Contactors, CLM, CMB, CMF, CMN & Combination Replacement Handles

Selection

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	Top or Bottom	CLM4097331	
			3	Top	CLM4097332	
			4	Top or Bottom	CLM4097333	
			6	Top or Bottom	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^②

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 ^①	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 ^①	300–400 Amps	1 NO and 1 NC 2 NC 2 NO 1 Coil Clearing NO and NC	CLMHCAK11 CLMHCAK02 CLMHCAK20 CLMHCK11	

Combination Starters Class 17, 18, 25, 26 & 32 Replacement Handle Assemblies

NEMA 1, 4, 12 Enclosure Class 17, 25, 32				
Disc Size	Standard Width	List Price \$	Extra Wide	List Price \$
30-100A	75D68257103		75D68257103	
200A	75D68257105		—	—

NEMA 1, 4, 12 Enclosure Class 18, 26, 32				
Circuit Breaker	Standard Width	List Price \$	Extra Wide	List Price \$
3-100A	75D68257080		75D68257080	
125A	75D68257096		—	—
150A	75D68257089		—	—

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

