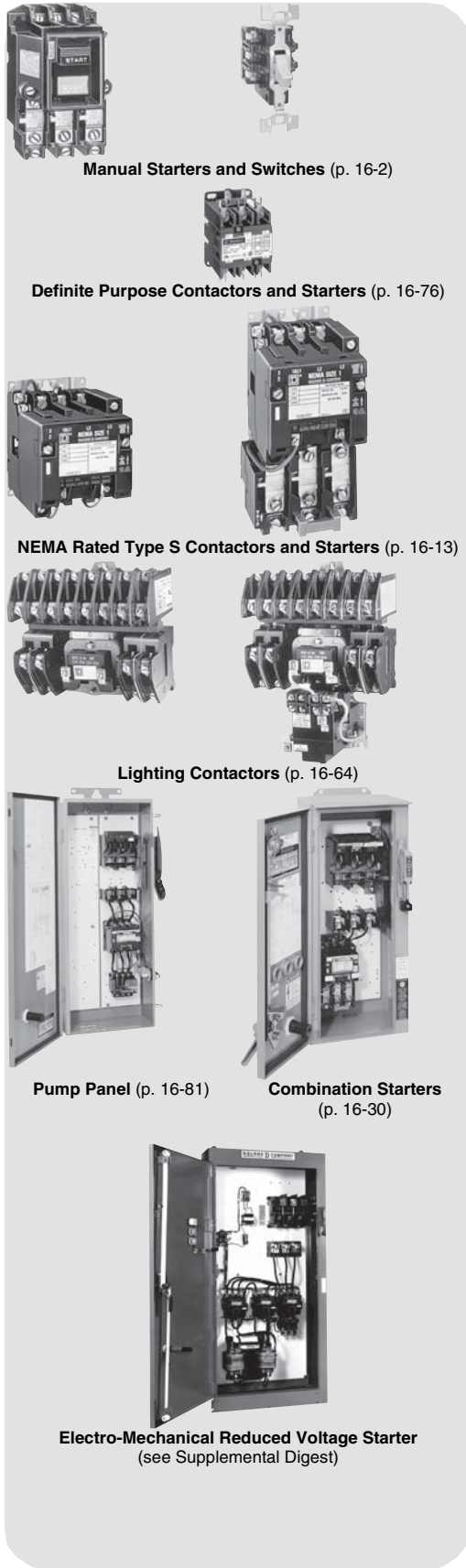


**NEMA Contactors and Starters**



**Manual Starters and Switches** (p. 16-2)

**Definite Purpose Contactors and Starters** (p. 16-76)

**NEMA Rated Type S Contactors and Starters** (p. 16-13)

**Lighting Contactors** (p. 16-64)

**Pump Panel** (p. 16-81)

**Combination Starters**  
(p. 16-30)

**Electro-Mechanical Reduced Voltage Starter**  
(see Supplemental Digest)

**NEMA AC Magnetic Contactors and Starter/Catalog**

Numbering System **16-12**

**Combination Starters—NEMA Rated**

Non-Reversing	
Non-Fusible Disconnect Class 8538	<b>16-31, 16-33</b>
Fusible Disconnect Class 8538	<b>16-30, 16-32, 16-33</b>
Mag-Gard® Circuit Breaker Class 8539	<b>16-34, 16-35, 16-36</b>
Thermal Magnetic Circuit Breaker Class 8539	<b>16-37, 16-38</b>
Reversing	
Non-Fusible Disconnect Class 8738	<b>16-51</b>
Fusible Disconnect Class 8738, 8739	<b>16-50, 16-51</b>
Mag-Gard Circuit Breaker Class 8739	<b>16-52</b>
Thermal Magnetic Circuit Breaker Class 8739	<b>16-54</b>

**Contactors—NEMA Rated**

Non-Reversing Class 8502	<b>16-13</b>
Reversing Class 8702	<b>16-43</b>
TeSys U Simple Motor Starter	<b>16-11</b>
Vacuum, Low Voltage, Non-Reversing Class 8502	<b>16-27</b>
Vacuum, Low Voltage, Reversing Class 8702	<b>16-49</b>

**Definite Purpose Contactors and Starters** **16-76, 16-88**  
Class 8910, 8965

**Duplex Motor Starters** Class 8941 **16-85**

**Enclosures** Class 9991 **16-102**

**External Reset Mechanisms** Class 9065 **16-101**

**Factory Modifications (Forms)** **16-109**

**Lighting Contactors** Class 8903 **16-64**

**Manual Starters and Switches** Class 2510, 2511, 2512 **16-2**

**Multispeed Starters** Class 8810 **16-58**

**Overload Relays**

Bimetallic Class 9065	<b>16-98</b>
Melting Alloy Class 9065	<b>16-90</b>
Motor Logic/Motor Logic Plus Class 9065	<b>16-91</b>
TeSys T Motor Management System	<b>16-92</b>

**Pump Panels**

Full Voltage Class 8940 **16-81**

**Reduced Voltage Starters**

Electro-Mechanical Class 8600 **See Supplemental Digest**

**Starters, Full Voltage—NEMA Rated**

Non-Reversing Class 8536	<b>16-17</b>
Reversing Class 8736	<b>16-45</b>
Vacuum, Low Voltage, Non-Reversing Class 8536	<b>16-29</b>

**Additional Products**

Accessories Class 9998, 9999	<b>16-117</b>
Renewal Parts Class 9998	<b>16-114</b>
Thermal Units	<b>16-125</b>
Reversing Drum Switches Class 2601	<b>16-10</b>





Fractional Horsepower Manual Starters with Melting Alloy Type Thermal Overload Relay

**Table 16.1: Single-Unit Types—Class 2510—Rated 16 A — Thermal Units**  
Prices shown do not include thermal units. Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

Type of Operator	No. of Poles	Features	NEMA 1 General Purpose Enclosure Surface Mounting				General Purpose Flush Mounting (Without Pull Box)						NEMA Type 4▲ Watertight and Dusttight Enclosure		NEMA Types 3R, 7 & 9 Hazardous Locations Div. 1 & 2 Class I Groups B, C, & D & Class II Groups E, F & G Enclosure		Open Type	Number of Thermal Units Required					
			Standard		Oversized		Gray Flush Plate		Standard Stainless Steel Flush Plate		Jumbo Stainless Steel Flush Plate		Type	\$ Price	Type	\$ Price			Type	\$ Price			
			Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price			Type	\$ Price			
<b>Basic Starter—Class 2510</b>																							
Toggle	1	Standard With Red Pilot Light◆	FG1 FG1P	86.00 129.00	FGJ1 FGJ1P	99.00 143.00	FF1 FF1P	78.00 122.00	FS1 FS1P	83.00 129.00	—	—	—	—	—	—	—	—	FO1 FO1P	71.00 116.00	1		
	2	Standard With Red Pilot Light◆	FG2 FG2P	99.00 143.00	FGJ2 FGJ2P	116.00 158.00	FF2 FF2P	93.00 120.00	FS2 FS2P	99.00 143.00	—	—	—	—	—	—	—	—	—	FO2 FO2P	86.00 129.00	1	
Key	1	Standard With Red Pilot Light◆	FG3 FG3P	116.00 158.00	FGJ3 FGJ3P	129.00 171.00	FF3 FF3P	107.00 149.00	FS3 FS3P	114.00 158.00	—	—	—	—	—	—	—	—	—	FO3 FO3P	99.00 143.00	1	
	2	Standard With Red Pilot Light◆	FG4 FG4P	129.00 171.00	FGJ4 FGJ4P	143.00 185.00	FF4 FF4P	122.00 165.00	FS4 FS4P	129.00 171.00	—	—	—	—	—	—	—	—	—	FO4 FO4P	114.00 158.00	1	
<b>Starter with Handle Guard/Lock-Off—Class 2510</b>																							
Toggle	1	Standard With Red Pilot Light◆	FG5 FG5P	99.00 143.00	FGJ5 FGJ5P	114.00 158.00	Order basic starter plus separate handle guard kit.						FW1 FW1P	320.00 435.00	FR1	350.00	—	—	—	—	—	—	1
	2	Standard With Red Pilot Light◆	FG6 FG6P	116.00 158.00	FGJ6 FGJ6P	129.00 171.00							FW2 FW2P	336.00 449.00	FR2	363.00	—	—	—	—	—	—	1

▲ Furnished with one 3/4" pipe tap in bottom (reversible for top feed). To obtain 3/4" pipe tap top and bottom, add suffix letter "H" to type number and add \$19.10 to price.  
■ For replacement starter, order open type above. For NEMA 4 with pilot light, retain pilot light mounting bracket from original device.

**Table 16.2: Duplex Units—Class 2510**

Type of Operator	No. of Poles	Features	NEMA 1 General Purpose Enclosure Surface Mounting		General Purpose Flush Mounting (Without Pull Box)				Replacement Starter Class 2510	Number of Thermal Units Required		
			Type	\$ Price	Type	\$ Price	Type	\$ Price			Type	\$ Price
			Type	\$ Price	Type	\$ Price	Type	\$ Price			Type	\$ Price
<b>One Starter in Duplex Enclosure—Class 2510</b>												
Toggle	2	Standard With Red Pilot Light◆	FG02	158.00	—	—	—	—	—	—	1	
			FG02P	201.00	—	—	—	—	—	—	—	
Key	2	With Red Pilot Light◆	FG04P	201.00	—	—	—	—	—	—	1	
<b>Two Starters in One Enclosure—Class 2510</b>												
Toggle	2 Each Str.	Standard With Red Pilot Light on Each◆	FG22	243.00	FF22	228.00	—	—	—	—	2	
			FG22P	399.00	FF22P	386.00	FS22P	399.00	—	—	—	
Key	2 Ea. Str.	With Red Pilot Light on Each◆	FG44P	458.00	FF44P	441.00	FS44P	458.00	—	—	2	
<b>Starter and "AUTO-OFF-HAND" SPDT Selector Switch (AC Only)—Class 2510</b>												
Toggle	1	Standard With Red Pilot Light◆	FG71	221.00	FF71	207.00	—	—	—	—	1	
			FG71P	264.00	FF71P	251.00	FS71P	264.00	—	—	—	
Key	2	Standard With Red Pilot Light◆	FG72	234.00	FF72	221.00	—	—	—	—	1	
			FG72P	278.00	FF72P	264.00	FS72P	278.00	—	—	—	
Key	2	With Red Pilot Light◆	FG74P	306.00	FF74P	293.00	FS74P	306.00	—	—	1	
<b>Two Speed Starters (AC Only)—Class 2512</b>										<b>Replacement Starter Class 2510</b>		
Toggle	1	With Mechanical Interlock: Standard	FG11	314.00	FF11	300.00	—	—	—	—	86.00	
		With 2 Red Pilot Lights◆	FG11P	471.00	FF11P	458.00	—	—	—	—	129.00	
	2	With Mechanical Interlock: Standard	FG22	342.00	FF22	329.00	—	—	—	—	99.00	
		With 2 Red Pilot Lights◆	FG22P	500.00	FF22P	485.00	—	—	—	—	143.00	
		With HIGH-OFF-LOW Selector Switch: With 2 Red Pilot Lights◆	—	—	—	FS101P	471.00	FO1PT	129.00	129.00		
		With HIGH-OFF-LOW Selector Switch: With 2 Red Pilot Lights◆	—	—	—	FS202P	500.00	FO2PT	143.00	143.00		

◆ For green pilot light, add the letter "G" to the catalog number (i.e. 2510FG2PG).

**Table 16.3: Horsepower Ratings Type F**

Volts	Maximum Horsepower		
	AC Single Phase		DC 2-Pole Only
	1-Pole	2-Pole	
115-230	1	1	3/4
277	1	1	—

Note: Continuous current rating—16 A.

**Table 16.4: Approvals—2510 Type F and K**

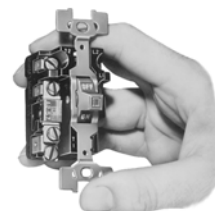
Enclosed		Open	
(UL Listed)	File E42243	(UL Component Recognized)	File E42243
	CCN NLRV		CCN NLRV2
CSA Certified File LR25490 Class 3211-05			

**Table 16.5: How to Order**

To Order Specify:	Catalog Number	
• Class Number	Class	Type
• Type Number	2510	FG1



Type FG2P



Type FO2

16 NEMA DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS

**Table 16.6: Non-Reversing—Class 2510**

Type of Operator	No. of Poles	Features	NEMA 1 General Purpose Enclosure Surface Mounting				General Purpose Flush Mounting (Without Pull Box)						NEMA Type 4 ▲ Watertight and Dusttight Enclosure		NEMA Types 3R, 7 & 9 ▲ Hazardous Locations Div. 1 & 2 Class I Groups B, C & D & Class II Groups E, F, and G Enclosure		Open Type	
			Standard		Oversized		Gray Flush Plate		Standard Stainless Steel Flush Plate		Jumbo Stainless Steel Flush Plate		Type	\$ Price	Type	\$ Price	Type	\$ Price
			Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price
Toggle	2	Standard With Pilot Light ♦ 115 Vac 230 Vac	KG1 66.00	KGJ1 81.00	KF1 59.00	KS1 66.00	—	—	—	—	—	—	KW1 314.00	KR1 342.00	KO1 52.00	—	—	
		KG1A 138.00 KG1B 138.00	KGJ1A 153.00 KGJ1B 153.00	KF1A 131.00 KF1B 131.00	KS1A 138.00 KS1B 138.00	KSJ1A 161.00 KSJ1B 161.00	—	—	—	—	—	—	—	—	—	KO1A 125.00 KO1B 125.00	—	—
	3	Standard With Pilot Light ♦ 208-277 Vac 440-600 Vac	KG2 149.00	KGJ2 165.00	KF2 143.00	KS2 149.00	—	—	—	—	—	—	KW2 386.00	KR2 442.00	KO2 120.00	—	—	
		KG2B 221.00 KG2C 221.00	KGJ2B 234.00 KGJ2C 234.00	KF2B 215.00 KF2C 215.00	KS2B 221.00 KS2C 221.00	KSJ2B 243.00 KSJ2C 243.00	—	—	—	—	—	—	—	—	—	KO2B 207.00 KO2C 207.00	—	—
	2	Standard With Pilot Light ♦ 115 Vac 230 Vac	KG5 78.00	KGJ5 93.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		KG5A 149.00 KG5B 149.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3	Standard With Pilot Light ♦ 208-277 Vac 440-600 Vac	KG6 162.00	KGJ6 176.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	KG6B 233.00 KG6C 233.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Key	2	Standard With Pilot Light ♦ 115 Vac 230 Vac	KG3 95.00	KGJ3 110.00	KF3 89.00	KS3 95.00	—	—	—	—	—	—	—	—	—	—	—	
		KG3A 167.00 KG3B 167.00	KGJ3A 179.00 KGJ3B 179.00	KF3A 161.00 KF3B 161.00	KS3A 167.00 KS3B 167.00	KSJ3A 185.00 KSJ3B 185.00	—	—	—	—	—	—	—	—	—	—	—	
	3	Standard With Pilot Light ♦ 208-277 Vac 440-600 Vac	KG4 179.00	KGJ4 192.00	KF4 171.00	KS4 179.00	—	—	—	—	—	—	—	—	—	—	—	
		KG4B 251.00 KG4C 251.00	KGJ4B 264.00 KGJ4C 264.00	KF4B 243.00 KF4C 243.00	KS4B 251.00 KS4C 251.00	KSJ4B 270.00 KSJ4C 270.00	—	—	—	—	—	—	—	—	—	—	—	
	2	Standard With Pilot Light ♦ 115 Vac 230 Vac	KG3 95.00	KGJ3 110.00	KF3 89.00	KS3 95.00	—	—	—	—	—	—	—	—	—	—	—	—
		KG3A 167.00 KG3B 167.00	KGJ3A 179.00 KGJ3B 179.00	KF3A 161.00 KF3B 161.00	KS3A 167.00 KS3B 167.00	KSJ3A 185.00 KSJ3B 185.00	—	—	—	—	—	—	—	—	—	—	—	—
3	Standard With Pilot Light ♦ 208-277 Vac 440-600 Vac	KG4 179.00	KGJ4 192.00	KF4 171.00	KS4 179.00	—	—	—	—	—	—	—	—	—	—	—	—	
	KG4B 251.00 KG4C 251.00	KGJ4B 264.00 KGJ4C 264.00	KF4B 243.00 KF4C 243.00	KS4B 251.00 KS4C 251.00	KSJ4B 270.00 KSJ4C 270.00	—	—	—	—	—	—	—	—	—	—	—	—	

▲ Furnished with one 3/4" pipe tap in bottom (reversible for top feed). To obtain 3/4" pipe tap top and bottom, add suffix letter "H" to type number and add \$28.70 to price.  
■ When replacing starter with pilot light in NEMA 4 enclosure, retain pilot light mounting bracket from original device.

**Table 16.7: Reversing—Class 2511**

Type of Operator	No. of Poles	Motor Types for Which Suitable	Features (Including Mechanical Interlock)	NEMA 1 General Purpose Enclosure Surface Mounting		With Flush Plate for Cavity Mounting (Without Pull Box)		Replacement Switch Class 2510	
				Type	\$ Price	Type	\$ Price	Type	\$ Price
Toggle	2	Single Ø 3-Lead Repulsion-Induction	Standard With Pilot Light: ♦ 115 Vac 230 Vac	KG11 287.00	—	KF11 270.00	—	KO1T 66.50	—
				KG11A 399.00 KG11B 399.00	—	KF11A 386.00 KF11B 386.00	—	KO1AT 138.00 KO1BT 138.00	—
Toggle	3	Three Ø; Also Single Ø Capacitor, Split Ø, or 4-Lead Repulsion-Induction	Standard With Pilot Light: ♦ 110–120 Vac 208–220 Vac 440–600 Vac	KG22 441.00	—	KF22 428.00	—	KO2T 149.00	—
				KG22A 557.00 KG22B 557.00 KG22C 557.00	—	KF22A 543.00 KF22B 543.00 KF22C 543.00	—	KO2AT 221.00 KO2BT 221.00 KO2CT 221.00	—
				—	—	—	—	—	—
				—	—	—	—	—	—

**Table 16.8: Two Speed—Class 2512**

Type of Operator	No. of Poles	Motor Types for Which Suitable	Features (Including Mechanical Interlock)	NEMA 1 General Purpose Enclosure Surface Mounting		With Flush Plate for Cavity Mounting (Without Pull Box)		Replacement Switch Class 2510	
				Type	\$ Price	Type	\$ Price	Type	\$ Price
Toggle	2	Single Ø Two Winding (3-Lead)	Standard With 2 Pilot Lights: ♦ 115 Vac 230 Vac	KG11 287.00	—	KF11 270.00	—	KO1T 66.50	—
				KG11A 513.00 KG11B 513.00	—	KF11A 500.00 KF11B 500.00	—	KO1AT 138.00 KO1BT 138.00	—
	3	Three Ø Separate Winding (Wye-Connected)	Standard With 2 Pilot Lights: ♦ 208–240 Vac 440–600 Vac	KG22 441.00	—	KF22 428.00	—	KO2T 152.00	—
				KG22B 671.00 KG22C 671.00	—	KF22B 656.00 KF22C 656.00	—	KO2BT 221.00 KO2CT 221.00	—

♦ For green pilot light, add the letter "G" to the catalog number (i.e. 2510KW2CG).

**Table 16.9: Class 2510 Horsepower Ratings**

Class 2510	No. of Poles	Motor Type AC	Maximum Hp				DC Rating		
			115 Volts	230 Volts	460 Volts	575 Volts	90 Volts	115 Volts	230 Volts
KO1 KO3	2	Single Ø	2	2	3	3	1	2	1-1/2
KO2 KO4	3	Three Ø	2	7-1/2	10	10	1	2	1-1/2
KO5	2	Single Ø	2	3	7-1/2	10	1	2	1-1/2
KO6	3	Three Ø	2	7-1/2	15	20	1	2	1-1/2

Note: Continuous current rating 30 A at 600 Vac maximum.

**Table 16.10: How to Order**

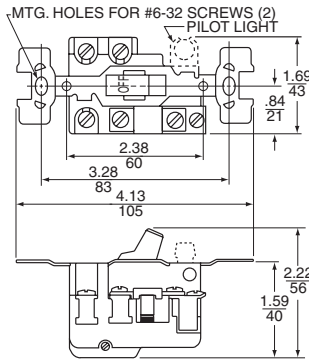
To Order Specify:		Catalog Number	
• Class Number		Class	Type
• Type Number		2510	KO2

**Table 16.11: Class 2511 and 2512 Horsepower Ratings Type K**

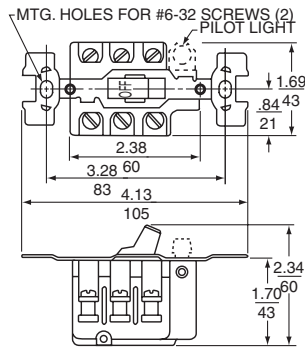
Device	No. of Poles	Motor Type AC	Maximum Hp			DC Ratings		
			115 Volts	230 Volts	460–575 Volts	90 Volts	115 Volts	230 Volts
Class 2511	2	Single Ø	2	2	3	1	2	1-1/2
	3	Three Ø	2	7-1/2	10	1	2	1-1/2
Class 2512	2	Single Ø	2	2	3	1	2	1-1/2
	3	3 Ø, Constant or Variable Torque	2	7-1/2	10	1	2	1-1/2
	3	3 Ø, Constant Horsepower	2	7-1/2	10	1	2	1-1/2

**16 NEMA/DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS**

Open Type



Types FO1, 1P, 2  
Fractional Hp Starter



Types KO1, 1A, 1B, 2, 2B, 2C  
Types KO5, 5A, 5B, 6, 6B, 6C  
Motor Starting Switch

NEMA 4 Watertight Die Cast Zinc Enclosure

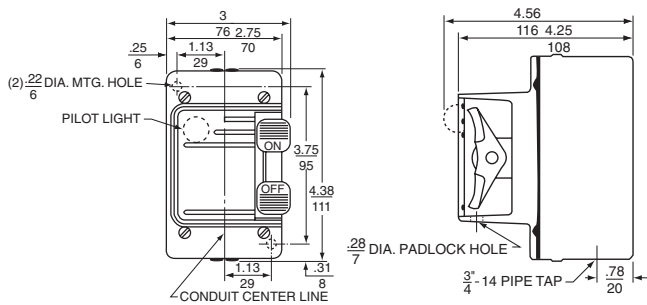


Table 16.12:

Device	Class	Type
Fractional Hp Starter	2510	FW1, 1P, 2, 2P
Motor Starting Switch	2510	KW1, 1A, 1B, 2, 2B, 2C

NEMA 1 General Purpose Enclosure (Flush Mount)

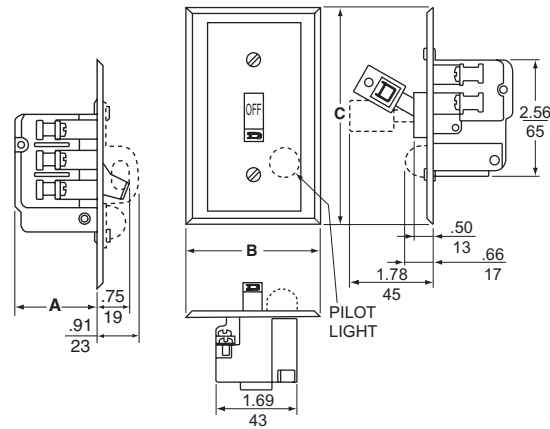
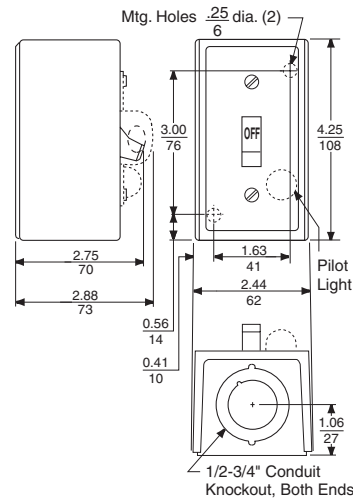


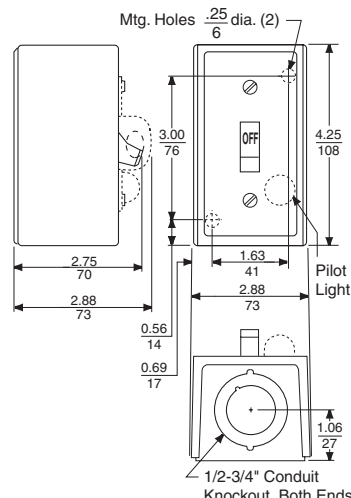
Table 16.13:

Device	Type of Operator	Class 2510 Type	Dimensions		
			A	B	C
Fractional Hp Starter	Toggle	FF1, 1P, 2, 2P FS1, 1P, 2, 2P	1-7/16	2-3/4	4-1/2
		FSJ1P, 2P	1-7/16	3-1/2	5-1/4
	Key	FF3, 3P, 4, 4P FS3, 3P, 4, 4P	1-7/16	2-3/4	4-1/2
		FSJ3P, 4P	1-7/16	3-1/2	5-1/4
Motor Starting Switch	Toggle	KF1, 1A, 1B, 2, 2B, 2C KS1, 1A, 1B, 2, 2B, 2C	1-3/4	2-3/4	4-1/2
		KSJ1A, 1B, 2B, 2C	1-3/4	3-1/2	5-1/4
	Key	KF3, 3A, 3B, 4, 4B, 4C KS3, 3A, 3B, 4, 4B, 4C	1-3/4	2-3/4	4-1/2
		KSJ3A, 3B, 4B, 4C	1-3/4	3-1/2	5-1/4

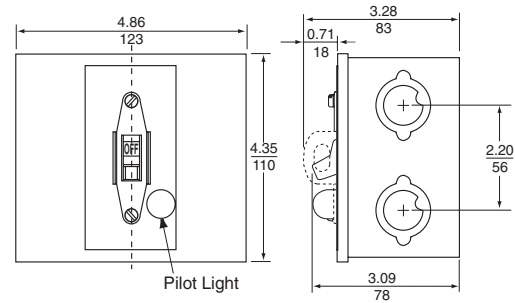
NEMA 1 General Purpose Enclosure (Surface Mount)



Standard  
(Class 2510 Types FG & KG, Single Unit)

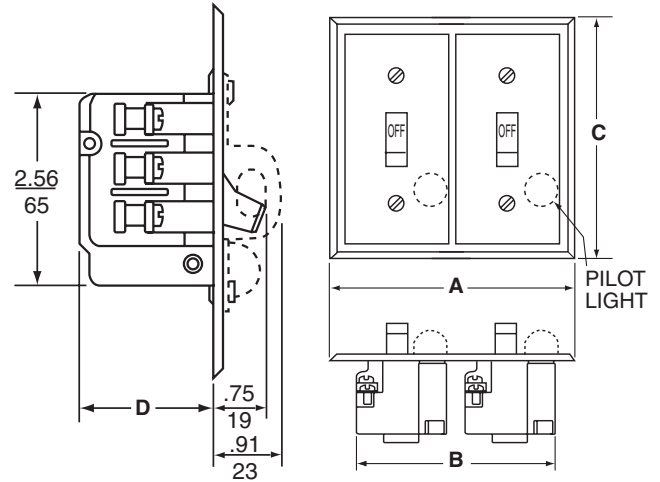
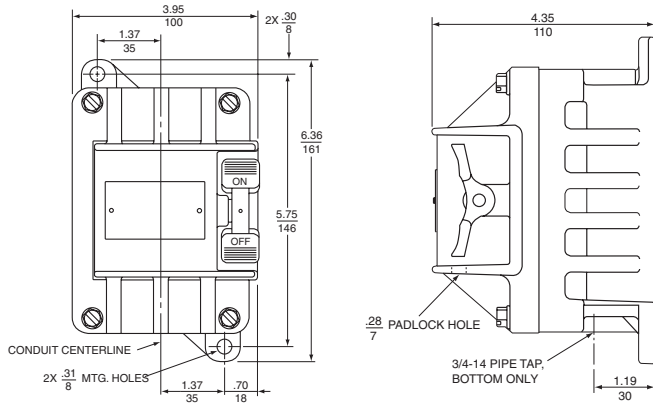


Oversized  
(Class 2510 Types FGJ & KGJ, Single Unit)



Jumbo  
(Class 9991 Type KE2; see page 16-9)

**NEMA 3R, 7, and 9 Aluminum Enclosure for Hazardous Locations**



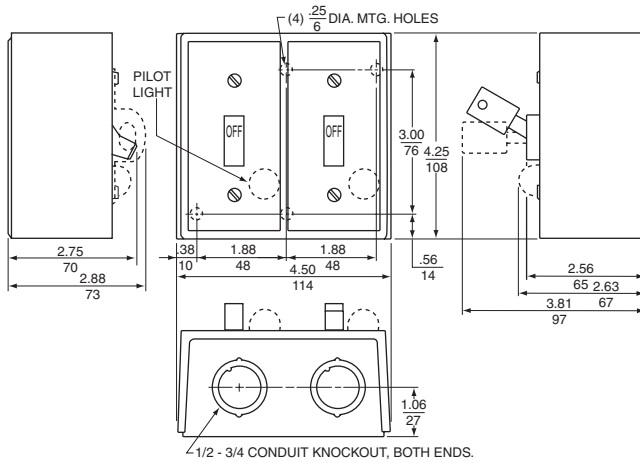
**Table 16.14: NEMA 3R, 7, and 9 Aluminum Enclosure for Hazardous Locations**

Device	Class	Type
Fractional Hp Starter	2510	FR1, 2
Motor Starting Switch	2510	KR1, 2

**Table 16.16: General Purpose Flush Mounting Plate for Duplex Devices**

Device	Type of Operator	Class	Type	Dimensions ♦			
				A	B	C	D
Two Starters	Toggle	2510	FF22, 22P FS22P	5-1/4 4-9/16	3-3/4 3-1/2	5-1/4 4-1/2	1-7/16 1-7/16
	Key	2510	FF44P FS44P	5-1/4 4-9/16	3-3/4 3-1/2	5-1/4 4-1/2	1-7/16 1-7/16
One Starter and One Selector Switch★	Toggle	2510	FF71, 71P, 72, 72P FS71P, 72P	5-1/4 4-9/16	3/4 3-1/2	5-1/4 4-1/2	2 2
	Key	2510	FF74P FS74P	5-1/4 4-9/16	3-3/4 3-1/2	5-1/4 4-1/2	2 2
Reversing Switch	Toggle	2511	KF11, 11A, 11B KF22, 22A KF22B, 22C	5-1/4	3-3/4	5-1/4	1-3/4
Two Speed Starter	Toggle	2512	FF11, 11P, 22, 22P	5-1/4	3-3/4	5-1/4	1-7/16
Two Speed Switch	Toggle	2512	KF11, 11A, 11B, KF22, 22B, 22C	5-1/4	3-3/4	5-1/4	1-3/4

**Dimensions for Duplex Devices**



♦ Dimensions include factory wired power connections.  
★ Selector Switch is on left, extends 1-5/8" from mounting surface.

**Table 16.15: NEMA 1 General Purpose Surface Mount Enclosure for Duplex Devices**

Device	Type of Operator	Class	Type
One Starter	Toggle	2510	FGO2, 02P
	Key	2510	FGO4P
Two Starters	Toggle	2510	FG22, 22P
	Key	2510	FG44P
One Str. and One Sel. Sw. ▲	Toggle	2510	FG71, 71P, 72, 72P
	Key	2510	FG74P
Reversing Switch ■	Toggle	2511	KG11, 11A, 11B, 22, 22A, 22B, 22C
Two Speed Starter	Toggle	2512	FG11, 11P, 22, 22P
Two Speed Switch	Toggle	2512	KG11, 11A, 11B, 22, 22B, 22C

▲ Selector switch is on left, increases overall depth to 3-1/2".  
■ Only one pilot light (located on right) is used on Class 2511 switches.



Types M and T integral horsepower manual starters provide convenient "On-Off" operation of small single phase, polyphase or DC motors. Typical applications include small machine tools, pumps, fans and conveyors.

- Push button (M) or toggle (T) operators
- Reliable overload protection
- Pilot light and auxiliary contact available

**Table 16.17: Integral Horsepower Manual Starters**

Note that the prices shown do not include thermal units. Standard trip thermal units are **\$21.50** each; see page 16-125 for selection information.

		Non-Reversing						Class 2510				Max. Voltage: 600 Vac						
No. of Poles	NEMA Size	Ratings			NEMA 1 Surface Mounting			NEMA 4/4X Watertight and Dusttight Enclosure Brushed Stainless Steel		NEMA 4/4X Watertight, Dusttight and Corrosion-Resistant Glass-Polyester Enclosure		▲ NEMA 7 & 9 For Hazardous Locations Class I – Groups C, D Class II – Groups E, F & G		NEMA 12 Dusttight and Driptight Industrial Use Enclosure		Open Type		
		Motor Voltage	Max. Hp		Square P.B. Operator	Toggle Operator	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Square P.B. Operator	Toggle Operator	\$ Price
			Poly-Phase	Single Phase														
2-Pole	M-0	115 230	—	1 2	MBG1	TBG1	264.00	MBW11 ■	720.00	MBW1 ■	720.00	MBR1 ■	1004.00	MBA1 ■	363.00	MBO1	TBO1	234.00
	M-1	115 230	—	2 3	MCG1	TCG1	336.00	MCW11	891.00	MCW1	891.00	MCR1	1197.00	MCA1	435.00	MCO1	TCO1	306.00
	M-1P	115 230	—	3 5	MCG2	TCG2	491.00	MCW12	1089.00	MCW2	1089.00	MCR2	1382.00	MCA2	593.00	MCO2	TCO2	309.00
3-Pole	M-0	115 200-230 380-575	— 3 5	—	MBG2	TBG2	314.00	MBW12 ■	770.00	MBW2 ■	770.00	MBR2 ■	1062.00	MBA2 ■	414.00	MBO2	TBO2	287.00
	M-1	115 200-230 380-575	— 7-1/2 10	—	MCG3	TCG3	386.00	MCW13	941.00	MCW3	941.00	MCR3	1254.00	MCA3	485.00	MCO3	TCO3	356.00
DC 2-Pole	M-0	115 230	—	1 hp–D.C. 1-1/2 hp–D.C.	MBG4	TBG4	264.00	MBW14	720.00	MBW4	720.00	—	—	MBA4	363.00	MBO4	TBO4	234.00
	M-1	115 230	—	1-1/2 hp–D.C. 2 hp–D.C.	MCG5	TCG5	336.00	MCW15	891.00	MCW5	891.00	MCR5	1188.00	MCA5	435.00	MCO5	TCO5	306.00

▲ NEMA 7 & 9 enclosures are cast-iron. NEMA 7 & 9 enclosures (cast aluminum) are available for outdoor use; to order these type of enclosures, replace the "R" in the catalog number with a "T". For additional information, contact your local Square D Field Sales Office.  
 ■ Approved for group motor installations per NEC 430-53(c).

**All Except NEMA 7 & 9**



File E42243  
CCN NLRV



File LR60905  
Class 3211-05

**NEMA 7 & 9 Only**



File E58760  
CCN NPXZ



File LR26817  
Class 3218-04

**Table 16.18: How to Order**

To Order Specify:	Catalog Number	
• Class Number	Class	Type
• Type Number	2510	MCA1

**Reversing and Two Speed**

Class 2511 reversing and Class 2512 two-speed manual starters consist of two mechanically interlocked Class 2510 Types M or T manual starters.

**Table 16.19: Reversing Class 2511**

Class	Description	No. of Poles	NEMA Size	Ratings		NEMA 1 Surface Mounting			Open Type		
				Motor Voltage	Maximum Hp	Square P.B. Operator	Toggle Operator	\$ Price	Square P.B. Operator	Toggle Operator	\$ Price
2511	Standard	3-Pole	M-0	200-230 380-575	3 5	MBG1	TBG1	984.00	MBO1	TBO1	899.00
			M-1	200-230 380-575	7-1/2 10	MCG1	TCG1	1197.00	MCO1	TCO1	1112.00

**Table 16.20: Two Speed (Wye-Connected Separate Winding Motors Only) Class 2512**

Class	Description	No. of Poles	NEMA Size	Ratings			NEMA 1 Surface Mounting			Open Type		
				Motor Voltage	Constant Hp	Constant Torque or Variable Torque	Square P.B. Operator	Toggle Operator	\$ Price	Square P.B. Operator	Toggle Operator	\$ Price
2512	Standard	3-Pole	M-0	200-230 380-575	2 3	3 5	MBG1	TBG1	984.00	MBO1	TBO1	899.00
			M-1	200-230 380-575	5 7-1/2	7-1/2 10	MCG1	TCG1	1197.00	MCO1	TCO1	1112.00

**Thermal Units**

Starters will not operate without properly installed thermal units and device reset. Thermal unit must be installed so that markings face the front of starter.

**Application Data**

**Size**—Available in NEMA Sizes M-0, M-1, and M-1P.

**Poles**—Two poles single phase; three poles polyphase; 2 poles DC.

**Voltage**—600 volts AC max.; 250 volts DC max.

**Overload Relays**—Melting alloy thermal overload relays have provisions for one Type B thermal unit for single phase starters and three Type B thermal units for three phase starters. **All thermal units must be installed and the device reset before the starter contacts will operate.** After overload relays have tripped, allow one or two minutes for the alloy to solidify before resetting.

**Operator**—Available with a push button or toggle operator in open and NEMA 1 versions. NEMA 4/4X (stainless) & 12 versions utilize a direct acting push button only. NEMA 4/4X (polyester) & 7/9 versions utilize an external toggle to actuate a push button device inside.

**Maintenance of Equipment**

For proper performance, all equipment should be periodically inspected and maintained. Replacement contacts and interlocks are available in kit form to facilitate servicing and stocking. In addition, the service bulletin contains an exploded view of the device with components clearly marked for easy identification by description and part number.

**Mechanism Lock Off**—Both open devices and starters in NEMA 1 surface and flush mounting, and NEMA 4, 4X, 7 & 9 and 12 enclosures can be locked in the OFF or STOP position. The NEMA 1 surface mounting, 4, 4X, 7 & 9 and 12 enclosures can also be locked closed to prevent unauthorized entry.

**Table 16.21: Terminal information and Replacement Contact Kits**

NEMA Size	Power Terminals		Auxiliary Interlock Terminals		No. of Poles	Service Bulletin	Replacement Contact Kit	
	Type of Lug	Wire Size (Solid or Stranded Copper Wire) Min.-Max.	Type of Lug	Wire Size (Solid or Stranded Copper Wire) Min.-Max.			Class	Type
M-0	Pressure Wire	#14-#8	Pressure Wire	#16-#12	2 or 3	312AS	9998	ML1
M-1	Pressure Wire	#14-#8	Pressure Wire	#16-#12	2 or 3	312AS	9998	ML2
M-1P	Box Lug	#14-#6	Pressure Wire	#16-#12	2	312AS	9998	ML2

**Accessories and Modification Kits**

**One auxiliary contact**, either N.O. or N.C. can easily be added internally to any open or enclosed Type M or T manual starter. It occupies the space provided in either the upper right hand or left hand corners of the device. These contacts are for AC loads only. For electrical ratings refer to page 16-119, Class 9999 Types SX11 or SX12.

A unique red **pilot light** assembly that clips into place is available **factory installed** on NEMA 1, 4, 4X, 12 and flush enclosures or as a **field modification kit** on the NEMA 1 surface or flush mounting enclosures. See page 16-9. The color cap assembly snaps into a knockout in the enclosure cover on the NEMA 1 enclosures. Pilot light kits are available for use on Various voltages (110-600 volts). Pilot light assemblies are not available for NEMA 7 & 9 enclosures.





**Manual Starters and Switches**

**Accessories and Modifications**

Class 2510, 2511, 2512 / Refer to Catalog 2510CT9701

**Table 16.22: Accessories—Class 2510 Types F and K**

Description	Class & Type	\$ Price
Handle Guard Kit with Padlock Provision ▲	2510FL1	14.30
Emergency Off Actuator	2510PB1	35.60
Additional Key for Key Operated Devices	2510FK1	4.80

▲ Standard on Type K devices.

**Table 16.23: Pilot Light Kits—Class 2510 Types F and K**

Application	Voltage	Red Pilot Light	Green Pilot Light	\$ Price
		Class & Type	Class & Type	
Type KF, KG, KW ■	110–120 Vac	9999PL11	9999PL11G	71.00
	208–277 Vac	9999PL12	9999PL12G	71.00
	440–600 Vac	9999PL13	9999PL13G	71.00
Type FF or FG, FW ■	115–240 Vac/dc	9999PL10	9999PL10G	42.80

■ Lenses cannot be replaced. Pilot light kits for NEMA 4 Enclosed Units are for replacement purposes only.

**Table 16.24: Replacement Nameplates—Class 2510 Types F and K**

Description	Application	Nameplate Marking	Nameplate Type Number—Class 2510				\$ Price
			For Type K Switch		For Type F Starter (Includes "Reset" Indication)		
			Without Pilot Light	With Pilot Light	Without Pilot Light	With Pilot Light	
1-3/4" x 2-13/16" Nameplate with Embossed Mounting Holes for #6 Oval Head Screws	Standard commercial switch box cover or flush plate, including Square D stainless steel plates	(Blank) (Special marking – Specify marking desired.)	FN1	—	FN2	—	21.50
			FN5	—	FN6	—	42.80
1-29/32" x 3-27/32" Flat Nameplate with Mounting Holes for #6 Pan Head Screws	Square D NEMA 1 surface mounted enclosure or gray flush plate	(Blank) High Low Forward Reverse (Special marking—Specify marking desired.)	FN10	FN20	FN30	FN40	21.50
			FN11	FN21	FN31	FN41	21.50
			FN12	FN22	FN32	FN42	21.50
			FN13	—	—	—	21.50
			FN14	FN24	—	—	21.50
			FN15	FN25	FN35	FN45	42.80

**Table 16.25: Modifications (Types M & T only)**

Description	Factory Modifications and Forms		Field Modifications	
	Form Number	Price Addition	Kit Class & Type	\$ Price
Red Pilot Light ♦	P11▲	77.00	9999MP1 (110–120 V) 9999MP2 (208–240 V) 9999MP3 (440–600 V)	71.00
Auxiliary Contacts ★	X1 (1 N.O.) X2 (1 N.C.)	105.00	9999SX11 (N.O.) 9999SX12 (N.C.)	99.00
Jumper Straps ▼	N/A	—	9998SO31	14.30
Contactor only	Y76	No Charge	N/A	—

- ♦ May only be field-added to NEMA 1 enclosures. For green pilot light, order 9999SPG1 additionally.
- ★ For proper operation, only one auxiliary contact kit per device may be added.
- ▼ Used to control a single phase motor utilizing a three phase starter.
- ▲ P11 Pilot Light Voltage Codes:  
120 V—V02  
200/208 V—V08  
230 V—V03  
460 V—V06  
575 V—V07  
The pilot light Form P11 requires a voltage code.  
Catalog number example: 2510MBG1V02P11.

**Table 16.26: How to Order**

To Order Specify:	Catalog Number	
• Class Number	Class	Type
• Type Number	9991	KE1

**Contact Kits**

See page 16-116 for Class 9998 Replacement Contact Kits.

**Table 16.27: Replacement Parts**

Description	Class and Type	\$ Price
Replacement Toggle Kits: Type FW and KW (NEMA 4) Type FR and KR (NEMA 7 & 9)	9998HW1	29.30
	9998HR2	30.90
Replacement Handle Kits: NEMA 12 (Ser. B) Type MBA, MCA NEMA 4/4X (Stainless) (Ser. B) Type MBW, MCW NEMA 4/4X (Polyester) Type MBW, MCW NEMA 7 and 9 Type MBR, MCR	9998HWA1	57.00
	9998HWA1	57.00
	9998HR3	57.00
	9998HR3	57.00
Internal Lever	9998IL1	14.30

**Table 16.28: Enclosures**

For use with Class 2510 Type	Enclosure	Catalog Number	\$ Price
F and K	NEMA 1 Standard	9991EN1	29.30
M—Sizes M0 & M1		9991MG1	57.00
M—Size M1P		9991MG2	57.00
FO1, FO1P, FO2, FO2P, FO3, FO3P, FO4, FO4P	NEMA 1 Oversized	9991FE1	42.80
KO1, KO1A, KO1B, KO2, KO2B, KO2C, KO3, KO3A, KO3B, KO4, KO4B, KO4C, KO5, KO5A, KO5B, KO6, KO6B, KO6C	NEMA 1 Oversized	9991KE1	42.80
	NEMA 1 Jumbo	9991KE2	86.00
	NEMA 3R	9991KE3	215.00

**16 NEMA/DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS**

**NEMA 1, 3R, 4 & 13 Without Overload Protection**

Class 2601 reversing drum switches may be used for across-the-line starting and reversing of AC polyphase, AC single phase or DC motors, where overload protection is not required or is provided separately. They are compact and inexpensive but ruggedly constructed. Drum switches are field convertible from maintained only to momentary only operation. This conversion consists of removing the handle screw and handle, turning the shaft 180 degrees, then replacing the handle and handle screw.

**Optional handles** – All devices offer as standard a one piece handle. An optional **ball and shaft** or **fluted type** handle is available. Drum switches with optional handles are available on a factory Quick-Ship basis only. To order, add the letter B or F to the type number, e.g., Class 2601 Type AW2B for a ball and shaft type, Class 2601 Type AW2F for a fluted type. Add **\$19.10** to the price for a fluted type, no adder for a ball and shaft type. (See photos below.)



Type AG2

Table 16.29:

600 Vac Maximum				Class 2601						360 Vdc Maximum			
Ratings				NEMA 1 General Purpose Enclosure		NEMA 4 Watertight and Dusttight Enclosure		NEMA 3R Rainproof Outdoor Enclosure		NEMA 1 Maintained & Momentary ▲		NEMA 13 Oiltight Flush Mounting	
Voltage	Maximum Horsepower			Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price
	AC Single Phase	AC Poly-Phase	DC										
115-200/230 230 460/575	1-1/2 — 2	— 2 —	1/4 — 1/4	AG2	158.00	AW2	428.00	AH2	207.00	AG2S2	158.00	AF2	131.00
115-200/230 230 460/575	1-1/2 — 3 5	— 5 — 7-1/2	2 — 2 —	BG1	428.00	BW1	590.00	N/A	—	BG1S4	428.00	BF1	356.00

▲ Maintained – “Forward”; Momentary – “Reverse”; (Not field convertible)



File E42243  
CCN NLRV

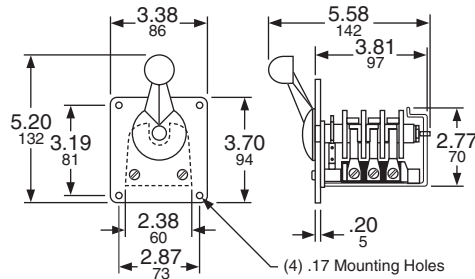


File LR25490  
Class 3211-05

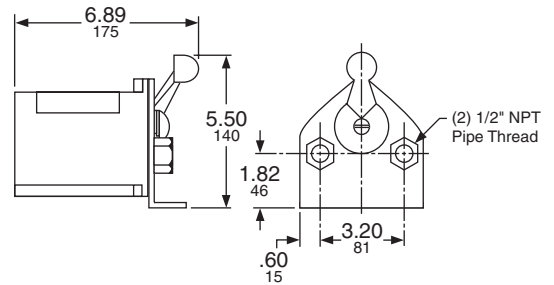
**Approximate Dimensions**



Type AW2



Class 2601 Type AF2



Class 2601 Types AW and BW

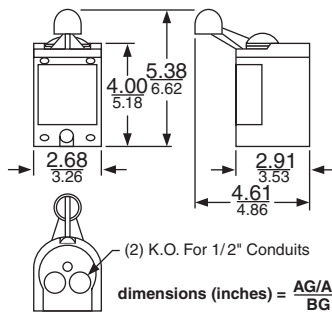
Optional Handles



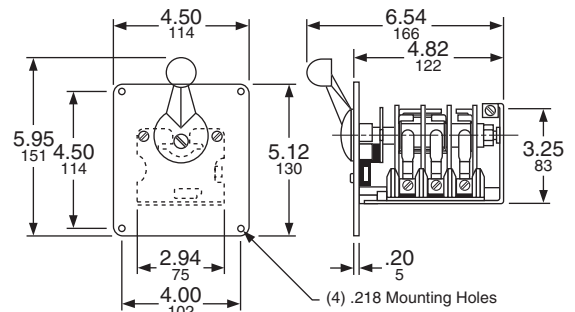
Ball and Shaft Type



Fluted Type



Class 2601 Types AG, AH, BG

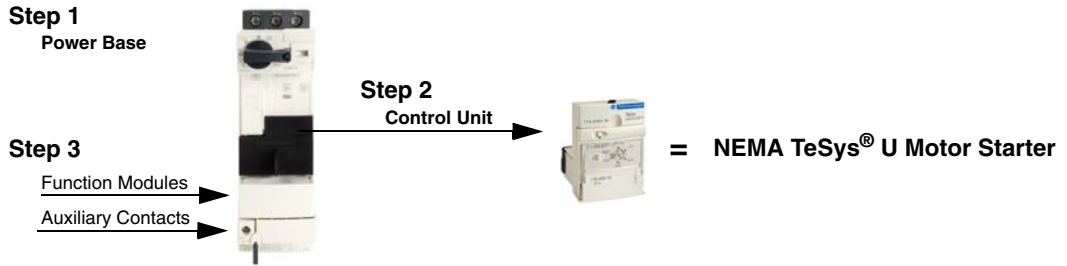


Class 2601 Type BF1

Table 16.30: How to Order

To Order Specify:	Catalog Number	
• Class Number	Class	Type
• Type Number	2601	AG2

NEMA rated TeSys U motor starter is integrated, simple to choose and to install, consisting of a control unit snapped in a powerbase. NEMA rated TeSys U can be configured to fit specific applications as well. The NEMA Rated TeSys U uses the same optional accessories: reverser, current limiter, predictive maintenance options and communication options as the IEC TeSys U.



**Selecting a NEMA TeSys U Motor Starter in Three Steps**

**Table 16.31: Step 1. Select Power Base (LUS32NR as a starter, LUB32NR as a self-protected starter)**

Control Connection	NEMA Size	Three Phase (HP max.)				Single Phase (HP max.)	Power Bases	
		200/208 V	220/240 V	460 V	575/600 V	240 V	Catalog Number	\$ Price
With screw terminations	1	7.5	7.5	10	10	3	LUS32NR	348.00
	1	7.5	7.5	10	10	3	LUB32NR	488.00

**Table 16.32: Step 2. Select Control Unit**

Setting Range (Amps)	Standard 3-phase Class 10 trip ▲	\$ Price	Advanced 3-phase Class 10 trip ▲	\$ Price	Advanced single-phase Class 10 trip ▲	\$ Price	Advanced 3-phase Class 20 trip ▲	\$ Price
0.15–0.6	LUCAX6**	120.00	LUCBX6**	150.00	LUCCX6**	150.00	LUCDX6**	150.00
0.3–1.4	LUCA1X**	120.00	LUCB1X**	150.00	LUCC1X**	150.00	LUCD1X**	150.00
1.25–5.0	LUCA05**	120.00	LUCB05**	150.00	LUCC05**	150.00	LUCD05**	150.00
3–12	LUCA12**	120.00	LUCB12**	150.00	LUCC12**	150.00	LUCD12**	150.00
4.5–18 ■	LUCA18**	120.00	LUCB18**	150.00	LUCC18**	150.00	LUCD18**	150.00
8–32 ■	LUCA32**	120.00	LUCB32**	150.00	LUCC32**	150.00	LUCD32**	150.00

- ▲ Complete catalog number by adding appropriate code from voltage code table below. For example: LUCAX6FU.
- Control units for 4.5–18 and 8–32 can be used ONLY with 32 amp rated power bases (LUS32 / LUB32 / LU2B32 / LUS32NR / LUB32NR).
- ◆ The control unit contains solid state overload relay and control power source for TeSys U. For more details on the different control units, their functions, and placement on the power base see page 18-29.

**Table 16.33: Voltage Codes**

Volts	24	48–72	110–240
DC	BL★	—	—
AC	B	—	—
DC or AC	—	ES▼	FU

- ★ DC voltage with range of 0.90 to 1.10 of nominal.
- ▼ 48–72 Vdc; 48 Vac

**Table 16.34: Step 3. Select Auxiliary Contacts (optional)**

Terminals	Contact Indicates	Contact Normal Status	Contact State for Each Mode△						Catalog Number	\$ Price
			Off	Ready	Run	Short Circuit Trip	Overload Trip (Manual Reset)	Overload Trip (Remote/Auto Reset)□		
Screw	Ready condition	N.O.	O	I	I	O	O	I	LUA1C11	34.50
	Fault condition	N.C.	I	I	I	O	O	I		
Screw	Ready condition	N.O.	O	I	I	O	O	I	LUA1C20	
	Fault condition	N.O.	O	O	O	I	I	O		

**Auxiliary Contact Function Modules**

-	-	2 N.O.	-	-	-	-	-	-	LUFN20	34.50
-	-	1 N.O. and 1 N.C.	-	-	-	-	-	-	LUFN11	
-	-	2 N.C.	-	-	-	-	-	-	LUFN02	

- △ I—indicates closed contact; O—indicates open contact
- Requires multifunction or advanced control unit plus fault differentiation module LUFDDA10.

Accessories for both LUS32/LUS32NR and LUB32/LUB32NR	Quick Description	For details & selection, see pages:
Current Limiter	Increases the breaking capacity to 130kA @ 460 V	18-30
Reverser	Stacked or side mounted	18-30
Line phase barrier	Required for use as a self-protected combination starter (UL508E)	18-30
Multifunction Control Unit	Has functions for monitoring and predictive maintenance	18-30
Function modules	Fault differentiation, Thermal overload, Motor load indication	18-30
Communication modules	Integrates into existing networks, major protocols available	18-31
TeSys U Starter	Use TeSys U as a starter only	18-32
Soft Starter + TeSys U	Use Altistart U01Soft Starter with TeSys U	18-32
Powerbus	Use TeSys U with a prewired system	18-31
Configuration and connection accessories	PowerSuite software, busbar, external handle	18-31

Accessories ..... pages 18-29 to 18-31  
Dimensions ..... page 18-50



E164862  
CCN NLDX



LR43364  
Class 3211 08



**Class 8536**

**Type S C G - 3 V02**

**Form S**

General Classification	
8502	Contactors Page 16-13
8536	Starter Page 16-17
8538	Combination Starter with Disconnect Switch Page 16-30
8539	Combination Starter with Circuit Breaker Page 16-34
8702	Reversing Contactor Page 16-43
8736	Reversing Starter Page 16-45
8738	Reversing Combination Starter with Disconnect Switch Page 16-50
8739	Reversing Combination Starter with Circuit Breaker Page 16-52
8810	Two Speed Starter Page 16-58 ▲
8903	Type S Lighting Contactors Page 16-65 ▲
8940	Pumping Plant Panel Page 16-81 ▲
8941	Duplex Controller Page 16-85 ▲

Design	
Type S NEMA Contactors and Starters	

NEMA Size		8903 (only)	
A	Size 00		
B	Size 0	M	30 Amperes
C	Size 1	P	60 Amperes
D	Size 2	Q	100 Amperes
E	Size 3	V	200 Amperes
F	Size 4	X	300 Amperes
G	Size 5	Y	400 Amperes
H	Size 6	Z	600 Amperes
J	Size 7	J	800 Amperes

Enclosure	
A	NEMA 12 Industrial Use
F	NEMA 1 Flush Mounting General Purpose
G	NEMA 1 General Purpose Surface Mounting
H	NEMA 3R Rainproof
O	Open Style Device (no enclosure)
R	NEMA 7 & 9 Hazardous Environments, Spin Top
T	NEMA 7 & 9 Hazardous Environments, Bolted
W	NEMA 4 Watertight, 4X Corrosion Resistant

Numerals	
Used to designate specific, physical arrangements, such as number of poles, fuse clip size, etc.; but the numbering varies with Class of equipment. Consult Digest listings for specific device numbers.	

Voltage Code	
AC operated devices without control transformer	
Code	Voltage/Frequency
V01	24/60
V02	120/60 or 110/50
V06	480/60 or 440/50
V07	600/60 or 550/50
V08	208/60

V81 - 480V Primary, 120V Secondary for units using a fused transformer control circuit Form (F4T).

This is only a partial listing consult Digest pages 16-13 and 16-110 for more information.

Common Forms (factory modifications) Page 16-109	
A	"Start-Stop" pushbuttons in the enclosure cover
B■	Bimetallic overload relays
C	"Hand-Off-Auto" selector switch in the enclosure cover
F4T	Fused transformer control circuit (primary fuses only)
FF4T	Fused transformer control circuit (primary & secondary fuses)
H	Solid state overload relay
P1	Red ON pilot light in the enclosure cover
P2	Green OFF pilot light in cover
S	Separate control circuit
X01	One "normally closed" auxiliary contact N.C.
X10	One "normally open" auxiliary contact N.O.

Consult Digest pages 16-109 to 16-113 for additional form letters, When more than one form is applied to a single device, arrange Forms in alphabetical order.

- ▲ Combination two speed starters will replace the "S" with a "C", "U" or "D". Pumping plant panels have Various leading characters. Not all use Type S contactors. Duplex controllers use "N", "C", "U", and "D".
- May also designate Motor Logic Plus overload relay

**Table 16.35: How to Order**

To Order Specify:	Catalog Number			
	Class	Type	Voltage Code	Form(s)
<ul style="list-style-type: none"> <li>• Class Number</li> <li>• Type Number</li> <li>• Voltage Code</li> <li>• Form(s)</li> </ul> see pages 16-109-16-113	8539	SCG44	V06	AH20P1X11

Note: Description: NEMA Size 1, (10 Hp) Mag-Gard Combo Starter in a NEMA Type 1 enclosure with a 480V coil, start/stop pushbutton (A), class 20 SSOLR (H20), red pilot light (P1), 1 N.O. and 1 N.C. auxiliary contact (X11)

**IMPORTANT - This information is intended for general interpretation of catalog numbers. Do not use to create catalog numbers for this product line.**

Note: The terms Type and Form do not appear in the catalog number.

Devices are wired from factory according to customer preference as follows:

- Common control
- Separate control (Form S)
- Control power transformer (CPT)

**Full Voltage Contactors—  
NEMA Rated**

Class 8502 Type S magnetic contactors are used to switch heating loads, capacitors, transformers, and electric motors where overload protection is provided separately. Class 8502 contactors are available in NEMA sizes 00 through 7. Type S contactors are designed for operation at 600 Vac, 50 to 60 Hz.



Type SCO2  
Size 1, 3-Pole Contactor

**Table 16.36: 3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

NEMA Size	Continuous Current Ratings	Motor Voltage	Max. Hp	Open Type		NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight, Dusttight Brushed Stainless Steel Enclosure (Size 0-5)▲	
				Type	\$ Price	Type	\$ Price	Type	\$ Price
00	9	200 230 460 575	1-1/2 1-1/2 2 2	SAO12■	329.00	SAG12■	360.00	Use Size 0	
0	18	200 230 460 575	3 3 5 5	SBO2■	414.00	SBG2■	446.00	SBW12■	945.00
1	27	200 230 460 575	7-1/2 7-1/2 10 10	SCO2■	485.00	SCG2■	518.00	SCW12■	1031.00
2	45	200 230 460 575	10 15 25 25	SDO2■	882.00	SDG2■	1031.00	SDW12■	1391.00
3	90	200 230 460 575	25 30 50 50	SEO2■	1425.00	SEG2■	1715.00	SEW12■	3167.00
4	135	200 230 460 575	40 50 100 100	SFO2■	3419.00	SFG2■	4022.00	SFW12■	6501.00
5	270	200 230 460 575	75 100 200 200	SGO2■	7451.00	SGG2■	8550.00	SGW12■	11685.00
6	540	200 230 460 575	150 200 400 400	SHO2■	20339.00	SHG2■	25172.00	SHW2■	32378.00
7	810	200 230 460 575	— 300 600 600	SJO2■	29028.00	SJG2■	33875.00	SJW2■	40995.00

- ▲ Size 6 and 7 are rated NEMA 4 only, painted sheet steel.
- Coil voltage code must be specified to order this product. Refer to standard voltage codes shown below.

**Table 16.37: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24♦	—	V01	No Charge
120★	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

- ♦ 24 V coils are not available on Sizes 4–7. On Sizes 00–3, where 24 V coils are available, Form S (separate control) must be specified (i.e., order as 8502SBO2V01S).
  - ★ 120 Volt Polyphase contactors are wired for separate control Form S must be specified (i.e., order as 8502SCO2V02S).
- Note: For voltage codes used with control transformers, see page 16-110.  
Form S (separate control) is used when a separate source of power is available for the control (coil) voltage. Form S is supplied at no charge.

Dimensions .....page 16-23  
 Factory Modifications (Forms) .....page 16-109  
 Separate Enclosures (Class 9991) .....page 16-102  
 Replacement Parts (Class 9998) .....page 16-114  
 Type S Accessories (Class 9999) .....page 16-117

For How to Order Information, see page 16-12.

**Table 16.38: 3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

NEMA Size	Continuous Current Ratings	Motor Voltage	Max. Hp	NEMA 4X Watertight, Dusttight, Corrosion-Resistant Glass-Polyester Enclosure		NEMA 7 & 9 Hazardous Locations Div. 1 & 2 Class I, Groups C & D Class II, Groups E, F, & G					NEMA 12/3R ▲ Dusttight & Driptight Industrial Use Enclosure	
				Type	\$ Price	Bolted Type		\$ Price	SPIN TOP® Type	\$ Price	Type	\$ Price
						Cast Iron ■	Cast Aluminum★					
00	9	200 230 460 575	1-1/2 1-1/2 2 2	Use Size 0		Use Size 0			Use Size 0		Use Size 0	
0	18	200 230 460 575	3 3 5 5	SBW22◆	945.00	SBT2◆	SBT42◆	2070.00	SBR2◆	2591.00	SBA2◆	617.00
1	27	200 230 460 575	7-1/2 7-1/2 10 10	SCW22◆	1031.00	SCT2◆	SCT42◆	2163.00	SCR2◆	2705.00	SCA2◆	689.00
2	45	200 230 460 575	10 15 25 25	SDW22◆	2057.00	SDT2◆	SDT42◆	3482.00	SDR2◆	4350.00	SDA2◆	1344.00
3	90	200 230 460 575	25 30 50 50	SEW22◆	3959.00	—	SET42◆	5205.00	SER2◆	2007.00	SEA2◆	2084.00
4	135	200 230 460 575	40 50 100 100	SFW22◆	8123.00	—	SFT42◆	8415.00	SFR2◆	10524.00	SFA2◆	5247.00
5	270	200 230 460 575	75 100 200 200	—	—	—	SGT42◆	18542.00	SGR2◆	23178.00	SGA2◆	11685.00
6	540	200 230 460 575	150 200 400 400	—	—	—	—	—	—	—	SHA2◆	29016.00
7	810	200 230 460 575	— 300 600 600	—	—	—	—	—	—	—	SJA2◆	37719.00

- ▲ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
- Limited to one Pilot Light and a Selector Switch or Start-Stop Push Button.
- ◆ Coil voltage code must be specified to order this product. Refer to voltage codes shown on page 16-13.
- ★ NEMA 7 and 9 bolted cast aluminum are not UL listed.

**Auxiliary Units**

Auxiliary contacts and power poles can be added by the factory or in the field on all Type S starters and contactors. The table below shows the maximum number of auxiliary units (in addition to the holding circuit contact) that can be added to a given size starter or contactor. In addition, it is possible to add a second internal contact on NEMA Size 0, 1, and 2 contactors and starters.

**Table 16.39:**

NEMA Size	Type	No. of Poles of Basic Contactor	Maximum Number of External Auxiliary Units (In addition to holding circuit contact)
00	SA	2–3	4 single circuit auxiliary contacts (N.O. or N.C.) if second internal auxiliary contact is not used.
0, 1 and 2	SB SC SD	1, 2 or 3	4 single circuit auxiliary contacts (N.O. or N.C.)
		4 or 5	2 single circuit auxiliary contacts (N.O. or N.C.) plus 1 power pole adder (1 or 2 poles, N.O. or N.C.).
3, 4 and 5	SE SF SG	2–5 (Size 3 and 4)	2 single circuit auxiliary contacts (N.O. or N.C.)
		2–3 (Size 5)	3 single circuit auxiliary contacts (N.O. or N.C.)
6 and 7	SH SJ	2–3	2 single circuit auxiliary contacts (N.O. or N.C.) plus 1 NEMA Size 0-1 or Size 2 power pole adder (1 or 2 poles, N.O. or N.C.)
			3 single circuit auxiliary contacts (N.O. or N.C.)
			2 single circuit auxiliary contacts (N.O. or N.C.) plus 1 NEMA Size 0–1 or Size 2 power pole adder (1 or 2 poles, N.O. or N.C.)

- Dimensions . . . . . page 16-23
- Factory Modifications (Forms) . . . . . page 16-109
- Separate Enclosures (Class 9991) . . . . . page 16-102
- Replacement Parts (Class 9998) . . . . . page 16-114
- Type S Accessories (Class 9999) . . . . . page 16-117

For How to Order Information, see page 16-12.

**Table 16.40: 600 Vac Maximum—50–60 Hz**

NEMA Size	Continuous Current Ratings	Motor Voltage	Max. Hp	Open Type		NEMA 1 General Purpose Enclosure		NEMA 4 & 4X –Watertight, Dusttight, Brushed Stainless Steel Enclosure (Size 0-5)▲	
				Type	\$ Price	Type	\$ Price	Type	\$ Price
<b>1-Pole Single Phase</b>									
0	18	115 230	1 2	SBO5■	329.00	SBG5■	360.00	SBW15■	860.00
1	27	115 230	2 3	SCO5■	399.00	SCG5■	432.00	SCW15■	945.00
<b>2-Pole Single Phase</b>									
00	9	115 230	1/3 1	SAO11■	287.00	SAG11■	318.00	Use Size 0	
0	18	115 230	1 2	SBO1■	372.00	SBG1■	404.00	SBW11■	903.00
1	27	115 230	2 3	SCO1■	441.00	SCG1■	476.00	SCW11■	989.00
2	45	115 230	3 7-1/2	SDO1■	827.00	SDG1■	975.00	SDW11■	1998.00
3	90	—	—	SEO1■	1310.00	SEG1■	1601.00	SEW11■	3054.00
4	135	—	—	SFO1■	3162.00	SFG1■	3765.00	SFW11■	6245.00
5	270	—	—	SGO1■	6852.00	SGG1■	7952.00	SGW11■	11087.00
6	540	—	—	SHO1■	17433.00	SHG1■	22266.00	SHW11■	29388.00
7	810	—	—	SJO1■	25452.00	SJG1■	30285.00	SJW11■	37407.00
<b>4-Pole Polyphase</b>									
0	18	200 230 460 575	3 3 5 5	SBO3■	527.00	SBG3■	561.00	SBW13■	1074.00
1	27	200 230 460 575	7-1/2 7-1/2 10 10	SCO3■	599.00	SCG3■	633.00	SCW13■	1146.00
2	45	200 230 460 575	10 15 25 25	SDO3■	1139.00	SDG3■	1287.00	SDW13■	2712.00
3	90	200 230 460 575	25 30 50 50	SEO3■	1823.00	SEG3■	2114.00	SEW13■	3965.00
4	135	200 230 460 575	40 50 100 100	SFO3■	4757.00	SFG3■	5360.00	SFW13■	8864.00
<b>5-Pole Polyphase</b>									
0	18	200 230 460 575	3 3 5 5	SBO4■	684.00	SBG4■	719.00	SBW14■	1229.00
1	27	200 230 460 575	7-1/2 7-1/2 10 10	SCO4■	755.00	SCG4■	788.00	SCW14■	1301.00
2	45	200 230 460 575	10 15 25 25	SDO4■	1710.00	SDG4■	1857.00	SDW14■	3281.00
3	90	200 230 460 575	25 30 50 50	SEO4■	2735.00	SEG4■	3024.00	SEW14■	4877.00
4	135	200 230 460 575	40 50 100 100	SFO4■	6579.00	SFG4■	7182.00	SFW14■	10688.00

▲ Size 6 and 7 are rated NEMA 4 only, painted sheet steel.  
■ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes listed on page 16-13.

Dimensions .....page 16-23  
Factory Modifications (Forms) ..... page 16-109  
Separate Enclosures (Class 9991) ..... page 16-102  
Replacement Parts (Class 9998) ..... page 16-114  
Type S Accessories (Class 9999) ..... page 16-117

For How to Order Information, see page 16-12.

**Table 16.41: 600 Vac Maximum—50–60 Hz**

NEMA Size	Continuous Current Ratings	Motor Voltage	Max. Hp	NEMA 4X Watertight, Dusttight Corrosion-Resistant Glass-Polyester Enclosure		NEMA 7 & 9, Div. 1 & 2 Hazardous Locations Class I, Groups C & D Class II, Groups E, F & G			NEMA 12/3R & Dusttight & Driptight Industrial Use Enclosure				
				Type	\$ Price	Bolted Type			SPIN TOP® Type	\$ Price	Type	\$ Price	
						Cast Iron ■	Cast Aluminum★	\$ Price					
<b>1-Pole Single Phase</b>													
0	18	115 230	1 2	—	—	SBT5♦	SBT45♦	1979.00	SBR5♦	2475.00	SBA5♦	531.00	
1	27	115 230	2 3	—	—	SCT5♦	SCT45♦	2070.00	SCR5♦	2591.00	SCA5♦	603.00	
<b>2-Pole Single Phase</b>													
00	9	115 230	1/3 1	Use Size 0		Use Size 0			Use Size 0		Use Size 0		
0	18	115 230	1 2	SBW21♦	903.00	SBT1♦	SBT41♦	2021.00	SBR1♦	2528.00	SBA1♦	575.00	
1	27	115 230	2 3	SCW21♦	989.00	SCT1♦	SCT41♦	2100.00	SCR1♦	2627.00	SCA1♦	647.00	
2	45	115 230	3 7-1/2	SDW21♦	1998.00	SDT1♦	SDT41♦	3402.00	SDR1♦	4257.00	SDA1♦	1287.00	
3	90	—	—	Consult Square D/ Schneider Electric CIC at 1-888-SquareD (1-888-778-2733)		—	SET41♦	5076.00	SER1♦	6344.00	SEA1♦	1971.00	
4	135	—	—			—	SFT41♦	8139.00	SFR1♦	10175.00	SFA1♦	4991.00	
5	270	—	—	—	—	—	—	—	SGR1♦	22350.00	SGA1♦	11087.00	
6	540	—	—	—	—	—	—	—	—	—	SHA1♦	26112.00	
7	810	—	—	—	—	—	—	—	—	—	SJA1♦	34131.00	
<b>4-Pole Polyphase</b>													
0	18	200 230 460 575	3 3 5 5	SBW23♦	1074.00	SBT3♦	Consult Square D/ Schneider Electric CIC at 1-888-SquareD (1-888-778-2733)	2199.00	SBR3♦	2748.00	SBA3♦	732.00	
1	27	200 230 460 575	7-1/2 7-1/2 10 19	SCW23♦	1146.00	SCT3♦		2291.00	SCR3♦	2867.00	SCA3♦	804.00	
2	45	200 230 460 575	10 15 25 25	SDW23♦	2712.00	SDT3♦		4199.00	SDR3♦	5255.00	SDA3♦	1601.00	
3	90	200 230 460 575	25 30 50 50	Consult Square D/Schneider Electric CIC at 1-888-778-2733)		—		SER3♦	7604.00	SEA3♦	2484.00		
4	135	200 230 460 575	40 50 100 100			—		SFR3♦	14283.00	SFA3♦	7011.00		
<b>5-Pole Polyphase</b>													
0	18	200 230 460 575	3 3 5 5	Consult Square D/ Schneider Electric CIC at 1-888-SquareD (1-888-778-2733)		—	—	—	—	—	SBA4♦	890.00	
1	27	200 230 460 575	7-1/2 7-1/2 10 10			—	—	—	—	—	—	SCA4♦	959.00
2	45	200 230 460 575	10 15 25 25			—	—	—	—	—	—	SDA4♦	2169.00
3	90	200 230 460 575	25 30 50 50			—	—	—	—	—	—	SEA4♦	3396.00
4	135	200 230 460 575	40 50 100 100			—	—	—	—	—	—	SFA4♦	8837.00

- ▲ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
- Limited to 1 pilot light and a selector switch or Start-Stop push button.
- ♦ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown on page 16-13.
- ★ NEMA 7 and 9 bolted cast aluminum are not UL listed.

Coil Voltage Codes and page number reference for additional information are shown on page 16-13.  
For How to Order Information, see page 16-12.



**General Information**

Type S magnetic starters are used for full-voltage starting and stopping of AC squirrel cage motors. Motor overload protection is provided via melting alloy type thermal overload relays. Type S starters are available in NEMA Sizes 00 through 7, and are designed for operation at 600 Vac, 50 to 60 Hz.

**Solid State Overload Relay Protection (MOTOR LOGIC®)**

These ambient insensitive overload relays are available on Sizes 00 through 6 and standard on size 7. They provide phase loss, phase unbalance protection. To order, add Form **H10** (for Class 10), **H20** (for Class 20), or **H30** (for selectable trip class protection). For more information about MOTOR LOGIC, see pages 16-91, 16-111 and 16-112.

**3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

Note that prices shown do not include thermal units. Devices require 3 thermal units (Sizes 00–6). Standard trip thermal units are **\$21.50** each. See page 16-125 for selection information.



Type SCO3  
Size 1, 3-Pole Starter



Schneider Electric offers express shipping for factory modified NEMA Type 1 and Type 12/3R Enclosed Starters. When you need them fast, our Laser™ Delivery program is the answer to getting your product when you need it most. Ask for Laser™ Delivery, then select the product and the modifications you need when you place your order. It's as easy as that!

**Table 16.42:**

NEMA Size	Continuous Current Ratings	Motor Voltage	Max. Hp	Open Type		NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight, Dusttight Brushed Stainless Steel Enclosure (Size 0-5)▲		NEMA 4X Watertight, Dusttight, Corrosion-Resistant Glass-Polyester Enclosure	
				Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price
00	9	200 230 460 575	1-1/2 1-1/2 2 2	SAO12■	386.00	SAG12■	419.00	Use Size 0		Use Size 0	
0	18	200 230 460 575	3 3 5 5	SBO2■	485.00	SBG2■	518.00	SBW12■	1017.00	SBW22■	1017.00
1	27	200 230 460 575	7-1/2 7-1/2 10 10	SCO3■	557.00	SCG3■	590.00	SCW13■	1103.00	SCW23■	1103.00
2	45	200 230 460 575	10 15 25 25	SDO1■	1013.00	SDG1■	1160.00	SDW11■	2186.00	SDW21■	2186.00
3	90	200 230 460 575	25 30 50 50	SEO1■	1638.00	SEG1■	1929.00	SEW11■	3380.00	SEW21■	4226.00
4	135	200 230 460 575	40 50 100 100	SFO1■	3747.00	SFG1■	4350.00	SFW11■	6827.00	SFW21■	8535.00
5	270	200 230 460 575	75 100 200 200	SGO1■	9152.00	SGG1■	10254.00	SGW11■	15795.00	—	—
6	540	200 230 460 575	150 200 400 400	SHO2■	21756.00	SHG2■	28881.00	SHW2■	36003.00	—	—
7	810	200 230 460 575	— 300 600 600	SJO2■	31256.00	SJG2■	38381.00	SJW2■	45503.00	—	—

- ▲ Size 6 and 7 are rated NEMA 4 only, painted sheet steel.
- Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown below.

**Table 16.43: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24♦	—	V01	No Charge
120★	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

- ♦ 24 V coils are not available on Sizes 4–7. On Sizes 00–3, where 24 V coils are available, **Form S** (separate control) must be specified (i.e., order as 8536SBO2V01S).
  - ★ 120 Volt Polyphase contactors are wired for separate control. **Form S** (separate control) must be specified (i.e., order as 8536SCO2V02S).
- Note: For voltage codes used with control transformers, see page 16-110.  
Form S (separate control) is used when a separate source of power is available for the control (coil) voltage.  
Form S is supplied at no charge.

Dimensions .....page 16-23  
 Factory Modifications (Forms) .....page 16-109  
 Separate Enclosures (Class 9991).....page 16-102  
 Replacement Parts (Class 9998) .....page 16-114  
 Type S Accessories (Class 9999).....page 16-117

For How to Order Information, see page 16-12.

**Table 16.44: 3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

Note that prices shown do not include thermal units. Devices require 3 thermal units (Sizes 00–6). Standard trip thermal units are **\$21.50** each. See page 16-125 for selection information.

NEMA Size	Continuous Current Ratings	Motor Voltage	Max. Hp	NEMA 7 & 9 For Hazardous Locations Div. 1 & 2 Class I—Groups C, D Class II—Groups E, F, & G			SPIN TOP® Type	\$ Price	NEMA 12/3R▲ Dusttight & Driptight Industrial Use Enclosure	
				Bolted Type					Type	\$ Price
				Cast Iron■	Cast Aluminum★	\$ Price				
00	9	200 230 460 575	1-1/2 1-1/2 2 2	Use Size 0			Use Size 0	Use Size 0		
0	18	200 230 460 575	3 3 5 5	SBT2♦	SBT42♦	2150.00	SBR2♦	2690.00	SBA2♦	689.00
1	27	200 230 460 575	7-1/2 7-1/2 10 10	SCT3♦	SCT43♦	2241.00	SCR3♦	2804.00	SCA3♦	761.00
2	45	200 230 460 575	10 15 25 25	SDT1♦	SDT41♦	3623.00	SDR1♦	4527.00	SDA1♦	1472.00
3	90	200 230 460 575	25 30 50 50	—	SET43♦	5439.00	SER3♦	6800.00	SEA1♦	2298.00
4	135	200 230 460 575	40 50 100 100	—	SFT41♦	8778.00	SFR1♦	10971.00	SFA1♦	5574.00
5	270	200 230 460 575	75 100 200 200	—	SGT41♦	20970.00	SGR1♦	26211.00	SGA1♦	13386.00
6	540	200 230 460 575	150 200 400 400	—	—	—	—	—	SHA2♦	32727.00
7	810	200 230 460 575	— 300 600 600	—	—	—	—	—	SJA2♦	42227.00

- ▲ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
- Limited to 1 Pilot Light and Selector Switch or Start-Stop Push-Button.
- ♦ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes listed in selection Table 16.43 shown on page 16-17.
- ★ NEMA 7 and 9 bolted cast aluminum are not UL listed.



Dimensions . . . . . page 16-23  
 Factory Modifications (Forms) . . . . . page 16-109  
 Separate Enclosures (Class 9991) . . . . . page 16-102  
 Replacement Parts (Class 9998) . . . . . page 16-114  
 Type S Accessories (Class 9999) . . . . . page 16-117

For How to Order Information, see page 16-12.

Schneider Electric offers express shipping for factory modified NEMA Type 1 and Type 12/3R Enclosed Starters. When you need them fast, our Laser™ Delivery program is the answer to getting your product when you need it most. Ask for Laser™ Delivery, then select the product and the modifications you need when you place your order. It's as easy as that!

**16 NEMA/DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS**

**2-Pole Single Phase—600 Vac Maximum—50–60 Hz**

**Table 16.45:**

Note that prices shown do not include thermal units. Devices require 1 thermal unit. Standard trip thermal units are **\$21.50** each. See page 16-125 for selection information.

NEMA Size	Continuous Current Ratings	Motor Voltage	Max. Hp	Open Type		NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight, Dusttight Brushed Stainless Steel Enclosure		NEMA 4X Watertight, Dusttight, Corrosion-Resistant Glass-Polyester Enclosure	
				Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price
00	9	115 230	1/3 1	SAO11▲	386.00	SAG11▲	419.00	Use Size 0		Use Size 0	
0	18	115 230	1 2	SBO1▲	435.00	SBG1▲	468.00	SBW11▲	966.00	SBW21▲	966.00
1	27	115 230	2 3	SCO1▲	507.00	SCG1▲	539.00	SCW11▲	1052.00	SCW21▲	1052.00
1P	36	115 230	3 5	SCO2▲	662.00	SCG2▲	696.00	SCW12▲	1209.00	SCW22▲	1209.00
2	45	115 230	3 7-1/2	SDO6▲	918.00	SDG6▲	1067.00	SDW16▲	2091.00	SDW26▲	2091.00

**4-Pole, 2-Phase—600 Vac Maximum—50–60 Hz**

**Table 16.46:**

Note that prices shown do not include thermal units. Devices require 2 thermal units. Standard trip thermal units are **\$21.50** each. See page 16-125 for selection information.

NEMA Size	Continuous Current Ratings	Motor Voltage	Max. Hp	Open Type		NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight, Dusttight Brushed Stainless Steel Enclosure		NEMA 4X Watertight, Dusttight, Corrosion-Resistant Glass-Polyester Enclosure	
				Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price
0	18	200 230 460 575	3 3 5 5	SBO3▲	629.00	SBG3▲	675.00	SBW13▲	1229.00	SBW23▲	1229.00
1	27	200 230 460 575	7-1/2 7-1/2 10 10	SCO4▲	714.00	SCG4▲	761.00	SCW14▲	1301.00	SCW24▲	1301.00
2	45	200 230 460 575	10 15 25 25	SDO2▲	1283.00	SDG2▲	1430.00	SDW12▲	2910.00	SDW22▲	2910.00
3	90	200 230 460 575	25 30 50 50	SEO2▲	2096.00	SEG2▲	2357.00	SEW12▲	4206.00	Consult Square D/ Schneider Electric CIC at 1-888-SquareD (1-888-778-2733)	
4	135	200 230 460 575	40 50 100 100	SFO2▲	5142.00	SFG2▲	5715.00	SFW12▲	9221.00		

▲ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes listed below.

**Table 16.47: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24 ■	—	V01	No Charge
120 ♦	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

■ 24 V coils are not available on Sizes 4–7. On sizes 00–3, where 24 V coils are available, **Form S** (separate control) must be specified (i.e., order as 8536SBO2V01S).

♦ 120 Volt Polyphase starters are wired for separate control. **Form S** (separate control) must be specified (i.e., order as 8536SCO2V02S).

Note: For voltage codes used with control transformers, see 16-110.

Form S (separate control) is used when a separate source of power is available for the control (coil) voltage. Form S is supplied at no charge.

Dimensions ..... page 16-23  
 Factory Modifications (Forms) ..... page 16-109  
 Separate Enclosures (Class 9991) ..... page 16-102  
 Replacement Parts (Class 9998) ..... page 16-114  
 Type S Accessories (Class 9999) ..... page 16-117

For How to Order Information, see page 16-12.

**2-Pole Single Phase—600 Vac Maximum—50–60 Hz**

**Table 16.48:**

Note that prices shown do not include thermal units. Devices require 1 thermal unit. Standard trip thermal units are **\$21.50** each. See page 16-125 for selection information.

NEMA Size	Continuous Current Ratings	Motor Voltage	Max. Hp	NEMA 7 & 9 Hazardous Locations, Div. 1 & 2 Class I, Groups C & D Class II, Groups E, F, & G					NEMA 12/3R ▲ Dusttight & Driptight Industrial Use Enclosure	
				Bolted Type			SPIN TOP® Type	\$ Price	Type	\$ Price
				Cast Iron ■	Cast Aluminum★	\$ Price				
00	9	115 230	1/3 1	Use Size 0			Use Size 0		Use Size 0	
0	18	115 230	1 2	SBT1♦	SBT41	2091.00	SBR1♦	2619.00	SBA1♦	639.00
1	27	115 230	2 3	SCT1♦	SCT41	2186.00	SCR1♦	2732.00	SCA1♦	710.00
1P	36	115 230	3 5	SCT2♦	SCT42	2363.00	SCR2♦	2952.00	SCA2♦	867.00
2	45	115 230	3 7-1/2	SDT6♦	SDT46	3513.00	SDR6♦	4400.00	SDA6♦	1380.00

★ NEMA 7 and 9 bolted cast aluminum are not UL listed.

**4-Pole 2-Phase—600 Vac Maximum—50–60 Hz**

**Table 16.49:**

Note that prices shown do not include thermal units. Devices require 2 thermal units. Standard trip thermal units are **\$21.50** each. See page 16-125 for selection information.

NEMA Size	Continuous Current Ratings	Motor Voltage	Max. Hp	Coil Voltage	NEMA 7 & 9 Hazardous Locations Class I, Groups C & D Class II, Groups E, F, & G					NEMA 12/3R ▲ Dusttight & Driptight Industrial Use Enclosure	
					Bolted Type			SPIN TOP® Type	\$ Price	Type	\$ Price
					Cast Iron ■	Cast Aluminum	\$ Price				
0	18	200 230 460 575	3 3 5 5	208 240 480 600	SBT3♦	Consult Square D/ Schneider Electric CIC at 1-888-SquareD (1-888-778-2733)	2348.00	SBR3♦	2939.00	SBA3♦	846.00
1	27	200 230 460 575	7-1/2 7-1/2 10 10	208 240 480 600	SCT4♦		2433.00	SCR4♦	3047.00	SCA4♦	932.00
2	45	200 230 460 575	10 15 25 25	208 240 480 600	SDT2♦		4797.00	SDR2♦	6002.00	SDA2♦	1742.00
3	90	200 230 460 575	25 30 50 50	208 240 480 600	Consult Square D/ Schneider Electric CIC at 1-888-SquareD (1-888-778-2733)		—	SER2♦	8679.00	SEA2♦	2726.00
4	135	200 230 460 575	40 50 100 100	208 240 480 600	Consult Square D/ Schneider Electric CIC at 1-888-SquareD (1-888-778-2733)		—	—	—	SFA2♦	7370.00

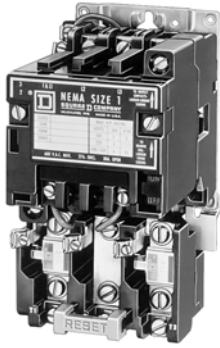
▲ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.

■ Limited to 1 Pilot Light and Selector Switch or Start-Stop Push-Button.

♦ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes listed on page 16-19.

Dimensions . . . . . page 16-23  
 Factory Modifications (Forms) . . . . . page 16-109  
 Separate Enclosures (Class 9991) . . . . . page 16-102  
 Replacement Parts (Class 9998) . . . . . page 16-114  
 Type S Accessories (Class 9999) . . . . . page 16-117

For How to Order Information, see page 16-12.



**Types SB–SD With Auxiliary Load Terminals**

It is sometimes desirable to use capacitors in motor branch circuits to improve power factor. The Size 0–2 Type SB–SD starters listed below include three auxiliary terminals to allow easy connection of power factor correction capacitors. When capacitors are connected using these terminals, no adjustment to the selection of thermal units is necessary. The auxiliary terminals accept #12–16 solid or stranded wire. NEMA Size 3 & 4 starters have provisions for auxiliary connections. User must supply lugs as necessary.

The Type S starters with auxiliary load terminals may also be used to control two motors simultaneously from a single starter. However, this application is tightly restricted by Section 430-53 of the National Electrical Code. Refer to the NEC for restrictions regarding overload protection, size of controller and motor branch circuit protection.

**Table 16.50: 3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

Note that prices shown do not include thermal units. Devices require 3 thermal units. Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

NEMA Size	Motor Voltage	Max. Hp	Open Type	\$ Price
0	200	3	SBTO2▲	485.00
	230	3		
	460	5		
	575	5		
1	200	7-1/2	SCTO3▲	557.00
	230	7-1/2		
	460	10		
	575	10		
2	200	10	SDTO1▲	1011.00
	230	15		
	460	25		
	575	25		

**Extra Capacity Single Phase Starters (Not NEMA Rated)**

**2-Pole Single Phase—250 Vac Maximum—50–60 Hz**

**Table 16.51:**

Note that prices shown do not include thermal unit. Devices require 1 thermal unit. Standard trip thermal unit is \$21.50 each. See page 16-125 for selection information.

Motor Voltage	Max. Hp	Open Type		NEMA 1 General Purpose Enclosure		NEMA 3R Rainproof, Sleet Resistant, Outdoor Use Enclosure		NEMA 4 & 4X Watertight, Dusttight Brushed Stainless Steel Enclosure		NEMA 4X Watertight Corrosion Resistant Glass-Polyester Enclosure		NEMA 12/3R ♦ Dusttight & Driptight Industrial Use Enclosure	
		Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price
115 230	5 10	SDO8▲■	1304.00	—	—	SDH8▲■	1787.00	—	—	—	—	—	—
115 230	7-1/2 15	SEO6▲	1431.00	SEG6▲	1722.00	SEH6▲	2091.00	SEW16▲	3176.00	SEW26▲	3969.00	SEA6▲	2091.00

▲ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown below.

■ Uses a Size 3 overload relay.

♦ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.

**Table 16.52: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24★	—	V01	No Charge
120▼	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

★ 24 V coils are not available on Sizes 4–7. On Sizes 00–3, where 24 V coils are available, **Form S** (separate control) must be specified.

▼ 120 Volt Polyphase starters are wired for separate control and must be ordered with Form S (i.e., 8536SCO2V02S).

Note: For voltage codes used with control transformers, see page 16-110.

Form S (separate control) is used when a separate source of power is available for the control (coil) voltage. Form S is supplied at no charge.

Dimensions . . . . . page 16-23  
 Factory Modifications (Forms) . . . . . page 16-109  
 Separate Enclosures (Class 9991) . . . . . page 16-102  
 Replacement Parts (Class 9998) . . . . . page 16-114  
 Type S Accessories (Class 9999) . . . . . page 16-117

For How to Order Information, see page 16-12.

Application Data for Selection

Table 16.53:

NEMA Size	Load Voltage	Maximum Hp Rating—Nonplugging and Nonjogging Duty		Maximum Hp Rating—Plugging and Jogging Duty		Continuous Current Rating, Amperes—600 Volt Max.	Service—Limit Current Rating, Amperes	Tungsten and Infrared Lamp Load, Amperes—250 Volts Max.	Resistance Heating Loads, KW—other than Infrared Lamp Loads *		KVA Rating for Switching Transformer Primaries at 50 or 60 Cycles				3Ø Rating for Switching Capacitors	
		Single Phase	Poly-Phase	Single Phase	Poly-Phase				Single Phase	Poly-Phase	Transformers Having Inrush Currents (Worst Case Peak) of Not More Than 20 Times Peak of Continuous Current Rating		Transformers Having Inrush Currents (Worst Case Peak) of Over 20 Through 40 Times Peak of Continuous Current Rating			KVAR
											Single Phase	Poly-Phase	Single Phase	Poly-Phase		
00	115	1/2	—	—	—	9	11	5	—	—	—	—	—	—	—	—
	200	—	1-1/2	—	—	9	11	5	—	—	—	—	—	—	—	—
	230	1	1-1/2	—	—	9	11	5	—	—	—	—	—	—	—	—
	380	—	1-1/2	—	—	9	11	—	—	—	—	—	—	—	—	—
	460	—	2	—	—	9	11	—	—	—	—	—	—	—	—	—
575	—	2	—	—	9	11	—	—	—	—	—	—	—	—	—	—
0	115	1	—	1/2	—	18	21	10	—	—	0.6	—	0.3	—	—	—
	200	—	3	—	1-1/2	18	21	10	—	—	1.8	—	0.9	—	—	—
	230	2	3	1	1-1/2	18	21	10	—	—	1.2	2.1	0.6	1.0	—	—
	380	—	5	—	1-1/2	18	21	—	—	—	—	—	—	—	—	—
	460	—	5	—	2	18	21	—	—	—	2.4	4.2	1.2	2.1	—	—
575	—	5	—	2	18	21	—	—	—	3.0	5.2	1.5	2.6	—	—	
1	115	2	—	1	—	27	32	15	3	5	1.2	—	0.6	—	—	—
	200	—	7-1/2	—	3	27	32	15	—	9.1	—	3.6	—	1.8	—	—
	230	3	7-1/2	2	3	27	32	15	6	10	2.4	4.3	1.2	2.1	—	—
	380	—	10	—	5	27	32	—	—	16.5	—	—	—	—	—	—
	460	—	10	—	5	27	32	—	12	20	4.9	8.5	2.5	4.3	—	—
575	—	10	—	5	27	32	—	15	25	6.2	11.0	3.1	5.3	—	—	
1P	115	3	—	1-1/2	—	36	42	24	—	—	—	—	—	—	—	—
	230	5	—	3	—	36	42	24	—	—	—	—	—	—	—	—
2	115	3	—	2	—	45	52	30	5	8.5	2.1	—	1.0	—	—	—
	200	—	10	—	7-1/2	45	52	30	—	15.4	—	6.3	—	3.1	—	—
	230	7-1/2	15	5	10	45	52	30	10	17	4.1	7.2	2.1	3.6	8	—
	380	—	25	—	15	45	52	—	—	28	—	—	—	—	—	—
	460	—	25	—	15	45	52	—	20	34	8.3	14	4.2	7.2	16	—
575	—	25	—	15	45	52	—	25	43	10.0	18	5.2	8.9	20	—	
3	115	—	—	—	—	90	104	60	10	17	4.1	—	2.0	—	—	—
	200	—	25	—	15	90	104	60	—	31	—	12	—	6.1	—	—
	230	—	30	—	20	90	104	60	20	34	8.1	14	4.1	7.0	27	—
	380	—	50	—	30	90	104	—	—	56	—	—	—	—	—	—
	460	—	50	—	30	90	104	—	40	68	16	28	8.1	14	53	—
575	—	50	—	30	90	104	—	50	86	20	35	10	18	67	—	
4	200	—	40	—	25	135	156	120	—	45	—	20	—	10	—	—
	230	—	50	—	30	135	156	120	30	52	14	23	6.8	12	40	—
	380	—	75	—	50	135	156	—	—	86.7	—	—	—	—	—	—
	460	—	100	—	60	135	156	—	60	105	27	47	14	23	80	—
	575	—	100	—	60	135	156	—	75	130	34	59	17	29	100	—
5	200	—	75	—	60	270	311	240	—	91	—	41	—	20	—	—
	230	—	100	—	75	270	311	240	60	105	27	47	14	24	80	—
	380	—	150	—	125	270	311	—	—	173	—	—	—	—	—	—
	460	—	200	—	150	270	311	—	120	210	54	94	27	47	160	—
	575	—	200	—	150	270	311	—	150	260	68	117	34	59	200	—
6Δ	200	—	150	—	125	540	621	480	—	182	—	81	—	41	—	—
	230	—	200	—	150	540	621	480	120	210	54	94	27	47	160	—
	380	—	300	—	250	540	621	—	—	342	—	—	—	—	—	—
	460	—	400	—	300	540	621	—	240	415	108	188	54	94	320	—
	575	—	400	—	300	540	621	—	300	515	135	234	68	117	400	—
7Δ	230	—	300	—	—	810	932	—	180	315	—	—	—	—	240	—
	460	—	600	—	—	810	932	—	360	625	—	—	—	—	480	—
	575	—	600	—	—	810	932	—	450	775	—	—	—	—	600	—

Tables and footnotes are taken from NEMA Standards. The ratings for capacitor switching above assume the following maximum available fault currents:

- ▲ Ratings shown are for applications requiring repeated interruptions of stalled motor current or repeated closing of high transient currents encountered in rapid motor reversal, involving more than five openings or closings per minute and more than ten in a ten-minute period, such as plug-stop, plug-reverse or jogging duty. Ratings apply to single speed and multi-speed controllers.
- Per NEMA Standards paragraph ICS 2-321.20, the service-limit current represents the maximum rms current, in Amperes, which the controller may be expected to carry for protracted periods in normal service. At service-limit current ratings, temperature rises may exceed those obtained by testing the controller at its continuous current rating. The ultimate trip current of over-current (overload) relays or other motor protective devices shall not exceed the service-limit current ratings of the controller.
- ◆ FLUORESCENT LAMP LOADS—300 VOLTS AND LESS—The characteristics of fluorescent lamps are such that it is not necessary to derate Class 8502 contactors below their normal continuous current rating. Class 8903 contactors may also be used with fluorescent lamp loads. For controlling tungsten and infrared lamp loads, and resistance heating loads, Class 8903 AC lighting contactors are recommended. These contactors are specifically designed for such loads and are applied at their full rating as listed in the Class 8903 Section.
- ★ Ratings apply to contactors which are employed to switch the load at the utilization voltage of the heat producing element with a duty which requires continuous operation of not more than five openings per minute. Class 8903 Types L and S lighting contactors are rated for resistance heating loads.
- ▼ When discharged, a capacitor has essentially zero impedance. For repetitive switching by a contactor, sufficient impedance should be connected in series to limit inrush current to not more than 6 times the contactor rated continuous current. In many installations, the impedance of connecting conductors may be sufficient for this purpose. When switching to connect additional banks, the banks already on the line may be charged and can supply additional available short-circuit current which should be considered when selecting the impedance to limit the current.

- NEMA Size 00-3: 5,000 A RMS Sym.
- NEMA Size 4-5: 10,000 A RMS Sym.
- NEMA Size 6: 18,000 A RMS Sym.
- NEMA Size 7: 30,000 A RMS Sym.

Note: If available fault current is greater than these values, connect sufficient impedance in series as noted in the previous paragraph.

Δ For NEMA Size 6 & 7, the operation rate is as follows: Continuous operation rate is 3 operations per minute maximum; Jogging or Plugging Duty operation rate is 15 operations per minute for a maximum of three minutes.

The motor ratings in Table 16.53 are NEMA standard ratings and apply only when the code letter of the motor is the same as or occurs earlier in the alphabet than is shown in the Table 16.54. Motors having code letters occurring later in the alphabet may require a larger controller. Consult Square D / Schneider Electric CIC at 1-888-SquareD (1-888-778-2733).

Table 16.54:

Motor Hp Rating	Maximum Allowable Motor Code Letter
1-1/2-2	L
3-5	K
7 1/2 & above	H

**Approximate Dimensions**

**Table 16.55: Dimensions for Class 8502 Open Type**

NEMA Size	Type	No. of Poles	Fig. No.	Dimensions—Inches (Refer to Appropriate Figure)										Wt lbs.
				A	B	C	D	E	F	G	H	I		
				IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	
00	SAO	2-3	1	3-7/32	4-11/32	4-7/32	1-5/8	1-5/8	7/32	3-15/16	—	—	4	
0	SBO	1-3	1	3-7/32	4-11/32	4-7/32	1-5/8	1-5/8	7/32	3-15/16	—	—	4	
1	SCO	4-5		4-1/4	4-11/32	4-7/32	1-5/8	2-5/8	7/32	3-15/16	—	—	4-1/2	
2	SDO	2-3	1	4-5/16	5-1/8	4-15/16	2-5/32	2-5/32	7/32	4-19/32	17/32	1-1/16	6-3/4	
		4-5		5-5/8	5-1/8	4-15/16	2-5/32	3-15/32	7/32	4-19/32	17/32	1-1/16	8-1/4	
3	SEO	2-3	1	5-15/32	7-3/32	6-1/2	1-7/8	3-17/32	5/16	6-1/32	3-1/4	4-3/4	14	
		4-5		9-3/4	7-7/8	6-1/2	3-15/16	5-13/16	5/16	7	4-17/32	9-1/16	22	
4	SFO	2-3	1	6	8-3/16	6-1/2	2-1/16	3-15/16	5/16	7	3-19/32	5-5/16	18	
		4-5		9-3/4	8-3/16	6-1/2	3-15/16	5-13/16	5/16	7	4-17/32	9-1/16	22	
5	SGO	2-3	1	8-2/3	12-5/16	8-3/4	3-1/4	5-13/16	5/8	11-1/8	4-3/4	7-1/4	45	
6	SHO	2-3	1	10-35/64	28-1/16	9	3-17/32	7-1/32	5-1/16	18-9/16	4-3/4	7-1/4	80	
7	SJO	2-3	1	10-35/64	37-1/4	10-7/8	3-17/32	7-1/32	7-7/32	22-3/8	4-3/4	7-1/4	135	

**Table 16.56: Dimensions for 8536 Open Type**

00, 0, 1, 1P	SAC-SCO	2-3	2	3-1/2	6-49/64	4-7/32	1/2	1	1-39/64	13/64	6-1/4	3-31/32	5
0, 1	SBO-SCO	4	2	4-17/32	6-49/64	4-7/32	1/2	1	2-2/3	13/64	6-1/4	3-31/32	5-1/2
2	SDO	2-3	2	4-5/16	7-13/16	4-15/16	1/2	1	2-5/32	13/64	7-11/32	4-1/16	7-3/4
		4		5-5/8	7-13/16	4-15/16	1/2	1	3-15/32	13/64	7-11/32	4-1/16	9-1/4
3	SEO	2-3	2	5-15/32	11-3/32	6-1/2	7/8	1-3/4	3-19/32	5/16	10-3/16	5-3/4	17
		4		9-3/4	12-1/8	6-1/2	1-13/16	1-3/4	5-13/16	5/16	11-3/16	5-3/4	25
4	SFO	3	2	6	12-7/8	6-1/2	1-13/16	1-3/4	3-15/16	5/16	11-3/16	5-3/4	22
		4		9-3/4	12-7/8	6-1/2	1-13/16	1-3/4	5-29/32	5/16	11-3/16	5-3/4	25
5	SGO	3	2	8-9/16	17-9/16	8-3/4	4-3/4	7-1/4	5-12/32	5/8	16-3/8	6	62
6	SHO	3	2	12-11/32	28-1/16	9	4-3/4	7-1/4	5-25/32	5-1/16	18-9/16	8-11/16	85
7	SJO	3	2	12-11/32	37-1/4	10-7/8	4-3/4	7-1/4	5-25/32	7-7/32	22-3/8	9	140

**Table 16.57: Dimensions for NEMA 1 General Purpose Enclosure**

NEMA Size	Type	No. of Poles	Fig. No.	Dimensions—Inches												
				A	B	C		D	E	F	G	H	I	J	K	L
						8502	8536									
00	SAG	All	3	6	10	5-9/32	5-9/16	3	7/8	8-1/8	1	15/16	4-1/8	5	—	—
0	SBG	All	3													
1	SCG	All	3													
2	SDG	All	3	7-13/16	12-11/16	6-1/32	6-5/16	—	1-3/32	10-1/2	1-3/32	1-3/32	5-5/8	5-3/4	1-3/32	5-5/8
3	SEG	All	3	11-7/16	21-13/16	8	8-3/8	—	1-17/32	18-3/4	1-17/32	1-17/32	8-3/8	7-3/4	1-17/32	8-3/8
4	SFG	All	5	11-1/4	25-5/32	9	9	8-19/32	1-1/4	1-1/4	22-5/16	1-7/16	7/16	—	—	—
5	SGG	All	5	17-7/32	44-7/32	12-13/16	12-15/16	13	2-1/8	2-1/8	40	2-1/8	9/16	—	—	—
6	SHG	All	4	65-3/4	20-7/32	13-1/8	13-1/8	—	11	64-1/2	2-5/16	5-1/2	—	—	—	—
7	SJG	All	4	93	34-1/2	23-1/2	23-1/2	Floor Mounting								

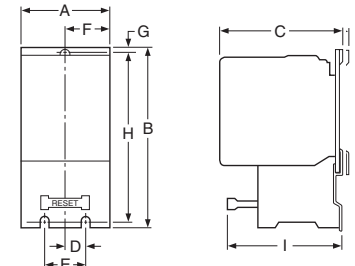


Figure 2  
Class 8536

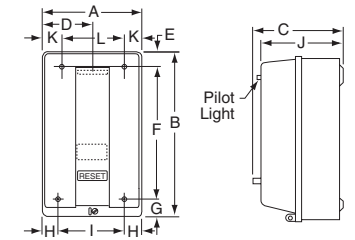


Figure 3

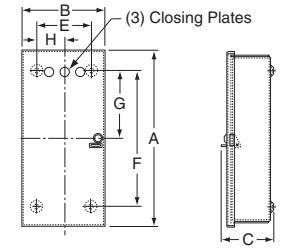


Figure 4

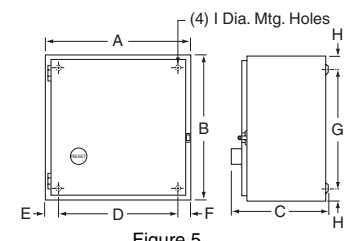


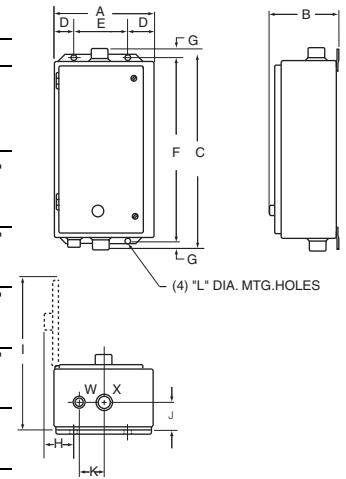
Figure 5

Approximate Dimensions

Table 16.58: NEMA 4 & 4X—Stainless Steel Watertight Enclosures<sup>▲</sup>

NEMA Size	Class	Type	No. of Poles	Dimensions—Inches											Bot. Hub Only	Top & Bot. Hub	
				A	B	C	D	E	F	G	H	I	J	K			L
0 and 1	8502	SBW	All	6-3/8	7-1/8	13-3/16	1-9/16	3-1/4	12	19/32	1-3/16	11-25/32	1-5/8	2-5/16	5/16	3/4" Dia. Hub	1" Dia. Hub
		SCW	All	6-3/8	7-13/16	13-3/16	1-9/16	3-1/4	12	19/32	1-7/8	11-25/32	1-5/8	2-5/16	5/16		
2	8502	SDW	All	8-1/8	7-7/8	16-3/16	1-9/16	5	15	1-3/32	1-15/16	14-3/4	2	2-5/8	5/16	3/4" Dia. Hub	1-1/2" Dia. Hub
		SCW	All	8-1/8	8-9/16	16-3/16	1-9/16	5	15	1-3/32	2-7/8	14-3/4	2	2-5/8	5/16		
3 and 4	8502	SEW	All	18-5/32	8-3/4	32-7/32	3-5/64	12	30-1/2	7/8	3-11/16	26-23/32	2-9/16	3-3/16	7/16	3/4" Dia. Hub	2-1/2" Dia. Hub
		SFW	All	18-5/32	9-9/16	32-7/32	3-5/64	12	30-1/2	7/8	4-1/2	26-23/32	2-9/16	3-3/16	7/16		
5	8502 & 8536	SGW	All	17-7/32	12-5/8	47-7/32	4-1/8	9	46	5/8	4-19/32	28-5/16	3-1/8	5-3/4	9/16	3/4" Dia. Hub	3-1/2" Dia. Hub
		SFW	All	17-7/32	12-5/8	47-7/32	4-1/8	9	46	5/8	4-19/32	28-5/16	3-1/8	5-3/4	9/16		
6▲	8502 & 8536	SHW	All	20-7/32	12-1/8	65-7/32	4-1/8	12	64	5/8	4-19/32	30-13/16	2-11/16	4-1/2	9/16	3/4" Dia. Hub	(2) 3" Dia. Hub
7▲	8502 & 8536	SJW	All	34-1/2	23-1/2	101	Floor Mounting										

▲ Size 6 and 7 are sheet steel enclosures, and are rated NEMA 4 only.



NEMA 4 & 4X  
Watertight Enclosure

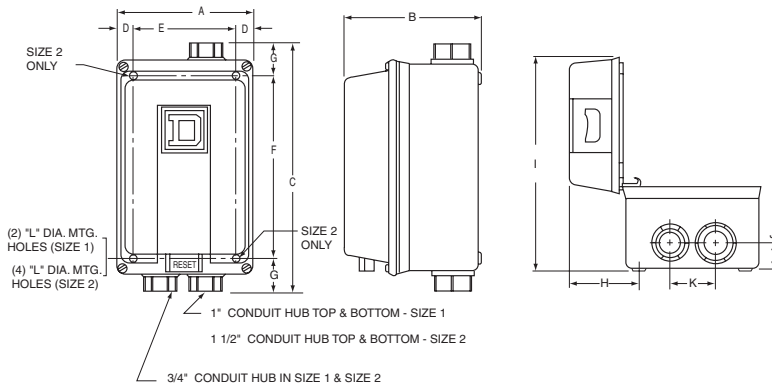
Table 16.59: NEMA 4 & 4X—Stainless Steel Watertight Enclosures with Form F4T■

NEMA Size	Class	Type	No. of Poles	Dimensions—Inches											
				A	B	C	D	E	F	G	H	I	J	K	L
0 and 1	8502	SBW	All	12-5/8	7-1/8	14-11/16	2-9/16	7-1/2	13-1/2	19/32	3-3/16	18-13/16	1-21/32	2-5/16	5/16
		SCW	All	12-5/8	7-13/16	14-11/16	2-9/16	7-1/2	13-1/2	19/32	3-7/8	18-13/32	1-21/32	2-5/16	5/16
2	8502	SDW	All	14-7/8	7-9/16	16-5/16	2-9/16	9-3/4	15	21/32	3-3/16	20-7/8	2	2-5/8	5/16
		SCW	All	14-7/8	8-1/4	16-5/16	2-9/16	9-3/4	15	21/32	3-7/8	20-7/8	2	2-5/8	5/16
3 and 4	8502	SEW	2-3	Same as Standard NEMA 4 dimensions, see above.											
		SFW	2-3	Same as Standard NEMA 4 dimensions, see above.											
5	8502 & 8536	SGW	All	Same as Standard NEMA 4 dimensions, see above.											
		SFW	All	Same as Standard NEMA 4 dimensions, see above.											
6■	8502 & 8536	SHW	All	Form F4T is supplied as standard. Refer to page 16-110.											
7■	8502 & 8536	SJW	All	Form F4T is supplied as standard. Refer to page 16-110.											

■ Size 6 and 7 are sheet steel enclosures, and are rated NEMA 4 only.

Table 16.60: NEMA 4X—Watertight & Corrosion Resistant Glass Polyester Enclosures

Size	Type	No. of Poles	Dimensions—Inches (see the figure below)											Bot. Hub Only	Top & Bot. Hub	Weight (lbs.)	
			A	B	C	D	E	F	G	H	I	J	K				L
0, 1	SBW SCW	All	6-1/2	6-7/16	12-1/8	3/4	5	8-3/4	1-11/16	3-11/32	10-1/16	1-5/16	2-1/8	5/16	3/4	1	17
2	SDW	All	8-1/2	7-1/16	13-7/8	3/4	7	10-1/2	1-11/16	3-29/32	11-15/16	1-5/8	2-3/8	5/16	3/4	1-1/2	22



16 NEMA/DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS



**Approximate Dimensions**

**Table 16.61: NEMA 4X—Watertight & Corrosion Resistant Glass Polyester Enclosures**

NEMA Size	Type	No. of Poles	Dimensions—Inches (see the figure to the left)				
			A	B	C	E	F
0-2▲	SBW	All	16-7/8	9-25/32	22-3/4	10-1/8	21-1/2
	SCW						
	SDW						
3-4■	SEW	All	25-13/16	11-15/16	33-1/2	18-1/2	32-1/4
	SFW						

▲ With control power transformer (Form F4T)  
■ Dimensions also for Form F4T.  
Note: Devices with Form F4T may use larger enclosure. Consult Square D/Schneider Electric CIC at 1-888-SquareD (1-888-778-2733) for dimensions.

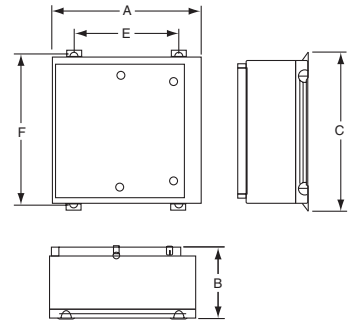


Figure 1 (NEMA 4X)

**NEMA 7 & 9—Bolted Cover, Cast Iron**

See Figure 1 for dimensions for NEMA size 0 and 1 (weight is 59 pounds). See Figure 2 for NEMA size 2 (weight is 75 pounds).

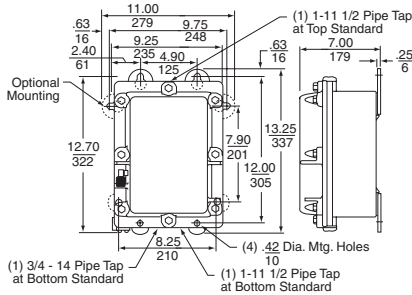


Figure 1  
Size 0 and 1

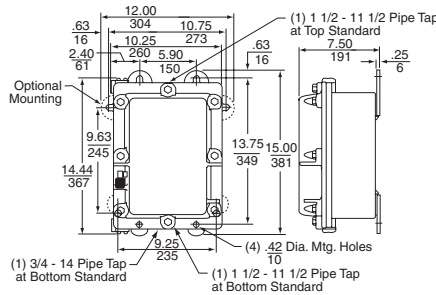


Figure 2  
Size 2

**Table 16.62: NEMA 7 & 9—SPIN TOP® Enclosure**

Conduit Sizes Loc. A, B, C & D			Dimensions—Inches (See Figure 3)														Wt. (lbs.)
NEMA Size	Std.	Type	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	
0-1	1-1/4	SBR SCR	10-5/8	26	15-1/4	8	4-3/4	5-3/8	3-3/4	1-1/16	7-1/2	11	7-5/16	2-1/16	—	—	70
2	1-1/2	SDR	13-7/8	30-1/2	19-1/4	8	4-3/4	5-1/4	3-3/4	1-1/16	7	18	9-3/8	2-3/4	—	—	100
3-4	2-1/2	SEF SFR	13-3/8	39-1/2	20-1/4	8	4-3/4	7-1/2	3-3/4	—	7-3/4	23	8-5/8	3	—	—	165 195
5	4	SGR	19	53-1/2	27-3/4	—	—	11-1/4	5-3/4	1/8	16	20-5/8	11-3/8	4-5/16	12	6-1/2	375

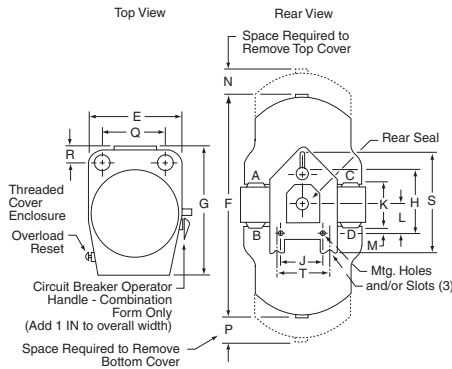


Figure 3  
NEMA 7 & 9  
SPIN TOP Enclosure

Approximate Dimensions

Table 16.63: NEMA 7 & 9—Bolted Cover, Cast Aluminum

NEMA Size	Type	Dimensions—Inches										Z Dia.	Wt. (lbs.)
		G	H	J	K	L	N	P	Q, R	S, T, U, V			
0-1	SBT SCT	14-1/4	17-1/4	9-1/2	12-1/4	8-7/8	4-1/2	11	2-3/8	3-1/8	1-1/2	75	
2	SDT	13-5/8	27-5/8	9-1/2	12-1/4	19-1/4	9-5/8	11	2-3/8	3-1/8	1-1/2	115	
3-4	SET SFT	18-1/8	31-5/8	10	16-1/4	19-1/4	9-5/8	12-5/8	2-3/8	3-3/4	2-1/2	180	
5	SGT	24-1/2	45-5/8	13-3/4	22-1/2	27-1/2	13-3/4	15-3/8	3-7/16	4	4	500	

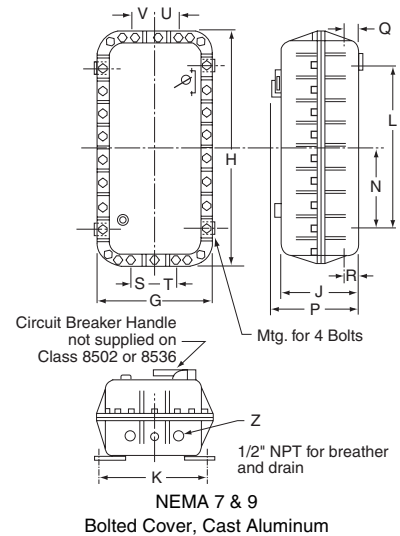


Table 16.64: NEMA 12/3R—Dusttight Enclosure

NEMA Size	Type	No. of Poles	Dimensions—Inches										Weight (lbs.)	
			A	B	C	D	E	F	G	H	I	J	Class 8502	Class 8536
0	SBA	All	6-3/8	8-17/32	12-3/4	1-9/16	3-1/4	12	3/8	3-9/16	12-1/4	5/16	15	16
1	SCA	All												
2	SDA	All	8-1/8	9-9/32	16	1-9/16	5	15	1/2	3-9/16	15-3/8	5/16	22	23
3	SEA	All											65	68
4	SFA	All	18-5/32	9-9/16	31-1/2	3-5/64	12	30-1/2	1/2	4-1/2	26-23/32	7/16	69	73
5	SGA	All	17-7/32	13-7/16	47	4-1/8	9	46	1/2	5-13/32	28-5/16	9/16	160	177
6	SHA	All	20-7/32	13	65	4-1/8	12	64	1/2	6-7/16	30-7/8	11/16	228	233
7	SJA	All	34-1/2	23-1/2	93	Floor Mounting						—	—	

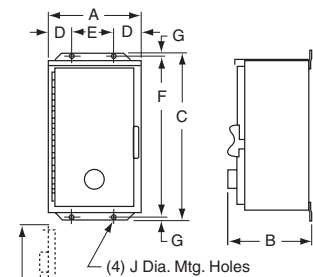


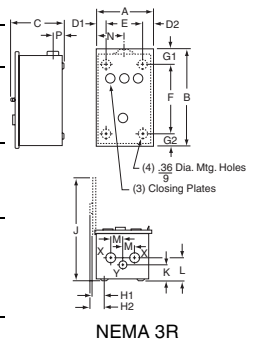
Table 16.65: NEMA 12/3R—Dusttight Enclosure With Form F4T

NEMA Size	Type	No. of Poles	Dimensions—Inches												
			A	B	C	D	E	F	G	H	I	J			
0	SBA	All	11-7/8	8	13-1/2	2-13/16	6-3/4	12-3/4	3/8	3-29/32	18-3/8	5/16			
1	SCA	All													
2	SDA	All	14-7/8	8-1/8	16	2-9/16	9-3/4	15	3/8	3-21/32	21-1/2	5/16			
3	SEA	2-3	Same as Standard NEMA 12 dimensions, see above.												
4	SFA	2-3	Same as Standard NEMA 12 dimensions, see above.												
5	SGA	All	Same as Standard NEMA 12 dimensions, see above.												
6	SHA	All	Form F4T is supplied as standard. Refer to page 16-110.												
7	SJA	All	Form F4T is supplied as standard. Refer to page 16-110.												

NEMA 12

Table 16.66: NEMA 3R—Rainproof and Sleet Resistant Enclosures

Size	Type	No. of Poles	Dimensions—Inches																	K.O. X	K.O. Y
			A	B	C	D1	D2	E	F	G1	G2	H1	H2	J	K	L	M	N	P		
0, 1	SBH SCH	All	8-27/32	12-9/32	7-1/8	1-3/8	1-7/16	6	7-1/2	2-19/32	2-3/16	2-1/16	2-5/8	14-9/32	1-3/8	1-3/8	1-7/8	4-3/8	1-27/32	1/2 3/4 1	1/2 3/4 1
2	SDH	All	9-27/32	16-9/32	8-5/8	1-3/8	1-7/16	7	11-1/2	2-19/32	2-3/16	2-1/16	2-5/8	16-25/32	1-5/16	1-3/4	2-1/8	4-7/8	1-27/32	1 1-1/4 1-1/2	1/2 3/4
3	SEH	All	12-27/32	25-9/32	8-5/8	1-3/8	1-7/16	10	20-1/2	2-19/32	2-3/16	2-1/16	2-5/8	19-25/32	1-5/16	1-15/16	2-7/16	6-3/8	1-27/32	1 1-1/4 2 2-1/2	1/2 3/4
4	SFH	All	12-27/32	40-9/32	9-1/8	1-3/8	1-7/16	10	35-1/2	2-19/32	2-3/16	2-1/16	2-5/8	20-9/32	1-5/16	2-5/16	2-11/16	6-3/8	1-27/32	1 1-1/4 2 2-1/2	1/2 3/4



NEMA 3R

**General Information**

Class 8502 Type W non-reversing vacuum contactors used to switch capacitors, transformers and electric motors where overload protection is separately provided. Type W vacuum contactors are designed for operation at 600 Volts, 50/60 Hz. (See page 16-49 for Class 8702 Reversing Vacuum Contactors.)



Class 8502 Type WH

**Table 16.67: Class 8502—Full Voltage 3 Pole Vacuum Contactors**

NEMA Size	Enclosed Ampere Rating	Locked Rotor Current (A)	Motor Voltage	Max. Hp	Open Type	
					Type	\$ Price
4	135	1080	200	40	WFO3▲	3965.00
			230	50		
			460	100		
			575	100		
5	270	2160	200	75	WGO3▲	8004.00
			230	100		
			460	200		
			575	200		
6	540	4320	200	150	WHO3▲	22383.00
			230	200		
			460	400		
			575	400		

▲ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes listed in selection table below.

**Table 16.68: Class 9998—Replacement Coils for Class 8502 and 8702 Vacuum Contactors (Includes Rectifier)**

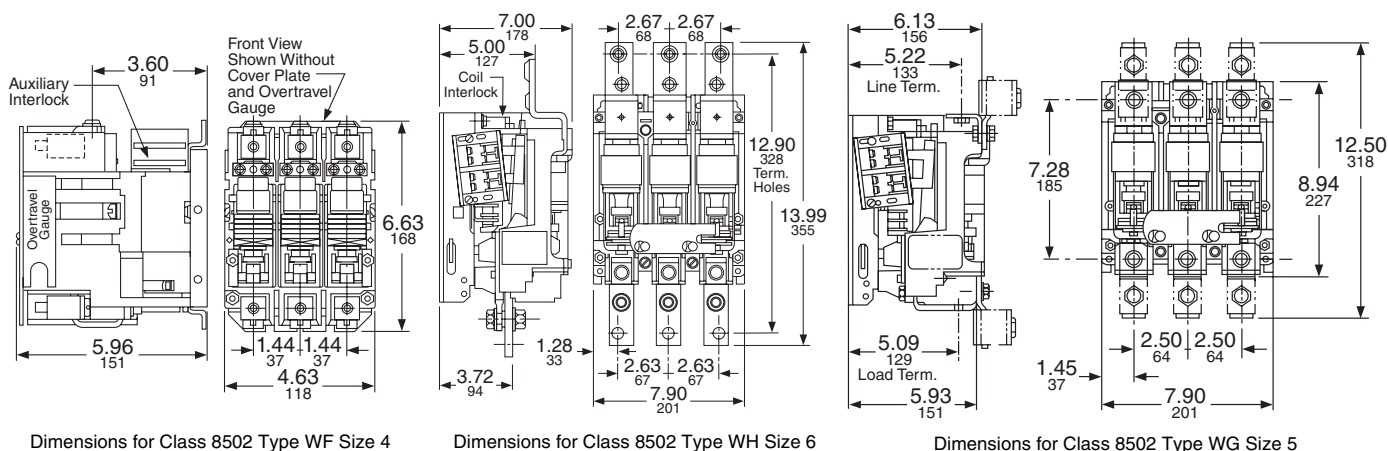
Size	Type	Poles	Class & Type	Suffix Number (Complete Coil Number Consists of Class and Type Followed by Suffix Number)				\$ Price
				120 V 110 V	240 V 220 V	480 V 440 V	600 V 550 V	
4	WF	3	9998WF	120	240	480	600	732.00
5	WG	3	9998WG	120	240	480	600	1724.00
6	WH	3	9998WH	120	240	480	600	1904.00

**Table 16.69: Class 9999—Vacuum Contactor Kits**

For Use With		Kit Description	Class 9999 Type	\$ Price
Type	Size			
WF-WG WH	4-5 6	Auxiliary Contacts, Non-Convertible 1-N.O. & 1-N.C. Isolated Contacts	WX11	116.00
WF WG-WH	4 5-6	Coil Circuit Auxiliary Contacts 1-N.O. & 1-N.C. Isolated Contacts, Delayed Break 1-N.C. Isolated Contact	WCX11 WLX01	153.00 476.00
WG	5	Lug Kits (6) lugs included	LUW5	261.00
WH	6	Lug Kits (6) lugs included	LUW6	270.00

**Table 16.70: Coil Voltage Codes**

Volts	110	120	220	240	440	480	550	600
50 Hz	V02		V03		V06		V07	
60 Hz		V02		V03		V06		V07



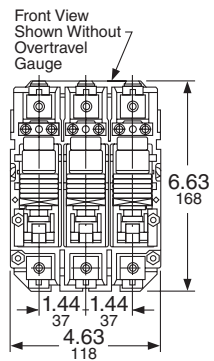
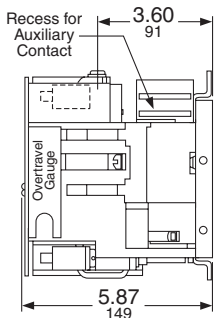
For How to Order Information, see page 16-12.

**General Information**

The Class 8502 Type V vacuum contactor is a three-pole, 1500 V rated device which meets UL508 (1.5 kV) and CSA. Vacuum technology offers long life and low maintenance in a compact, lightweight design. The contactor is suitable for contaminated atmospheres because the main contacts are sealed in vacuum bottles. Also, since gravity is not used to assist contactor operation, the Class 8502 contactor may be mounted in any plane without special modifications. Type V vacuum contactors are designed for the control of inductive or non-inductive loads at voltages between 200 and 1500 Vac.



Class 8502 Type VH



Dimensions for Class 8502 Type VF Size 4

**Table 16.71: Class 8502—Full Voltage 3 Pole Vacuum Contactors**

NEMA Size	Enclosed Ampere Rating	Locked Rotor Current (A)	Motor Voltage	Max. Hp	Open Type	
					Type	\$ Price
4	160	1080	200	50	VFO3▲	3965.00
			230	60		
			460	125		
			575	150		
			800	200		
			1000	250		
5	320	2160	200	100	VGO3▲	8004.00
			230	125		
			460	250		
			575	300		
			800	400		
			1000	—		
6	540	4320	200	150	VHO3▲	22383.00
			230	200		
			460	400		
			575	400		
			800	—		
			1000	1300		

▲ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes listed in selection table below.

**Table 16.72: Class 9998—Replacement Coils for Class 8502 and 8702 (Contains Rectifier)**

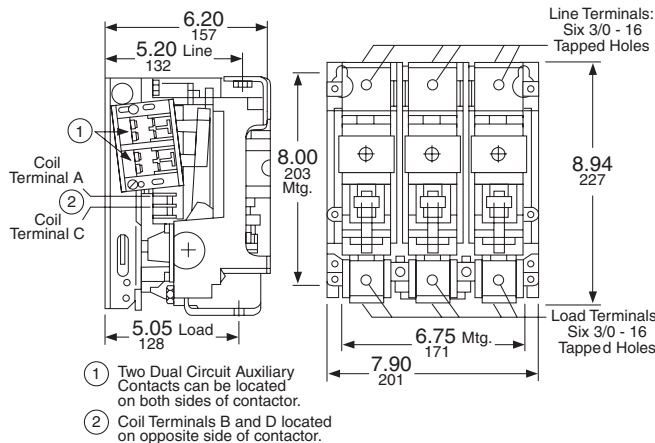
Size	Type	Poles	Class & Type	Suffix Number (Complete Coil Number Consists of Class and Type Followed by Suffix Number)				\$ Price
				120 Volts 110 Volts	240 Volts 220 Volts	480 Volts 440 Volts	600 Volts 550 Volts	
4	VF	3	9998WF	120	240	480	600	732.00
5	VG	3	9998VG	120	240	480	600	1724.00
6	VH	3	9998WH	120	240	480	600	1904.00

**Table 16.73: Class 9999—Vacuum Starter Kits**

For Use With		Kit Description	Class 9999 Type	\$ Price
Type	Size			
VF-VG VH	4-5 6	Auxiliary Contacts, Non-Convertible 1 N.O. & 1 N.C. Isolated Contacts	WX11	116.00
VF VG-VH	4 5-6	Coil Circuit Auxiliary Contacts 1 N.O. & 1 N.C. Isolated Contacts, Delayed Break 1 N.C. Isolated Contact	WCX11 WLX01	153.00 476.00
VG	5	Lug Kits (6) lugs included	LUW5	261.00
VH	6	Lug Kits (6) lugs included	LUW6	1715.00

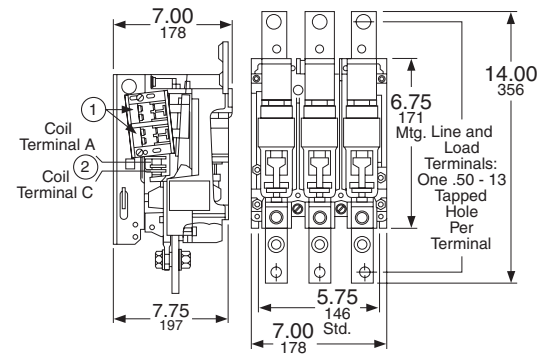
**Table 16.74: Coil Voltage Codes**

Volts	110	120	220	240	440	480	550	600
50 Hz	V02	V02	V03	V03	V06	V06	V07	
60 Hz		V02	V03	V03	V06	V06	V07	V07



- ① Two Dual Circuit Auxiliary Contacts can be located on both sides of contactor.
- ② Coil Terminals B and D located on opposite side of contactor.

Dimensions for Class 8502 Type VG Size 5



- ① Two Dual Circuit Auxiliary Contacts can be located on both sides of contactor.
- ② Coil Terminals B and D located on opposite side of contactor.

Dimensions for Class 8502 Type VH Size 6

For How to Order Information, see page 16-12.

**General Information**

Class 8536 Type W non-reversing vacuum starters are used to switch electric motors where overload protection is not separately provided.

Type W vacuum starters are designed for operation at 600 Volts, 50/60 Hz. Starters are available exclusively with Motor Logic® Feature Base Solid State Overload Relays.

**Table 16.75: Class 8536—Full Voltage Vacuum Starters**

NEMA Size	Enclosed Ampere Rating	Locked Rotor Current (A)	Motor Voltage	Max. Hp	Open Type	
					Type	\$ Price
4	135	1080	200	40	WFO3▲	4433.00
			230	50		
			460	100		
			575	100		
5	270	2160	200	75	WGO3▲	10125.00
			230	100		
			460	200		
			575	200		
6	540	4320	200	150	WHO3▲	24008.00
			230	200		
			460	400		
			575	400		

▲ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes listed in selection table at left.

**Table 16.76: Class 9998—Replacement Coils for Class 8536 Vacuum Starters**

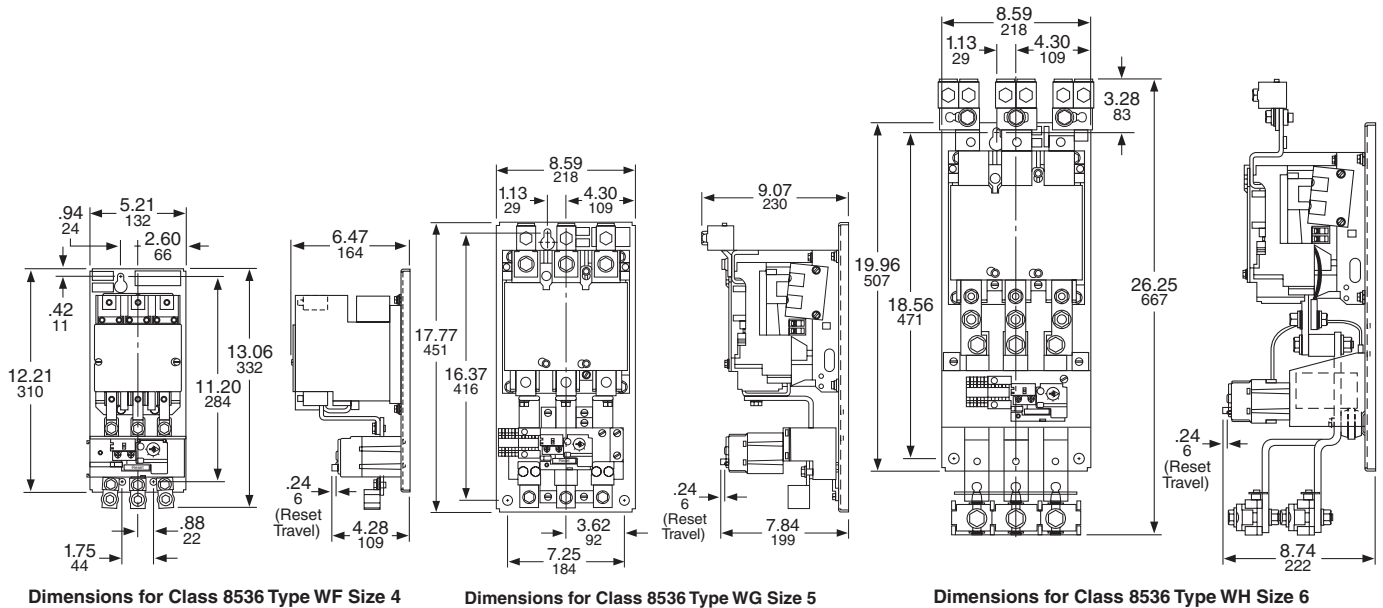
Size	Type	Poles	Class & Type	Suffix Number (Complete Coil Number Consists of Class and Type Followed by Suffix Number)				\$ Price
				120 Volts 110 Volts	240 Volts 220 Volts	480 Volts 440 Volts	600 Volts 550 Volts	
4	WF	All	9998WF	120	240	480	600	732.00
5	WG	All	9998WG	120	240	480	600	1724.00
6	WH	All	9998WH	120	240	480	600	1904.00

**Table 16.77: Class 9999—Vacuum Starter Kits**

For Use With		Kit Description	Class 9999 Type	\$ Price
Type	Size			
WF-WG WH	4-5 6	Auxiliary Contacts, Non-Convertible 1 N.O. & 1 N.C. Isolated Contacts	WX11	122.00
WF WG-WH	4 5-6	Coil Circuit Auxiliary Contacts 1 N.O. & 1 N.C. Isolated Contacts, Delayed Break 1 N.C. Isolated Contact	WCX11 WLX01	114.00 503.00
WG	5	Lug Kits (6) lugs included	LUW5	275.00

**Table 16.78: Coil Voltage Codes**

Volts	110	120	220	240	440	480	550	600
50 Hz	V02		V03		V06		V07	
60 Hz		V02		V03		V06		V07



For How to Order Information, see page 16-12.

**General Information**

Class 8538 and 8539 Type S combination starters combine the requirements of motor overload and short circuit protection into one package. These starters are manufactured in accordance with NEMA standards and are UL Listed (although some Form numbers may not be listed—contact your local Square D representative for information). Class 8538 and 8539 combination starters are designed to operate at 600 Vac maximum, 50 to 60 Hz—and are supplied with melting alloy overload relays as standard.

**3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

Note that prices shown do not include thermal units. Devices require 3 thermal units. Standard trip thermal units are \$21.50 each. See page 16-125 for selection information. For class J fuse clip, use Form Y1072 (no charge).

**Table 16.79: Fusible Full Voltage Type (Class H Fuse Clips), with Melting Alloy Overload Relays**

Motor Voltage (Starter Voltage)	Ratings		Fuse Clip Size (A)	NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304) (Sizes 0-5) †		NEMA 4X Watertight, Dusttight and Corrosion Resistant Polyester Enclosure		NEMA 12/3R* Dusttight and Driptight Industrial Use Enclosure		\$ Price
	Max. Hp Poly-phase	NEMA Size		Type	\$ Price	Type	\$ Price	Type	\$ Price	With External Reset	Without External Reset	
										Type	Type	
200 (208)	3	0	30	SBG12▲	1344.00	SBW12▲	2712.00	SBW22▲	3123.00	SBA22▲	SBA12▲	1686.00
	5	1	30	SCG12▲	1416.00	SCW12▲	2781.00	SCW22▲	3195.00	SCA22▲	SCA12▲	1758.00
	7-1/2		60	SCG13▲	1443.00	SCW13▲	2811.00	SCW23▲	3239.00	SCA23▲	SCA13▲	1785.00
	10	2	60	SDG12▲	2228.00	SDW12▲	4334.00	SDW22▲	4778.00	SDA22▲	SDA12▲	2712.00
	20	3	100	SEG15▲	3752.00	SEW15▲	7425.00	SEW25▲	8166.00	SEA25▲	SEA15▲	4377.00
	25		200	SEG12▲	4064.00	SEW12▲	7739.00	—	—	SEA22▲	SEA12▲	4692.00
	40	4	200	SFG15▲	7199.00	SFW15▲	11898.00	—	—	SFA25▲	SFA15▲	8936.00
75	5	400	SGG15▲	16122.00	SGW15▲	28112.00	—	—	SGA25▲	SGA15▲	20336.00	
150	6	600	SHG13▲	42305.00	SHW13▲	54077.00	—	—	SHA23▲	SHA13▲	47219.00	
230 (240)	3	0	30	SBG12▲	1344.00	SBW12▲	2712.00	SBW22▲	3123.00	SBA22▲	SBA12▲	1686.00
	5	1	30	SCG12▲	1416.00	SCW12▲	2781.00	SCW22▲	3195.00	SCA22▲	SCA12▲	1758.00
	7-1/2		60	SCG13▲	1443.00	SCW13▲	2811.00	SCW23▲	3239.00	SCA23▲	SCA13▲	1785.00
	15	2	60	SDG12▲	2228.00	SDW12▲	4334.00	SDW22▲	4778.00	SDA22▲	SDA12▲	2712.00
	25	3	100	SEG15▲	3752.00	SEW15▲	7425.00	SEW25▲	8166.00	SEA25▲	SEA15▲	4377.00
	30		200	SEG12▲	4064.00	SEW12▲	7739.00	—	—	SEA22▲	SEA12▲	4692.00
	50	4	200	SFG15▲	7199.00	SFW15▲	11898.00	—	—	SFA25▲	SFA15▲	8936.00
100	5	400	SGG15▲	16122.00	SGW15▲	28112.00	—	—	SGA25▲	SGA15▲	20336.00	
200	6	600	SHG13▲	42305.00	SHW13▲	54077.00	—	—	SHA23▲	SHA13▲	47219.00	
460 (480)	5	0	30	SBG13▲	1344.00	SBW13▲	2712.00	SBW23▲	3123.00	SBA23▲	SBA13▲	1686.00
	10	1	30	SCG14▲	1443.00	SCW14▲	2811.00	SCW24▲	3239.00	SCA24▲	SCA14▲	1785.00
	15		30	SDG16▲	2241.00	SDW16▲	4350.00	SDW26▲	4791.00	SDA26▲	SDA16▲	2712.00
	25	2	60	SDG14▲	2271.00	SDW14▲	4377.00	SDW24▲	4820.00	SDA24▲	SDA14▲	2754.00
	50		3	100	SEG13▲	3824.00	SEW13▲	7497.00	SEW23▲	8244.00	SEA23▲	SEA13▲
	100	4	200	SFG13▲	7254.00	SFW13▲	11955.00	—	—	SFA23▲	SFA13▲	8991.00
	200	5	400	SGG13▲	16122.00	SGW13▲	28112.00	—	—	SGA23▲	SGA13▲	20336.00
400	6	600	SHG12▲	42305.00	SHW12▲	54077.00	—	—	SHA22▲	SHA12▲	47219.00	
575 (600)	5	0	30	SBG13▲	1344.00	SBW13▲	2712.00	SBW23▲	3123.00	SBA23▲	SBA13▲	1686.00
	10	1	30	SCG14▲	1443.00	SCW14▲	2811.00	SCW24▲	3239.00	SCA24▲	SCA14▲	1785.00
	15		30	SDG16▲	2241.00	SDW16▲	4350.00	SDW26▲	4791.00	SDA26▲	SDA16▲	2712.00
	25	2	60	SDG14▲	2271.00	SDW14▲	4377.00	SDW24▲	4820.00	SDA24▲	SDA14▲	2754.00
	50		3	100	SEG13▲	3824.00	SEW13▲	7497.00	SEW23▲	8244.00	SEA23▲	SEA13▲
	100	4	200	SFG13▲	7254.00	SFW13▲	11955.00	—	—	SFA23▲	SFA13▲	8991.00
	200	5	400	SGG13▲	16122.00	SGW13▲	28112.00	—	—	SGA23▲	SGA13▲	20336.00
400	6	600	SHG12▲	42305.00	SHW12▲	54077.00	—	—	SHA22▲	SHA12▲	47219.00	

- ▲ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown on page 16-31.
  - NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
  - ♦ NEMA Size 6 starters are NEMA 4 painted sheet steel enclosures.
- Note: Some control transformers may require the use of oversized enclosures. Refer to control transformer selection table on page 16-40.

**Table 16.80: Fusible Disconnect Switch Type (Class H Fuse Clips), Single Phase▼△**

Motor Voltage	Max. Hp	Coil Voltage	NEMA Size	Poles	Fuse Clip Size (A)	NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304)		NEMA 4X Watertight, Dusttight and Corrosion Resistant Polyester Enclosure		NEMA 12/3R* Dusttight and Driptight Industrial Use Enclosure		\$ Price
						Type	\$ Price	Type	\$ Price	Type	\$ Price	With External Reset	Without External Reset	
												Type	Type	
120	1	120	0	2	30	SBG62V02	1344.	SBW62V02	2712.	SBW65V02	3123.	SBA65V02	SBA62V02	1686.
	2		30		SCG62V02	1416.	SCW62V02	2781.	SCW65V02	3195.	SCA65V02	SCA62V02	1758.	
	3		60		SDG62V02	2228.	SDW62V02	4334.	SDW65V02	4778.	SDA65V02	SDA62V02	2712.	
240	2	240	0	2	30	SBG62V03	1344.	SBW62V03	2712.	SBW65V03	3123.	SBA65V03	SBA62V03	1686.
	3		30		SCG62V03	1416.	SCW62V03	2781.	SCW65V03	3195.	SCA65V03	SCA62V03	1758.	
	7-1/2		60		SDG62V03	2228.	SDW62V03	4334.	SDW65V03	4778.	SDA65V03	SDA62V03	2712.	

- ★ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
- ▼ Single phase units require one thermal unit and are not available with Form Hxx—Solid State Overload Relays.
- △ Not included in Laser™ Delivery program.

For How to Order Information, see page 16-12.



Schneider Electric offers express shipping for factory modified NEMA Combo Starters. When you need them fast, our Laser™ Delivery program is the answer to getting your product when you need it most. Ask for Laser™ Delivery, then select the product and the modifications you need when you place your order. It's as easy as that!



**3-Pole Polyphase—600 Vac Maximum—50-60 Hz**

Note that prices shown do not include thermal units. Devices require 3 thermal units. Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

**Table 16.81: Non-Fusible Full Voltage Type, Non-Reversing, with Melting Alloy Overload Relays**

Ratings			NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304) (Sizes 0-5)■		NEMA 4X Watertight, Dusttight and Corrosion Resistant Polyester Enclosure		NEMA 12/3R▲ Dusttight and Driptight Industrial Enclosure		
Motor Voltage (Starter Voltage)	Max. Hp Poly-phase	NEMA Size	Type	\$ Price	Type	\$ Price	Type	\$ Price	With External Reset	Without External Reset	\$ Price
									Type	Type	
200 (208)	3	0	SBG11♦	1301.00	SBW11♦	2669.00	SBW21♦	3068.00	SBA21♦	SBA11♦	1643.00
	7-1/2	1	SCG11♦	1373.00	SCW11♦	2739.00	SCW21♦	3153.00	SCA21♦	SCA11♦	1715.00
	10	2	SDG11♦	2169.00	SDW11♦	4278.00	SDW21♦	4706.00	SDA21♦	SDA11♦	2654.00
	25	3	SEG11♦	3609.00	SEW11♦	7284.00	SEW21♦	8010.00	SEA21♦	SEA11♦	4235.00
	40	4	SFG11♦	6956.00	SFW11♦	11655.00	—	—	SFA21♦	SFA11♦	8693.00
	75	5	SGG11♦	15609.00	SGW11♦	27599.00	—	—	SGA21♦	SGA11♦	19823.00
	150	6	SHG11♦	41174.00	SHW11♦	52568.00	—	—	SHA21♦	SHA11♦	45710.00
230 (240)	3	0	SBG11♦	1301.00	SBW11♦	2669.00	SBW21♦	3068.00	SBA21♦	SBA11♦	1643.00
	7-1/2	1	SCG11♦	1373.00	SCW11♦	2739.00	SCW21♦	3153.00	SCA21♦	SCA11♦	1715.00
	15	2	SDG11♦	2169.00	SDW11♦	4278.00	SDW21♦	4706.00	SDA21♦	SDA11♦	2654.00
	30	3	SEG11♦	3609.00	SEW11♦	7284.00	SEW21♦	8010.00	SEA21♦	SEA11♦	4235.00
	50	4	SFG11♦	6956.00	SFW11♦	11655.00	—	—	SFA21♦	SFA11♦	8693.00
	100	5	SGG11♦	15609.00	SGW11♦	27599.00	—	—	SGA21♦	SGA11♦	19823.00
	200	6	SHG11♦	41174.00	SHW11♦	52568.00	—	—	SHA21♦	SHA11♦	45710.00
460 (480)	5	0	SBG11♦	1301.00	SBW11♦	2669.00	SBW21♦	3068.00	SBA21♦	SBA11♦	1643.00
	10	1	SCG11♦	1373.00	SCW11♦	2739.00	SCW21♦	3153.00	SCA21♦	SCA11♦	1715.00
	25	2	SDG11♦	2169.00	SDW11♦	4278.00	SDW21♦	4706.00	SDA21♦	SDA11♦	2654.00
	50	3	SEG11♦	3609.00	SEW11♦	7284.00	SEW21♦	8010.00	SEA21♦	SEA11♦	4235.00
	100	4	SFG11♦	6956.00	SFW11♦	11655.00	—	—	SFA21♦	SFA11♦	8693.00
	200	5	SGG11♦	15609.00	SGW11♦	27599.00	—	—	SGA21♦	SGA11♦	19823.00
	400	6	SHG11♦	41174.00	SHW11♦	52568.00	—	—	SHA21♦	SHA11♦	45710.00
575 (600)	5	0	SBG11♦	1301.00	SBW11♦	2669.00	SBW21♦	3068.00	SBA21♦	SBA11♦	1643.00
	10	1	SCG11♦	1373.00	SCW11♦	2739.00	SCW21♦	3153.00	SCA21♦	SCA11♦	1715.00
	25	2	SDG11♦	2169.00	SDW11♦	4278.00	SDW21♦	4706.00	SDA21♦	SDA11♦	2654.00
	50	3	SEG11♦	3609.00	SEW11♦	7284.00	SEW21♦	8010.00	SEA21♦	SEA11♦	4235.00
	100	4	SFG11♦	6956.00	SFW11♦	11655.00	—	—	SFA21♦	SFA11♦	8693.00
	200	5	SGG11♦	15609.00	SGW11♦	27599.00	—	—	SGA21♦	SGA11♦	19823.00
	400	6	SHG11♦	41174.00	SHW11♦	52568.00	—	—	SHA21♦	SHA11♦	45710.00



Refer to page 16-30 for details.

**Table 16.82: Non-Fusible Disconnect Switch Type, Single Phase★▼**

Motor Voltage	Max. Hp	Coil Voltage	NEMA Size	Poles	NEMA 1 General Purpose Enclosures		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304)		NEMA 4X Watertight, Dusttight and Corrosion Resistant Polyester Enclosure		NEMA 12/3R▲ Dusttight and Driptight Industrial Enclosure		
					Type	\$ Price	Type	\$ Price	Type	\$ Price	With External Reset	Without External Reset	\$ Price
120	1	120	0	2	SBG61V02	1301.00	SBW61V02	2669.00	SBW64V02	3068.00	SBA64V02	SBA61V02	1643.00
	2		SCG61V02		1373.00	SCW61V02	2739.00	SCW64V02	3153.00	SCA64V02	SCA61V02	1715.00	
	3		SDG61V02		2169.00	SDW61V02	4278.00	SDW64V02	4706.00	SDA64V02	SDA61V02	2654.00	
240	2	240	0	2	SBG61V03	1301.00	SBW61V03	2669.00	SBW64V03	3068.00	SBA64V03	SBA61V03	1643.00
	3		SCG61V03		1373.00	SCW61V03	2739.00	SCW64V03	3153.00	SCA64V03	SCA61V03	1715.00	
	7-1/2		SDG61V03		2169.00	SDW61V03	4278.00	SDW64V03	4706.00	SDA64V03	SDA61V03	2654.00	

- ▲ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
- NEMA Size 6 starters are NEMA 4 painted sheet steel enclosure.
- ♦ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown below.
- ★ Single phase units require one thermal unit and are not available with Form Hxx—Solid State Overload Relays.
- ▼ Not included in Laser™ Delivery program.

Note: Some control transformers may require the use of oversized enclosures. Refer to control transformer selection table on page 16-40.

**Table 16.83: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24□△	—	V01	No Charge
120□	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

- △ 24 V coils are not available on Sizes 4-7. On Sizes 00-3, where 24 V coils are available, Form S (separate control) must be specified (i.e., order as 8538SBG11V01S).
- These voltage codes must include Form S (supplied at no charge). When specifying Form S, please supply motor voltage when ordering (i.e., order as 8538SCG11V02S).

Note: For voltage codes used with control transformers, see page 16-110. Form S (separate control) is used when a separate source of power is available for the control (coil) voltage. Form S is supplied at no charge.

For How to Order Information, see page 16-12.

**3-Pole Polyphase – 600 Vac Maximum – 50-60 Hz**

Note that prices shown do not include thermal units. Devices require 3 thermal units. Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

**Table 16.84: Fusible (with Class R Fuse Clips) Full Voltage Type, Non-Reversing, with Melting Alloy Overload Relays—(100,000 AIC Rated)**

Motor Voltage (Starter Voltage)	Ratings			NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304) (Sizes 0-5) ♦		NEMA 4 & 4X Watertight, Dusttight and Corrosion Resistant Polyester Enclosure		NEMA 12/3R▲ Dusttight and Driptight Industrial Enclosure		
	Max. Hp Polyphase	NEMA Size	Fuse Clip Size (A)	Type	\$ Price	Type	\$ Price	Type	\$ Price	With External Reset	Without External Reset	\$ Price
										Type	Type	
200 (208)	3	0	30	SBG32■	1367.00	SBW32■	2732.00	SBW42■	3140.00	SBA42■	SBA32■	1709.00
	5	1	30	SCG32■	1436.00	SCW32■	2804.00	SCW42■	3225.00	SCA42■	SCA32■	1778.00
	7-1/2	1	60	SCG33■	1466.00	SCW33■	2834.00	SCW43■	3252.00	SCA43■	SCA33■	1808.00
	10	2	60	SDG32■	2249.00	SDW32■	4356.00	SDW42■	4791.00	SDA42■	SDA32■	2732.00
	20	3	100	SEG32■	3794.00	SEW32■	7469.00	SEW42■	8216.00	SEA42■	SEA32■	4419.00
	25	3	200	SFG32■	4108.00	SEW32■	7781.00	—	—	SEA42■	SEA32■	4734.00
230 (240)	40	4	200	SFG35■	7241.00	SEW35■	11942.00	—	—	SFA45■	SFA35■	8978.00
	75	5	400	SGG35■	16221.00	SGW35■	28214.00	—	—	SGA45■	SGA35■	20435.00
	150	6	600	SHG33■	42782.00	SHW33■	54176.00	—	—	SHA43■	SHA33■	47696.00
	3	0	30	SBG32■	1367.00	SBW32■	2732.00	SBW42■	3140.00	SBA42■	SBA32■	1709.00
	5	1	30	SCG32■	1436.00	SCW32■	2804.00	SCW42■	3225.00	SCA42■	SCA32■	1778.00
	7-1/2	1	60	SCG33■	1466.00	SCW33■	2834.00	SCW43■	3252.00	SCA43■	SCA33■	1808.00
460 (480)	15	2	60	SDG32■	2249.00	SDW32■	4356.00	SDW42■	4791.00	SDA42■	SDA32■	2732.00
	25	3	100	SEG32■	3794.00	SEW32■	7469.00	SEW42■	8216.00	SEA42■	SEA32■	4419.00
	30	3	200	SFG32■	4108.00	SEW32■	7781.00	—	—	SEA42■	SEA32■	4734.00
	50	4	200	SFG35■	7241.00	SEW35■	11942.00	—	—	SFA45■	SFA35■	8978.00
	100	5	400	SGG35■	16221.00	SGW35■	28214.00	—	—	SGA45■	SGA35■	20435.00
	200	6	600	SHG33■	42782.00	SHW33■	54176.00	—	—	SHA43■	SHA33■	47696.00
575 (600)	5	0	30	SBG33■	11394.00	SBW33■	2762.00	SBW43■	3176.00	SBA43■	SBA33■	1736.00
	10	1	30	SCG34■	1466.00	SCW34■	2834.00	SCW44■	3252.00	SCA44■	SCA34■	1808.00
	15	2	30	SDG36■	2262.00	SDW36■	4370.00	SDW46■	4805.00	SDA46■	SDA36■	2748.00
	25	2	60	SDG34■	2291.00	SDW34■	4400.00	SDW44■	4841.00	SDA44■	SDA34■	2775.00
	50	3	100	SEG33■	3866.00	SEW33■	7541.00	SEW43■	8294.00	SEA43■	SEA33■	4491.00
	100	4	200	SFG33■	7298.00	SEW33■	11997.00	—	—	SFA43■	SFA33■	9035.00
200 (208)	400	5	400	SGG33■	16221.00	SGW33■	28214.00	—	—	SGA43■	SGA33■	20435.00
	400	6	600	SHG32■	42782.00	SHW32■	54176.00	—	—	SHA42■	SHA32■	47696.00

▲ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.

■ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown below.

♦ NEMA Size 6 starters are NEMA 4 painted sheet steel enclosures.

Note: Some control transformers may require the use of oversized enclosures. Refer to the control transformer selection table on page 16-40.

**Table 16.85: Fusible Disconnect Switch Type (Class R Fuses), Single Phase★▼**

Motor Voltage	Max. Hp	Coil Voltage	NEMA Size	Poles	Fuse Clip Size (A)	NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel		NEMA 4X Watertight, Dusttight and Corrosion Resistant Polyester Enclosure		NEMA 12/3R Dusttight and Driptight Industrial Use Enclosure		
						Type	\$ Price	Type	\$ Price	Type	\$ Price	With External Reset	Without External Reset	\$ Price
												Type	Type	
120	1	120	0	2	30	SBG63V02	1367.00	SBW63V02	2732.00	SBW66V02	3140.00	SBA66V02	SBA63V02	1709.00
	2		30		SCG63V02	1436.00	SCW63V02	2804.00	SCW66V02	3225.00	SCA66V02	SCA63V02	1178.00	
	3		60		SDG63V02	2249.00	SDW63V02	4356.00	SDW66V02	4791.00	SDA66V02	SDA63V02	2732.00	
240	2	240	0	2	30	SBG63V03	1367.00	SBW63V03	2732.00	SBW66V03	3140.00	SBA66V03	SBA63V03	1709.00
	3		30		SCG63V03	1436.00	SCW63V03	2804.00	SCW66V03	3225.00	SCA66V03	SCA63V03	1178.00	
	7-1/2		60		SDG63V03	2249.00	SDW63V03	4356.00	SDW66V03	4791.00	SDA66V03	SDA63V03	2732.00	

★ Single phase units require one thermal unit and are not available with Form Hxx—Solid State Overload Relays.

▼ Not included in Laser™ Delivery program.

**Table 16.86: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24□△	—	V01	No Charge
120□	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

△ 24 V coils are not available on Sizes 4-7. On Sizes 00-3, where 24 V coils are available,

Form S (separate control) must be specified (i.e., order as 8538SBG32V01S).

□ These voltage codes must include Form S (supplied at no charge). When specifying Form S, please supply motor voltage when ordering (i.e., order as 8538SCG32V02S).

Note: For voltage codes used with control transformers, see page 16-110.

Form S (separate control) is used when a separate source of power is available for the control (coil) voltage.

Form S is supplied at no charge.

For How to Order Information, see page 16-12.



Refer to page 16-30 for details.



by Schneider Electric  
www.schneider-electric.us

**3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

**Full Voltage Type With Melting Alloy Overload Relays**

Note that prices shown do not include thermal units. Devices require 3 thermal units, standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

**Table 16.87:**

Ratings				NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dustight Enclosure Stainless Steel (304)		NEMA 12/3R▲ Dusttight and Driptight Industrial Use Enclosure		
Motor Voltage (Starter Voltage)	Max. Hp Poly-phase	NEMA Size	Fuse Clip Size (A)					With External Reset	Without External Reset	\$ Price
				Type	\$ Price	Type	\$ Price	Type	Type	
<b>Class 8538 Non-Fusible Disconnect Switch Type—NEMA Size 0–2■□</b>										
200 (208)	3	0	N/A	SBG11S8♦	1656.00	SBW11S8♦	3738.00	SBA21S8♦	SBA11S8♦	2285.00
	7-1/2	1	N/A	SCG11S8♦	1728.00	SCW11S8♦	3807.00	SCA21S8♦	SCA11S8♦	2327.00
	10	2	N/A	SDG11S8♦	2528.00	SDW11S8♦	3564.00	SDA21S8♦	SDA11S8♦	2178.00
230 (240)	3	0	N/A	SBG11S8♦	1656.00	SBW11S8♦	3738.00	SBA21S8♦	SBA11S8♦	2285.00
	7-1/2	1	N/A	SCG11S8♦	1728.00	SCW11S8♦	3807.00	SCA21S8♦	SCA11S8♦	2327.00
	15	2	N/A	SDG11S8♦	2528.00	SDW11S8♦	3564.00	SDA21S8♦	SDA11S8♦	2178.00
460 (480)	5	0	N/A	SBG11S8♦	1656.00	SBW11S8♦	3738.00	SBA21S8♦	SBA11S8♦	2285.00
	10	1	N/A	SCG11S8♦	1728.00	SCW11S8♦	3807.00	SCA21S8♦	SCA11S8♦	2327.00
	25	2	N/A	SDG11S8♦	2528.00	SDW11S8♦	3564.00	SDA21S8♦	SDA11S8♦	2178.00
575 (600)	5	0	N/A	SBG11S8♦	1656.00	SBW11S8♦	3738.00	SBA21S8♦	SBA11S8♦	2285.00
	10	1	N/A	SCG11S8♦	1728.00	SCW11S8♦	3807.00	SCA21S8♦	SCA11S8♦	2327.00
	25	2	N/A	SDG11S8♦	2528.00	SDW11S8♦	3564.00	SDA21S8♦	SDA11S8♦	2178.00
<b>Class 8538 Fusible Disconnect Switch Type—NEMA Size 0–2■□</b>										
200 (208)	3	0	30	SBG12S8♦	1700.00	SBW12S8♦	3780.00	SBA22S8♦	SBA12S8♦	2327.00
	5	1	30	SCG12S8♦	1772.00	SCW12S8♦	3851.00	SCA22S8♦	SCA12S8♦	2370.00
	7-1/2	1	60	SCG13S8♦	1800.00	SCW13S8♦	3879.00	SCA23S8♦	SCA13S8♦	2399.00
230 (240)	3	0	30	SBG12S8♦	1700.00	SBW12S8♦	3780.00	SBA22S8♦	SBA12S8♦	2327.00
	5	1	30	SCG12S8♦	1772.00	SCW12S8♦	3851.00	SCA22S8♦	SCA12S8♦	2370.00
	7-1/2	1	60	SCG13S8♦	1800.00	SCW13S8♦	3879.00	SCA23S8♦	SCA13S8♦	2399.00
460 (480)	15	2	60	SDG12S8♦	2583.00	SDW12S8♦	5403.00	SDA22S8♦	SDA12S8♦	3324.00
	5	0	30	SBG13S8♦	1728.00	SBW13S8♦	3807.00	SBA13S8♦	SBA13S8♦	2357.00
	10	1	30	SCG14S8♦	1800.00	SCW14S8♦	3879.00	SCA14S8♦	SCA14S8♦	2399.00
575 (600)	15	2	30	SDG16S8♦	2597.00	SDW16S8♦	5418.00	SDA16S8♦	SDA16S8♦	3338.00
	25	2	60	SDG14S8♦	2627.00	SDW14S8♦	5445.00	SDA14S8♦	SDA14S8♦	3366.00
	5	0	30	SBG13S8♦	1728.00	SBW13S8♦	3807.00	SBA13S8♦	SBA13S8♦	2357.00

<b>Class 8538 Fusible Disconnect Switch Type with Class R Fuse Clips—NEMA Size 0–2■□</b>										
200 (208)	3	0	30	SBG32S8♦	1722.00	SBW32S8♦	3753.00	SBA42S8♦	SBA32S8♦	2348.00
	5	1	30	SCG32S8♦	1794.00	SCW32S8♦	3873.00	SCA42S8♦	SCA32S8♦	2390.00
	7-1/2	1	60	SCG33S8♦	1821.00	SCW33S8♦	3900.00	SCA43S8♦	SCA33S8♦	2420.00
230 (240)	3	0	30	SBG32S8♦	1722.00	SBW32S8♦	3753.00	SBA42S8♦	SBA32S8♦	2348.00
	5	1	30	SCG32S8♦	1794.00	SCW32S8♦	3873.00	SCA42S8♦	SCA32S8♦	2390.00
	7-1/2	1	60	SCG33S8♦	1821.00	SCW33S8♦	3900.00	SCA43S8♦	SCA33S8♦	2420.00
460 (480)	15	2	60	SDG32S8♦	2604.00	SDW32S8♦	5426.00	SDA42S8♦	SDA32S8♦	3344.00
	5	0	30	SBG33S8♦	1751.00	SBW33S8♦	3830.00	SBA43S8♦	SBA33S8♦	2376.00
	10	1	30	SCG34S8♦	1821.00	SCW34S8♦	3900.00	SCA44S8♦	SCA34S8♦	2420.00
575 (600)	15	2	30	SDG36S8♦	2619.00	SDW36S8♦	5439.00	SDA46S8♦	SDA36S8♦	3360.00
	25	2	60	SDG34S8♦	2646.00	SDW34S8♦	5468.00	SDA44S8♦	SDA34S8♦	3387.00
	5	0	30	SBG33S8♦	1751.00	SBW33S8♦	3830.00	SBA43S8♦	SBA33S8♦	2376.00

- ▲ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
  - For NEMA Size 3–5 starters in oversized NEMA 1, 4 or 12 enclosures, contact factory for pricing and TAG number.
  - ◆ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown to the right.
- Note: Some control transformers may require the use of oversized enclosures. Refer to the control transformer selection table on page 16-40.

**Table 16.88: Class 8538 Fusible Disconnect Switch Type for Horizontal Mounting□**

Ratings				NEMA 12/3R▲ Dusttight and Driptight Industrial Use Enclosure		
Motor Voltage (Starter Voltage)	Max. Hp Poly-phase	NEMA Size	Fuse Clip Size (A)	With External Reset	Without External Reset	\$ Price
				Type	Type	
200 (208)	2 7-1/2	1	30	SCA22S1★	SCA12S1★	1754.00
			60	SCA23S1★	SCA13S1★	1781.00
230 (240)	2 7-1/2	1	30	SCA22S1★	SCA12S1★	1754.00
			60	SCA23S1★	SCA13S1★	1781.00
460 (480)	10	1	30	SCA24S1★	SCA14S1★	1781.00
575 (600)	10	1	30	SCA24S1★	SCA14S1★	1781.00

★ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes listed in selection Table 16.89.

**Table 16.89: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24Δ▼	—	V01	No Charge
120Δ	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

- ▼ 24 V coils are not available on Sizes 4–7. On Sizes 00–3, where 24 V coils are available, Form S (separate control) must be specified (i.e., order as 8538SBG1158V01S).
  - Δ These voltage codes must include Form S (supplied at no charge). When specifying Form S, supply motor voltage when ordering (i.e., order as 8538SCG1158V02S).
  - Not included in Laser™ Delivery program.
- Note: For voltage codes used with control transformers, see page 16-110.

For How to Order Information, see page 16-12.

**Mag-Gard® Circuit Breaker**  
**3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

Note that prices shown do not include thermal units. Devices require 3 thermal units (Sizes 00–6). Standard trip thermal units are **\$21.50** each. See page 16-125 for selection information.

**Table 16.90: Full Voltage Type, Non-Reversing, with Melting Alloy Overload Relay**

Motor Voltage (Starter Voltage)	Ratings			NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304) (Sizes 0–5)▲		NEMA 4 & 4X Watertight Dusttight and Corrosion Resistant Polyester Enclosure		NEMAs 7 & 9 For Hazardous Locations Class I, Groups C & D Class II, Groups E, F & G (Cast Aluminum) Division 1 & 2			NEMA 12/3R+ Dusttight and Driptight Industrial Use Enclosure				
	Hp Range Poly-phase	NEMA Size	Circuit Breaker (See Page 7-32 for Breaker Adjustment Range)	Type	\$ Price	Type	\$ Price	Type	\$ Price	SPIN TOP® Type	\$ Price	Bolted Type ■	\$ Price	With External Reset Type	Without External Reset Type	\$ Price	
200 (208)	1/4–1/3 1/2–1 1-1/2–3	0	GJL36003M01 GJL36007M02 GJL36015M03	SBG41★ SBG42★ SBG43★	1814.00	SBW41★ SBW42★ SBW43★	3182.00	SBW51★ SBW52★ SBW53★	3653.00	SBR41★ SBR42★ SBR43★	3843.00	SBT41★ SBT42★ SBT43★	3843.00	SBA51★ SBA52★ SBA53★	SBA41★ SBA42★ SBA43★	2156.00	
	1/4–1/3 1/2–1 1-1/2–3 5 7-1/2	1	GJL36003M01 GJL36007M02 GJL36015M03 GJL36030M04 GJL36050M05	SCG41★ SCG42★ SCG43★ SCG44★ SCG45★	1886.00	SCW41★ SCW42★ SCW43★ SCW44★ SCW45★	3252.00	SCW51★ SCW52★ SCW53★ SCW54★ SCW55★	3738.00	SCR41★ SCR42★ SCR43★ SCR44★ SCR45★	3936.00	SCT41★ SCT42★ SCT43★ SCT44★ SCT45★	3936.00	SCA51★ SCA52★ SCA53★ SCA54★ SCA55★	SCA41★ SCA42★ SCA43★ SCA44★ SCA45★	2228.00	
	1-1/2–3 5 7-1/2–10	2	GJL36015M03 GJL36030M04 GJL36050M05	SDG41★ SDG42★ SDG43★	2669.00	SDW41★ SDW42★ SDW43★	4778.00	SDW51★ SDW52★ SDW53★	5255.00	SDR41★ SDR42★ SDR43★	5255.00	SDT41★ SDT42★ SDT43★	5255.00	SDA51★ SDA52★ SDA53★	SDA41★ SDA42★ SDA43★	3153.00	
	15–25	3	FAL3610018M	SEG42★	3879.00	SEW42★	7554.00	SEW52★	8310.00	SER42★	8679.00	SET42★	8679.00	SEA52★	SEA42★	4505.00	
	30 40	4	KAL3625025M KAL3625026M	SFG42★ SFG43★	8508.00	SFW42★ SFW43★	13208.00	SFW52★ SFW53★	14534.00	SFR42★ SFR43★	13521.00	SFT42★ SFT43★	13521.00	SFA52★ SFA53★	SFA42★ SFA43★	10245.00	
	50 60 75	5	KAL3625030M LAL3640032M LAL3640033M	SGG42★ SGG43★ SGG44★	19724.00	SGW42★ SGW43★ SGW44★	31716.00	— — —	— — —	SGR42★ SGR43★ SGR44★	29381.00	SGT42★ SGT43★ SGT44★	29381.00	SGA52★ SGA53★ SGA54★	SGA42★ SGA43★ SGA44★	22859.00	
	100 125 150	6	LAL3640036M MAL3660040M MAL3660042M	SHG43★ SHG44★ SHG45★	42825.00	SHW43★ SHW44★ SHW45★	49946.00	— — —	— — —	— — —	— — —	— — —	— — —	SHA53★ SHA54★ SHA55★	SHA43★ SHA44★ SHA45★	46670.00	
	230 (240)	1/4–1/3 1/2–1 1-1/2–3	0	GJL36003M01 GJL36007M02 GJL36015M03	SBG41★ SBG42★ SBG43★	1814.00	SBW41★ SBW42★ SBW43★	3182.00	SBW51★ SBW52★ SBW53★	3653.00	SBR41★ SBR42★ SBR43★	3843.00	SBT41★ SBT42★ SBT43★	3843.00	SBA51★ SBA52★ SBA53★	SBA41★ SBA42★ SBA43★	2156.00
		1/4–1/3 1/2–1 1-1/2–3 5–7-1/2	1	GJL36003M01 GJL36007M02 GJL36015M03 GJL36030M04	SCG41★ SCG42★ SCG43★ SCG44★	1886.00	SCW41★ SCW42★ SCW43★ SCW44★	3182.00	SCW51★ SCW52★ SCW53★ SCW54★	3738.00	SCR41★ SCR42★ SCR43★ SCR44★	3936.00	SCT41★ SCT42★ SCT43★ SCT44★	3936.00	SCA51★ SCA52★ SCA53★ SCA54★	SCA41★ SCA42★ SCA43★ SCA44★	2228.00
		1-1/2–3 5–7-1/2 10 15	2	GJL36015M03 GJL36030M04 GJL36050M05 GJL36075M06	SDG41★ SDG42★ SDG43★ SDG44★	2669.00	SDW41★ SDW42★ SDW43★ SDW44★	4778.00	SDW51★ SDW52★ SDW53★ SDW54★	5255.00	SDR41★ SDR42★ SDR43★ SDR44★	5255.00	SDT41★ SDT42★ SDT43★ SDT44★	5255.00	SDA51★ SDA52★ SDA53★ SDA54★	SDA41★ SDA42★ SDA43★ SDA44★	3153.00
		15–30	3	FAL3610018M	SEG42★	3879.00	SEW42★	7554.00	SEW52★	8310.00	SER42★	8679.00	SET42★	8679.00	SEA52★	SEA42★	4505.00
		40 50	4	KAL3625026M KAL3625029M	SFG43★ SFG44★	8508.00	SFW43★ SFW44★	13208.00	SFW53★ SFW54★	14534.00	SFR43★ SFR44★	13521.00	SFT43★ SFT44★	13521.00	SFA53★ SFA54★	SFA43★ SFA44★	10245.00
60 75 100		5	KAL3625031M LAL3640032M LAL3640033M LAL3640035M	SGG43★ SGG44★ SGG45★ SGG46★	19724.00	SGW43★ SGW44★ SGW45★ SGW46★	31716.00	— — — —	— — — —	SGR43★ SGR44★ SGR45★ SGR46★	29381.00	SGT43★ SGT44★ SGT45★ SGT46★	29381.00	SGA53★ SGA54★ SGA55★ SGA56★	SGA43★ SGA44★ SGA45★ SGA46★	22859.00	
125–150 200		6	MAL3660040M MAL3660044M	SHG44★ SHG45★	42825.00	SHW44★ SHW45★	49946.00	— —	— —	— —	— —	— —	— —	SHA54★ SHA55★	SHA44★ SHA45★	46670.00	
250 300		7	MAL3680045M MAL36100047M	SJG42★ SJG43★	57837.00	SJW42★ SJW43★	64958.00	— —	— —	— —	— —	— —	— —	SJA52★ SJA53★	SJA42★ SJA43★	61682.00	

- ▲ NEMA Size 6 and 7 starters are NEMA 4 painted sheet steel enclosures.
  - NEMAs 7 and 9 bolted are not UL Listed.
  - ◆ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
  - ★ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown below.
- Note: Some control transformers may require the use of oversized enclosures. Refer to control transformer selection table on page 16-40.

**Table 16.91: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24▼	—	V01	No Charge
120△	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

▼ 24 V coils are not available on Sizes 4–7. On Sizes 00–3, where 24 V coils are available, **Form S** (separate control) must be specified (i.e., order as 8539SBG41V01S).  
 △ These voltage codes must include **Form S** (supplied at no charge). When specifying **Form S**, please supply motor voltage when ordering (i.e., order as 8539SCG41V02S).

Note: For voltage codes used with control transformers, see page 16-110.  
 Form S (separate control) is used when a separate source of power is available for the control (coil) voltage. Form S is supplied at no charge.

- Dimensions . . . . . page 16-41
- Factory Modifications (Forms) . . . . . page 16-109
- Replacement Parts (Class 9998) . . . . . page 16-114
- Type S Accessories (Class 9999) . . . . . page 16-117

For How to Order Information, see page 16-12.



Refer to page 16-30 for details.

**16 NEMA DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS**

by Schneider Electric  
www.schneider-electric.us

**Mag-Gard® Circuit Breaker**

**3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

Note that prices shown do not include thermal units. Devices require 3 thermal units (Sizes 00–6). Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

**Table 16.92: Full Voltage Type, Non-Reversing, with Melting Alloy Overload Relays**

Ratings			NEMA Type 1 General Purpose Enclosure			NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304) (Sizes 0-5)▲		NEMA 4 & 4X Watertight and Corrosion Resistant Polyester Enclosure		NEMAs 7 & 9 For Hazardous Locations Class I, Groups C & D Class II, Groups E, F & G (Cast Aluminum) Division 1 & 2				NEMA 12/3R♦ Dusttight and Driptight Industrial Use Enclosure				
Motor Voltage (Starter Voltage)	Hp Range Poly-phase	NEMA Size	Circuit Breaker (See Page 7-32 for Breaker Adjustment Range)		Type	\$ Price	Type	\$ Price	Type	\$ Price	SPIN TOP® Type		\$ Price	Bolted Type ■	\$ Price	With External Reset	Without External Reset	\$ Price
			Type	\$ Price							Type	\$ Price				Type	Type	
460 (480)	1/4-1 1-1/2-3 5	0	GJL36003M01 GJL36007M02 GJL36015M03	SBG41★ SBG42★ SBG43★	1814.	SBW41★ SBW42★ SBW43★	3182.	SBW51★ SBW52★ SBW53★	3653.	SBR41★ SBR42★ SBR43★	3843.	SBT41★ SBT42★ SBT43★	3843.	SBA51★ SBA52★ SBA53★	SBA41★ SBA42★ SBA43★	2156.		
	1/4-1 1-1/2-3 5-7-1/2 10	1	GJL36003M01 GJL36007M02 GJL36015M03 GJL36030M04	SCG41★ SCG42★ SCG43★ SCG44★	1886.	SCW41★ SCW42★ SCW43★ SCW44★	3252.	SCW51★ SCW52★ SCW53★ SCW54★	3738.	SCR41★ SCR42★ SCR43★ SCR44★	3936.	SCT41★ SCT42★ SCT43★ SCT44★	3936.	SCA51★ SCA52★ SCA53★ SCA54★	SCA41★ SCA42★ SCA43★ SCA44★	2228.		
	5-7-1/2 10-15 20-25	2	GJL36015M03 GJL36030M04 GJL36050M05	SDG41★ SDG42★ SDG43★	2669.	SDW41★ SDW42★ SDW43★	4778.	SDW51★ SDW52★ SDW53★	5255.	SDR41★ SDR42★ SDR43★	5255.	SDT41★ SDT42★ SDT43★	5255.	SDA51★ SDA52★ SDA53★	SDA41★ SDA42★ SDA43★	3153.		
	20-25 30-50	3	GJL36050M05 FAL3610018M	SEG41★ SEG42★	3879.	SEW41★ SEW42★	7554.	SEW51★ SEW52★	8310.	SER41★ SER42★	8679.	SET41★ SET42★	8679.	SEA51★ SEA52★	SEA41★ SEA42★	4505.		
	60-75 100	4	KAL3625025M KAL3625029M	SFG42★ SFG44★	8508.	SFW42★ SFW44★	13208.	SFW52★ SFW54★	14534.	SFR42★ SFR44★	13521.	SFT42★ SFT44★	13521.	SFA52★ SFA54★	SFA42★ SFA44★	10245.		
	125 150 200	5	KAL3625031M LAL3640032M LAL3640033M	SGG43★ SGG44★ SGG46★	19724.	SGW43★ SGW44★ SGW46★	31716.	— — —	— — —	SGR43★ SGR44★ SGR46★	29381.	SGT43★ SGT44★ SGT46★	29381.	SGA53★ SGA54★ SGA56★	SGA43★ SGA44★ SGA46★	22859.		
	250 300 350 400	6	LAL3640036M MAL3660040M MAL3660042M MAL3660044M	SHG43★ SHG44★ SHG45★ SHG46★	42825.	SHW43★ SHW44★ SHW45★ SHW46★	49946.	— — — —	— — — —	— — — —	— — — —	— — — —	— — — —	SHA53★ SHA54★ SHA55★ SHA56★	SHA43★ SHA44★ SHA45★ SHA46★	46670.		
	500 600	7	MAL3690045M MAL36100047M	SJG42★ SJG43★	57837.	SJW42★ SJW43★	64958.	— —	— —	— —	— —	— —	— —	SJA52★ SJA53★	— —	61682.		
	575 (600)	1/4-1 1-1/2-3 5	0	GJL36003M01 GJL36007M02 GJL36015M03	SBG41★ SBG42★ SBG43★	1814.	SBW41★ SBW42★ SBW43★	3182.	SBW51★ SBW52★ SBW53★	3653.	SBR41★ SBR42★ SBR43★	3843.	SBT41★ SBT42★ SBT43★	3843.	SBA51★ SBA52★ SBA53★	SBA41★ SBA42★ SBA43★	2156.	
		1/4-1 1-1/2-3 5-10	1	GJL36003M01 GJL36007M02 GJL36015M03	SCG41★ SCG42★ SCG43★	1886.	SCW41★ SCW42★ SCW43★	3252.	SCW51★ SCW52★ SCW53★	3738.	SCR41★ SCR42★ SCR43★	3936.	SCT41★ SCT42★ SCT43★	3936.	SCA51★ SCA52★ SCA53★	SCA41★ SCA42★ SCA43★	2228.	
5-10 15-20 25		2	GJL36015M03 GJL36030M04 GJL36050M05	SDG41★ SDG42★ SDG43★	2669.	SDW41★ SDW42★ SDW43★	4778.	SDW51★ SDW52★ SDW53★	5255.	SDR41★ SDR42★ SDR43★	5255.	SDT41★ SDT42★ SDT43★	5255.	SDA51★ SDA52★ SDA53★	SDA41★ SDA42★ SDA43★	3153.		
25-30 40-50		3	GJL36050M05 FAL3610018M	SEG41★ SEG42★	3879.	SEW41★ SEW42★	7554.	SEW51★ SEW52★	8310.	SER41★ SER42★	8679.	SET41★ SET42★	8679.	SEA51★ SEA52★	SEA41★ SEA42★	4505.		
60-100		4	KAL3625025M KAL3625029M	SFG42★ SFG44★	8508.	SFW42★ SFW44★	13208.	SFW52★ SFW54★	14534.	SFR42★ SFR44★	13521.	SFT42★ SFT44★	13521.	SFA52★ SFA54★	SFA42★ SFA44★	10245.		
125 150 200		5	KAL3625031M LAL3640032M LAL3640033M	SGG43★ SGG44★ SGG46★	19724.	SGW43★ SGW44★ SGW46★	31716.	— — —	— — —	SGR43★ SGR44★ SGR46★	29381.	SGT43★ SGT44★ SGT46★	29381.	SGA51★ SGA52★ SGA54★	SGA41★ SGA42★ SGA44★	22859.		
250 300 350-400		6	LAL3640035M LAL3640036M MAL3660040M	SHG42★ SHG43★ SHG44★	42825.	SHW42★ SHW43★ SHW44★	49946.	— — —	— — —	— — —	— — —	— — —	— — —	SHA52★ SHA53★ SHA54★	SHA42★ SHA43★ SHA44★	46670.		
500 600		7	MAL3680044M MAL3680045M	SJG41★ SJG42★	57837.	SJW41★ SJW42★	64958.	— —	— —	— —	— —	— —	— —	SJA51★ SJA52★	— —	61682.		

▲ NEMA Size 6 and 7 starters are NEMA 4 painted sheet steel enclosures.  
■ NEMA 7 and 9 bolted are not UL Listed.  
♦ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.  
★ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown below.  
Note: Some control transformers may require the use of oversized enclosures. Refer to control transformer selection table on page 16-40.

**Table 16.93: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24Δ▼	—	V01	No Charge
120Δ	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

▼ 24 V coils are not available on Sizes 4-7. On Sizes 00-3, where 24 V coils are available, Form S (separate control) must be specified (i.e., order as 8539SBG41V01S).  
Δ These voltage codes must include Form S (supplied at no charge). When specifying Form S, please supply motor voltage when ordering (i.e., order as 8539SCG41V02S).  
Note: For voltage codes used with control transformers, see page 16-110.  
Form S (separate control) is used when a separate source of power is available for the control (coil) voltage.  
Form S is supplied at no charge.

Dimensions ..... page 16-41  
Factory Modifications (Forms) ..... page 16-109  
Replacement Parts (Class 9998) ..... page 16-114  
Type S Accessories (Class 9999) ..... page 16-117

For How to Order Information, see page 16-12.



Refer to page 16-30 for details.

16 NEMA DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS

**3-Pole Polyphase—600 Vac Maximum—50-60 Hz**

Note that prices shown do not include thermal units. Devices require 3 thermal units. Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

**Table 16.94: Mag-Gard® Circuit Breakers in Oversized Enclosure, NEMA Size 0-2■△  
Full Voltage Type, Non-Reversing with Melting Alloy Overload Relays**

Motor Voltage (Starter Voltage)	Ratings			NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304)		NEMA 12/3R▲ Dusttight and Driptight Industrial Use Enclosure		
	Hp Range Poly-phase	NEMA Size	Circuit Breaker (See Page 7-32 for Breaker Adjustment Range)	Type	\$ Price	Type	\$ Price	With External Reset	Without External Reset	\$ Price
								Type	Type	
200 (208)	1/4-1/3 1/2-1 1-1/2-3	0	GJL36003M01 GJL36007M02 GJL36015M03	SBG41S8♦ SBG42S8♦ SBG43S8♦	2169.00	SBW41S8♦ SBW42S8♦ SBW43S8♦	4248.00	SBA51S8♦ SBA52S8♦ SBA53S8♦	SBA41S8♦ SBA42S8♦ SBA43S8♦	2798.00
	1/4-1/3 1/2-1 1-1/2-3-5 7 1/2	1	GJL36003M01 GJL36007M02 GJL36015M03 GJL36030M04 GJL36050M05	SCG41S8♦ SCG42S8♦ SCG43S8♦ SCG44S8♦ SCG45S8♦	2241.00	SCW41S8♦ SCW42S8♦ SCW43S8♦ SCW44S8♦ SCW45S8♦	4320.00	SCA51S8♦ SCA52S8♦ SCA53S8♦ SCA54S8♦ SCA55S8♦	SCA41S8♦ SCA42S8♦ SCA43S8♦ SCA44S8♦ SCA45S8♦	2867.00
	1-1/2-3 5 7 1/2-10	2	GJL36015M03 GJL36030M04 GJL36050M05	SDG41S8♦ SDG42S8♦ SDG43S8♦	3024.00	SDW41S8♦ SDW42S8♦ SDW43S8♦	5844.00	SDA51S8♦ SDA52S8♦ SDA53S8♦	SDA41S8♦ SDA42S8♦ SDA43S8♦	3794.00
230 (240)	1/4-1/3 1/2-1 1-1/2-3	0	GJL36003M01 GJL36007M02 GJL36015M03	SBG41S8♦ SBG42S8♦ SBG43S8♦	2169.00	SBW41S8♦ SBW42S8♦ SBW43S8♦	4248.00	SBA51S8♦ SBA52S8♦ SBA53S8♦	SBA41S8♦ SBA42S8♦ SBA43S8♦	2798.00
	1/4-1/3 1/2-1 1-1/2-3 5-7-1/2	1	GJL36003M01 GJL36007M02 GJL36015M03 GJL36030M04	SCG41S8♦ SCG42S8♦ SCG43S8♦ SCG44S8♦	2241.00	SCW41S8♦ SCW42S8♦ SCW43S8♦ SCW44S8♦	4320.00	SCA51S8♦ SCA52S8♦ SCA53S8♦ SCA54S8♦	SCA41S8♦ SCA42S8♦ SCA43S8♦ SCA44S8♦	3867.00
	1-1/2-3 5-7-1/2 10 15	2	GJL36015M03 GJL36030M04 GJL36050M05 GJL36075M06	SDG41S8♦ SDG42S8♦ SDG43S8♦ SDG44S8♦	3024.00	SDW41S8♦ SDW42S8♦ SDW43S8♦ SDW44S8♦	5844.00	SDA51S8♦ SDA52S8♦ SDA53S8♦ SDA54S8♦	SDA41S8♦ SDA42S8♦ SDA43S8♦ SDA44S8♦	3794.00
460 (480)	1/4-1 1-1/2-3 5	0	GJL36003M01 GJL36007M02 GJL36015M03	SBG41S8♦ SBG42S8♦ SBG43S8♦	2169.00	SBW41S8♦ SBW42S8♦ SBW43S8♦	4248.00	SBA51S8♦ SBA52S8♦ SBA53S8♦	SBA41S8♦ SBA42S8♦ SBA43S8♦	2798.00
	1/4-1 1-1/2-3 5-7-1/2 10	1	GJL36003M01 GJL36007M02 GJL36015M03 GJL36030M04	SCG41S8♦ SCG42S8♦ SCG43S8♦ SCG44S8♦	2241.00	SCW41S8♦ SCW42S8♦ SCW43S8♦ SCW44S8♦	4320.00	SCA51S8♦ SCA52S8♦ SCA53S8♦ SCA54S8♦	SCA41S8♦ SCA42S8♦ SCA43S8♦ SCA44S8♦	2867.00
	5-7-1/2 10-15 20-25	2	GJL36015M03 GJL36030M04 GJL36050M05	SDG41S8♦ SDG42S8♦ SDG43S8♦	3024.00	SDW41S8♦ SDW42S8♦ SDW43S8♦	5855.00	SDA51S8♦ SDA52S8♦ SDA53S8♦	SDA41S8♦ SDA42S8♦ SDA43S8♦	3794.00
575 (600)	1/4-1 1-1/2-3 5	0	GJL36003M01 GJL36007M02 GJL36015M03	SBG41S8♦ SBG42S8♦ SBG43S8♦	2169.00	SBW41S8♦ SBW42S8♦ SBW43S8♦	4248.00	SBA51S8♦ SBA52S8♦ SBA53S8♦	SBA41S8♦ SBA42S8♦ SBA43S8♦	2798.00
	1/4-1 1-1/2-3 5-10	1	GJL36003M01 GJL36007M02 GJL36015M03	SCG41S8♦ SCG42S8♦ SCG43S8♦	2241.00	SCW41S8♦ SCW42S8♦ SCW43S8♦	4320.00	SCA51S8♦ SCA52S8♦ SCA53S8♦	SCA41S8♦ SCA42S8♦ SCA43S8♦	3867.00
	5-10 15-20 25	2	GJL36015M03 GJL36030M04 GJL36050M05	SDG41S8♦ SDG42S8♦ SDG43S8♦	3024.00	SDW41S8♦ SDW42S8♦ SDW43S8♦	5844.00	SDA51S8♦ SDA52S8♦ SDA53S8♦	SDA41S8♦ SDA42S8♦ SDA43S8♦	3794.00

- ▲ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
- For NEMA Size 3-5 starters in oversized NEMA 1, 4 or 12 enclosures, contact factory for pricing and TAG number.
- ♦ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown below.

Note: Some control transformers may require the use of oversized enclosures. Refer to control transformer selection table on page 16-40.

**Table 16.95: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24▼★	—	V01	No Charge
120▼	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

- ★ 24 V coils are not available on Sizes 4-7. On Sizes 00-3, where 24 V coils are available, **Form S** (separate control) must be specified (i.e., order as 8539SBG41S8V01S).
- ▼ These voltage codes must include **Form S** (supplied at no charge). When specifying **Form S**, please supply motor voltage when ordering (i.e., order as 8539SCG41S8V02S).
- △ Not included in Laser™ Delivery program.

Note: For voltage codes used with control transformers, see page 16-110.  
Form S (separate control) is used when a separate source of power is available for the control (coil) voltage.  
Form S is supplied at no charge.

Dimensions . . . . . page 16-41  
 Factory Modifications (Forms) . . . . . page 16-109  
 Replacement Parts (Class 9998) . . . . . page 16-114  
 Type S Accessories (Class 9999) . . . . . page 16-117

For How to Order Information, see page 16-12.

**3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

Note that prices shown do not include thermal units. Devices require 3 thermal units (Sizes 0-6). Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

**Table 16.96: Full Voltage Type, Non-Reversing, with Melting Alloy Overload Relays**

Ratings				NEMA Type 1 General Purpose		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304) (Sizes 0-5)▲		NEMA 4 & 4X Watertight Dusttight and Corrosion Resistant Polyester Enclosure		NEMAs 7 & 9 For Hazardous Locations Class I, Groups C & D Class II, Groups E, F & G (Cast Aluminum) Division 1 & 2				NEMA 12/3R+ Dusttight and Driptight Industrial Use Enclosure			
Motor Voltage (Starter Voltage)	Max. Hp Poly-phase	NEMA Size	Circuit Breaker		Type	\$ Price	Type	\$ Price	Type	\$ Price	SPIN TOP® Type	\$ Price	Bolted Type ■	\$ Price	With External Reset	Without External Reset	\$ Price
			Type	Ampere Rating											Type	Type	
200 (208)	2-3	0	FAL▼	15-20	SBG1★ SBG3★	1400.	SBW1★ SBW3★	2768.	SBW11★ SBW13★	3182.	SBR1★ SBR3★	3843.	SBT1★ SBT3★	3843.	SBA11★ SBA13★	SBA1★ SBA3★	1742.
	5-7-1/2	1	FAL▼	35-50	SCG5★ SCG2★	1472.	SCW5★ SCW2★	2840.	SCW15★ SCW12★	3267.	SCR5★ SCR2★	3936.	SCT5★ SCT2★	3936.	SCA15★ SCA12★	SCA5★ SCA2★	1814.
	10	2	FAL▼	60	SDG1★	2255.	SDW1★	4364.	SDW11★	4805.	SDR1★	5255.	SDT1★	5255.	SDA11★	SDA1★	2739.
	15-20-25	3	FAL FAL KAL	90-100-110	SEG3★ SEG1★ SEG5★	3879.	SEW3★ SEW1★ SEW5★	7554.	SEW13★ SEW11★ SEW15★	8310.	SER3★ SER1★ SER5★	8679.	SET3★ SET1★ SET5★	8679.	SEA13★ SEA11★ SEA15★	SEA3★ SEA1★ SEA5★	4505.
	30-40	4	KAL	125-200	SFG3★ SFG4★	8508.	SFW3★ SFW4★	13208.	SFW13★ SFW14★	14534.	SFR3★ SFR4★	13521.	SFT3★ SFT4★	13521.	SFA13★ SFA14★	SFA3★ SFA4★	10245.
	50-60-75	5	LAL	200-250-300	SGG6★ SGG1★ SGG4★	19724.	SGW6★ SGW1★ SGW4★	31716.	— — —	— — —	SGR6★ SGR1★ SGR4★	29381.	SGT6★ SGT1★ SGT4★	29381.	SGA13★ SGA11★ SGA14★	SGA6★ SGA1★ SGA4★	22859.
	100-125-150	6	MAL	450-600-600	SHG4★ SHG3★ SHG5★	42825.	SHW4★ SHW3★ SHW5★	49946.	— — —	— — —	— — —	— — —	— — —	— — —	SHA14★ SHA13★ SHA15★	SHA4★ SHA3★ SHA5★	46670.
230 (240)	2-3	0	FAL▼	15-20	SBG1★ SBG3★	1400.	SBW1★ SBW3★	2768.	SBW11★ SBW13★	3182.	SBR1★ SBR3★	3843.	SBT1★ SBT3★	3843.	SBA11★ SBA13★	SBA1★ SBA3★	1742.
	5-7-1/2	1	FAL▼	30-45	SCG1★ SCG6★	1472.	SCW1★ SCW6★	2840.	SCW11★ SCW16★	3267.	SCR1★ SCR6★	3936.	SCT1★ SCT6★	3936.	SCA11★ SCA16★	SCA1★ SCA6★	1814.
	10-15	2	FAL▼	60-80	SDG1★ SDG7★	2255.	SDW1★ SDW7★	4364.	SDW11★ SDW17★	4805.	SDR1★ SDR7★	5255.	SDT1★ SDT7★	5355.	SDA11★ SDA17★	SDA1★ SDA7★	2739.
	20-25-30	3	FAL FAL KAL	90-100-110	SEG3★ SEG1★ SEG5★	3879.	SEW3★ SEW1★ SEW5★	7554.	SEW13★ SEW11★ SEW15★	8310.	SER3★ SER1★ SER5★	8679.	SET3★ SET1★ SET5★	8679.	SEA13★ SEA11★ SEA15★	SEA3★ SEA1★ SEA5★	4505.
	40-50	4	KAL	150-200	SFG1★ SFG4★	8508.	SFW1★ SFW4★	13208.	SFW11★ SFW14★	14534.	SFR1★ SFR4★	13521.	SFT1★ SFT4★	13521.	SFA11★ SFA14★	SFA1★ SFA4★	10245.
	60-75-100	5	LAL	225-250-350	SGG3★ SGG1★ SGG2★	19724.	SGW3★ SGW1★ SGW2★	31716.	— — —	— — —	SGR3★ SGR1★ SGR2★	29381.	SGT3★ SGT1★ SGT2★	29381.	SGA13★ SGA11★ SGA12★	SGA3★ SGA1★ SGA2★	22859.
	125-150-200	6	MAL	450-600-800	SHG4★ SHG3★ SHG7★	42825.	SHW4★ SHW3★ SHW7★	49946.	— — —	— — —	— — —	— — —	— — —	— — —	SHA14★ SHA13★ SHA17★	SHA4★ SHA3★ SHA7★	46670.
250-300	7	MAL	900-1000	SJG2★ SJG3★	57837.	SJW2★ SJW3★	64958.	— —	— —	— —	— —	— —	— —	SJA12★ SJA13★	— —	61682.	

- ▲ NEMA Size 6 & 7 starters are NEMA 4 painted sheet steel enclosures.
- NEMA 7 & 9 bolted are not UL Listed.
- ◆ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
- ★ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes listed below.
- ▼ Rated 250 Volts Max.

Note: Some control transformers may require the use of oversized enclosures. Refer to control transformer selection table on page 16-40.

**Table 16.97: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24□△	—	V01	No Charge
120□	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

- △ 24 V coils are not available on Sizes 4-7. On Sizes 00-3, where 24 V coils are available, **Form S** (separate control) must be specified (i.e., order as 8539SBG1V01S).
  - These voltage codes must include **Form S** (supplied at no charge). When specifying **Form S**, please supply motor voltage when ordering (i.e., order as 8539SCG5V02S).
- Note: For voltage codes used with control transformers, see page 16-110.  
Form S (separate control) is used when a separate source of power is available for the control (coil) voltage. Form S is supplied at no charge.

Dimensions .....page 16-41  
Factory Modifications (Forms) .....page 16-109  
Replacement Parts (Class 9998) .....page 16-114  
Type S Accessories (Class 9999) .....page 16-117

For How to Order Information, see page 16-12.



Refer to page 16-30 for details.



3-Pole Polyphase—600 Vac Maximum—50–60 Hz

Note that prices shown do not include thermal units. Devices require 3 thermal units (Sizes 00-6). Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

Table 16.98: Line Voltage Type, Non-Reversing, with Melting Alloy Overload Relays

Ratings					NEMA Type 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304) (Sizes 0-5)▲		NEMA 4 & 4X Watertight Dusttight and Corrosion Resistant Polyester Enclosure		NEMAs 7 & 9 For Hazardous Locations Class I, Groups C & D Class II, Groups E, F & G (Cast Aluminum) Division 1 & 2				NEMA 12/3R Dusttight and Driptight Industrial Use Enclosure			
Motor Voltage (Starter Voltage)	Max. Hp Poly-phase	NEMA Size	Circuit Breaker		Type	\$ Price	Type	\$ Price	Type	\$ Price	SPIN TOP® Type	\$ Price	Bolted Type ■	\$ Price	With External Reset	Without External Reset	\$ Price	
			Type	Ampere Rating											Type	Type		
460 (480)	5	0	FAL	15	SBG2★	1814.	SBW2★	3182.	SBW12★	3653.	SBR2★	3843.	SBT2★	3843.	SBA12★	SBA2★	2156.	
	7-1/2 10	1	FAL	20 25	SCG3★ SCG7★	1886.	SCW3★ SCW7★	3252.	SCW13★ SCW17★	3738.	SCR3★ SCR7★	3936.	SCT3★ SCT7★	3936.	SCA13★ SCA17★	SCA3★ SCA7★	2228.	
	15 20 25	2	FAL	40 60 70	SDG3★ SDG4★ SDG5★	2669.	SDW3★ SDW4★ SDW5★	4778.	SDW13★ SDW14★ SDW15★	5255.	SDR3★ SDR4★ SDR5★	5255.	SDT3★ SDT4★ SDT5★	5255.	SDA13★ SDA14★ SDA15★	SDA3★ SDA4★ SDA5★	3153.	
	30 40 50	3	FAL	80 90 100	SEG6★ SEG3★ SEG1★	3879.	SEW6★ SEW3★ SEW1★	7554.	SEW16★ SEW13★ SEW11★	8310.	SER6★ SER3★ SER1★	8679.	SET6★ SET3★ SET1★	8679.	SEA16★ SEA13★ SEA11★	SEA6★ SEA3★ SEA1★	4505.	
	60 75 100	4	KAL	110 125 200	SFG5★ SFG3★ SFG4★	8508.	FW5★ FW3★ FW4★	13208.	SFW15★ SFW13★ SFW14★	14534.	SFR5★ SFR3★ SFR4★	13521.	SFT5★ SFT3★ SFT4★	13521.	SFA15★ SFA13★ SFA14★	SFA5★ SFA3★ SFA4★	10245.	
	125 150 200	5	LAL	225 250 350	SGG3★ SGG1★ SGG2★	19724.	SGW3★ SGW1★ SGW2★	31716.	—	—	SGR3★ SGR1★ SGR2★	29381.	SGT3★ SGT1★ SGT2★	29381.	SGA13★ SGA11★ SGA12★	SGA3★ SGA1★ SGA2★	22859.	
	250 300 350 400	6	MAL	450 600 600 800	SHG4★ SHG3★ SHG5★ SHG7★	42825.	SHW4★ SHW3★ SHW5★ SHW7★	49946.	—	—	—	—	—	—	SHA14★ SHA13★ SHA15★ SHA17★	SHA4★ SHA3★ SHA5★ SHA7★	46670.	
	500 600	7	MAL	900 1000	SJG2★ SJG3★	57837.	SJW2★ SJW3★	64958.	—	—	—	—	—	—	SJA12★ SJA13★	—	—	61682.
	575 (600)	5	0	FAL	15	SBG2★	1814.	SBW2★	3182.	SBW12★	3653.	SBR2★	3843.	SBT2★	3843.	SBA12★	SBA2★	2156.
		7-1/2 10	1	FAL	20 25	SCG8★ SCG3★	1886.	SCW8★ SCW3★	3252.	SCW18★ SCW13★	3738.	SCR8★ SCR3★	3936.	SCT8★ SCT3★	3936.	SCA18★ SCA13★	SCA8★ SCA3★	2228.
15 20 25		2	FAL	35 45 60	SDG8★ SDG9★ SDG4★	2669.	SDW8★ SDW9★ SDW4★	4778.	SDW18★ SDW19★ SDW14★	5255.	SDR8★ SDR9★ SDR4★	5255.	SDT8★ SDT9★ SDT4★	5255.	SDA18★ SDA19★ SDA14★	SDA8★ SDA9★ SDA4★	3153.	
30 40 50		3	FAL	60 80 90	SEG4★ SEG6★ SEG3★	3879.	SEW4★ SEW6★ SEW3★	7554.	SEW14★ SEW16★ SEW13★	8310.	SER4★ SER6★ SER3★	8679.	SET4★ SET6★ SET3★	8679.	SEA14★ SEA16★ SEA13★	SEA4★ SEA6★ SEA3★	4505.	
60 75 100		4	FAL KAL KAL	100 110 150	SFG6★ SFG5★ SFG1★	8508.	FW6★ FW5★ FW1★	13208.	SFW16★ SFW15★ SFW11★	14534.	SFR6★ SFR5★ SFR1★	13521.	SFT6★ SFT5★ SFT1★	13521.	SFA16★ SFA15★ SFA11★	SFA6★ SFA5★ SFA1★	10245.	
125 150 200		5	KAL LAL LAL	200 200 250	SGG7★ SGG6★ SGG1★	19724.	SGW7★ SGW6★ SGW1★	31716.	—	—	SGR7★ SGR6★ SGR1★	29381.	SGT7★ SGT6★ SGT1★	29381.	SGA17★ SGA16★ SGA11★	SGA7★ SGA6★ SGA1★	22859.	
250 300 350 400		6	MAL	350 450 500 600	SHG6★ SHG4★ SHG2★ SHG3★	42825.	SHW6★ SHW4★ SHW2★ SHW3★	49946.	—	—	—	—	—	—	SHA16★ SHA14★ SHA12★ SHA13★	SHA6★ SHA4★ SHA2★ SHA3★	46670.	
500 600		7	MAL	800 900	SJG1★ SJG2★	57837.	SJW1★ SJW2★	64958.	—	—	—	—	—	—	SJA11★ SJA12★	—	—	61682.

Table 16.99: Thermal Magnetic Circuit Breaker Type, Single Phase▼▲

Motor Voltage	Max. Hp	Coil Voltage	NEMA Size	Poles	Circuit Breaker (Type)	Ampere Rating	NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304) (Sizes 0-2)		NEMA 4 & 4X Watertight, Dusttight and Corrosion Resistant Polyester Enclosure		NEMA 12/3R Dusttight and Driptight Industrial Use Enclosure		
							Type	\$ Price	Type	\$ Price	Type	\$ Price	With External Reset	Without External Reset	\$ Price
													Type	Type	
120	1 2 3	120	0 1 2	1	FAL12030	30	SBG61V02	1400.00	SBW61V02	2768.00	SBW64V02	3182.00	SBA64V02	SBA61V02	1742.00
					FAL12050	50	SCG61V02	1472.00	SCW61V02	2840.00	SCW64V02	3267.00	SCA64V02	SCA61V02	1814.00
					FAL12070	70	SDG61V02	2255.00	SDW61V02	4364.00	SDW64V02	4805.00	SDA64V02	SDA61V02	2739.00
	1 2 3	2	0 1 2	2	FAL22025	25	SBG71V02	1400.00	SBW71V02	2768.00	SBW74V02	3182.00	SBA74V02	SBA71V02	1742.00
					FAL22035	35	SCG71V02	1472.00	SCW71V02	2840.00	SCW74V02	3267.00	SCA74V02	SCA71V02	1814.00
					FAL22080	80	SDG71V02	2255.00	SDW71V02	4364.00	SDW74V02	4805.00	SDA74V02	SDA71V02	2739.00
2 3 7.5	240	0 1 2	2	FAL22025	25	SBG71V03	1400.00	SBW71V03	2768.00	SBW74V03	3182.00	SBA74V03	SBA71V03	1742.00	
				FAL22035	35	SCG71V03	1472.00	SCW71V03	2840.00	SCW74V03	3267.00	SCA74V03	SCA71V03	1814.00	
				FAL22080	80	SDG71V03	2255.00	SDW71V03	4364.00	SDW74V03	4805.00	SDA74V03	SDA71V03	2739.00	

- ▲ NEMA Size 6 and 7 starters are NEMA 4 painted sheet steel enclosures.
  - NEMA 7 and 9 bolted are not UL Listed.
  - ◆ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
  - ★ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes listed on page 16-37.
  - ▼ Single phase units require one thermal unit and are not available with Form Hxx—Solid State Overload Relays.
  - ▲ Not included in Laser™ Delivery program.
- Note: Some control transformers may require the use of oversized enclosures. Refer to control transformer selection table on page 16-40.

For How to Order Information, see page 16-12.



Refer to page 16-30 for details.

16 NEMA DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS

**Application Data**

**Table 16.100: Class 8539—UL Listed Short Circuit Ratings**

Mag-Gard® Motor Circuit Protector Type			
NEMA Size	Voltage	Enclosure	Available Amperes RMS Symmetrical
0 & 1, 2 Size 3 Type SE●41 & SE●51 Only (GJL)	0-480	Standard▲ and Oversize	100,000
0 & 1 (FAL)	0-480	Standard▲ and Oversize	22,000
0 & 1 (FAL)	481-600	Standard▲ and Oversize	10,000
3 (FAL)	0-480	Standard▲ and Oversize	5,000
4 (KAL)	0-480	Standard▲ and Oversize	10,000
0 & 1, 2 Size 3 Type SE●41 & SE●51 Only (GJL)	481-600	Standard▲ and Oversize	10,000
0-3	600	NEMA 7 & 9	5,000
2	600	Oversize	22,000
2-6	600	Standard▲	22,000
4 & 5	600	NEMA 7 & 9	10,000
7	0-480	Standard▲	30,000
7	481-600	Standard▲	22,000

▲ Standard enclosure includes non-oversize NEMAs 1, 4 & 4X Stainless, and 12.

**Table 16.101: Table 1: Mag-Gard Trip Range**

Suffix Number	Range (A)	Suffix Number	Range (A)	Suffix Number	Range (A)	Suffix Number	Range (A)
M01	9-33	11M	8-28	25M	625-1250	33M	1500-3000
M02	21-77	12M	18-70	26M	750-1500	35M	1750-3500
M03	45-165	13M	50-180	29M	875-1750	36M	2000-4000
M04	90-330	15M	100-350	30M	1000-2000	40M	2500-5000
M05	150-550	16M	150-580	31M	1125-2250	42M	3000-6000
M06	225-825	18M	300-1100	32M	1250-2500	44M	3500-7000

Note: The Mag-Gard adjustable trip range is determined by the suffix of the circuit breaker catalog number. Table 16.101 indicates the trip range which corresponds to a given suffix number. The Mag-Gard Motor Circuit Protector should be adjusted to a level just above Locked-Rotor Current of the motor. This setting will provide optimum overcurrent protection for the motor. For more information on Mag-Gard instantaneous trip circuit breakers, refer to the Mag-Gard circuit breaker section of this Catalog.

**Table 16.105: Terminals**

NEMA Size	Type	Line Terminals on Disconnect				Power Terminals On Magnetic Starter			Control Terminals On Magnetic Starter		
		Type of Lug	Wire Range		Type of Lug	Wire Range	Wires Per Terminal	Type of Lug	Wire Range	Wires Per Terminal	
			Switch	Circuit Breaker							
0 & 1	SB & SC	Box Lug	#14-1/0 Cu/Al	#14-#4 Cu▲ #12-#4 Al or #14-#1/0 Cu #12-#1/0 Al #14-#1 Cu/#8-#1/0 Al (GJL Breaker)	Pressure Wire	#14-#8 Cu	1 or 2	Pressure Wire	#16-#12 Cu	2	
2	SD	Box Lug	#14-1/0 Cu/Al	#14-#1/0 Cu or #12-#1/0 Al #14-#1 Cu/#8-#1/0 Al (GJL Breaker)	Box Lug	#14-#4 Cu	1	Pressure Wire	#16-#12 Cu	2	
3	SE	Box Lug	#14-1/0 Cu/Al	#14-#2 Cu #10-#2 Al (FA Breaker) #4-300 MCM Cu/Al (KA Brkr) #14-#1 Cu/#8-#1/0 Al (GJL Breaker)	Box Lug	#14-#0 Cu	1	Pressure Wire	#16-#12 Cu	2	
4	SF	Box Lug	#6-300 MCM Cu/Al	#14-#1/0 Cu #12-#1/0 Al (FA Breaker) #4-300 MCM Cu/Al (KA Brkr)	Box Lug	#8-250 MCM Cu	1	Pressure Wire	#16-#12 Cu	2	
5	SG	Box Lug	One #4-500 MCM Cu	#4-300 MCM Cu/AL (KA Breaker) (1)#1-600 MCM or (2)#1-250 MCM Cu/Al (LA Brkr)	Box Lug	#4-500 MCM Cu	1	Pressure Wire	#16-#12 Cu	2	
6	SH	Box Lug	—	(1)#1-600 MCM or (2)#1-250 MCM Cu/Al (LA Breaker) (3)#3/0-500 MCM Cu/Al (MA Brkr)	Parallel Groove	250-500 MCM Cu★	1 or 2	Pressure Wire	#16-#12 Cu▼	2	
7	SJ	Box Lug	—	(3)#3/0-500 MCM Cu/Al	Parallel Groove	250-500 MCM Cu	1-4	Pressure Wire	#16-#12 Cu	2	

★ Order Class 9999 Type SCU6 parts kit to convert power terminals to accept sizes 2/0-300 MCM wire.

▼ Terminal block range limited to #16-#14.  
▲ Use on FAL circuit breakers rated 25 A or less.

**Table 16.102: Class 8539—UL Listed Short Circuit Ratings**

Thermal Magnetic Circuit Breaker Type			
NEMA Size	Voltage	Enclosure	Available Amperes RMS Symmetrical
0-3	600	Standard■	5,000
4 & 5	600	Standard■	10,000
6	600	Standard■	18,000
7	0-480	Standard■	30,000
7	481-600	Standard■	22,000

■ Standard enclosure includes non-oversize NEMAs 1, 4 & 4X Stainless, and 12.

**Table 16.103: Class 8538—UL Listed Short Circuit Ratings**

NEMA Size	NEMA Fuse Class	Enclosure	Available Amperes RMS Symmetrical
0-3	Class H or K	Standard♦	5,000
0-3	Class R/J	Standard♦	100,000
0-2	Class H or K	Oversize	5,000
0-2	Class R/J	Standard	100,000
4-5	Class H or K	Standard♦	10,000
4-5	Class R/J	Standard♦	100,000
6	Class H or K	Standard♦	18,000
6	Class R/J	Standard♦	100,000

♦ Standard enclosure includes non-oversize NEMAs 1, 4 & 4X Stainless, and 12.

**Table 16.104: Table 2: Motor Code Letter Table**

Horsepower	Motor Code Letters
1/2 or less	A-L
3/4-1-1/2	A-K
2-3	A-J
5-25	A-H
30-125	A-G
150 or more	A-F

Note: The combination starter selection tables on pages 16-35-16-36 are suitable for motors with Locked-Rotor Current letters per NEC Table 430-7(b) as listed in Table 16.104. For other motors a special thermal magnetic circuit breaker with adjustable magnetic trip settings for the specific motor is required. When ordering for these special applications, specify the motor horsepower, voltage, frequency, full load current and code letter (or locked rotor current) to assure proper protection.

Accessories

Interlocks and Control Transformers

A one or two pole electrical interlock can be added to the disconnect switch or circuit breaker. Thus, if a separate control circuit is used, the magnetic starter can be de-energized when the disconnect is switched to the OFF position. See Table 16.106 for proper interlock

selection. For electrical ratings of disconnect and circuit breaker interlocks, see Table 16.107 below.

An electrical interlock may also be factory installed in either a disconnect switch or circuit breaker combination starter. Specify **Form Y74** for single pole, or **Form Y75** for two pole interlocks. For pricing see factory modifications (Forms).



Table 16.106: Disconnect Switch and Breaker Interlocks

Class	Type	SPDT (Y74)		DPDT (Y75)	
		Class 9999 Type	\$ Price	Class 9999 Type	\$ Price
8538	SB■, SC■, SD■ (Series B)	R6	116.00	R7	221.00
	SD (Series C)	R43	116.00	R44	221.00
8538 & 8738	SB, SC (Series C)	R45	107.00	R46	207.00
	SE, SF (Series A)	R8	131.00	R9	243.00
	SE (Series B & C)	R41	131.00	R42	243.00
	SF (Series B & C)	R39	135.00	R40	243.00
	SG	R35	435.00	R36	521.00
8539, 8739	SB, SC, SD, SE, SF, SG▲	R26	131.00	R27	243.00
8538	SBA, SCA, SBG, SCG (Series D)	TC11	120.00	TC21	239.00
8538	SBAS8, SCAS8, SBGS8, SCGS8 (Series D)	TC10	120.00	TC20	239.00
8738	SBAS8, SCAS8, SBGS8, SCGS8 (Series E)	TC10	120.00	TC20	239.00
8738	SBA, SCA, SBG, SCG (Series E)	TC11	120.00	TC21	239.00
8538	SDA, SDA■, SDG, SDG■ (Series D)	TC10	120.00	TC20	239.00
8738	SDA, SDG (Series E)	TC10	120.00	TC20	239.00
8538, 8738	SEA, SEG (Series D)	TC10	120.00	TC20	239.00

- ▲ No interlocks available for the GJL circuit breaker. The internally mounted auxiliary switch (catalog number AAC) must be used.
- Class 8538 type numbers ending in suffix "S8".

Table 16.107: Disconnect Switch and Breaker Interlock Electrical Ratings

Class 9999 Type R6, 8, 26, 35, 39, 41, 43, 45, TC10, & TC11					Class 9999 Type R7, 9, 27, 36, 40, 42, 44, 46 & TC 20, 21				
AC—50 or 60 Hz					AC—50 or 60 Hz				
Volts	Maximum Current			Volts	Maximum Current				Continuous Carrying Current Amps
	Make	Break	Continuous Carrying Current Amps		Make		Break		
	Amps	Amps			Amps	VA	Amps	VA	
120	40	15	15	120	30	3450	3	345	10
240	20	10	15	240	15	3450	1.5	345	10
480	10	8	15	480	7.5	3450	.75	345	10
600	8	6	15	600	6	3450	.6	345	10

These 100 VA kits are designed specifically to allow for field modification of NEMA Size 0, 1 and 2 combination starters that require a control power transformer. The kit includes a 9070TF100 fused transformer on a special mounting plate for ease of placement and installation on the combo starter back pan. A wire harness (with wiring diagrams) is included to complete the kit.

Table 16.108: Control Transformer Field Modification Kits

Catalog Number	Primary Voltage	Secondary Voltage	\$ Price
9999CPT1D1	240 x 480	120	447.00
9999CPT1D3	208	120	447.00

Table 16.109: Control Transformer Selection

NEMA Size	Starter Type	Standard Capacity (Form F4T)	50 VA Additional Capacity (Form F4T10)	100 VA Additional Capacity (Form F4T11)	200 VA Additional Capacity (Form F4T12)
		Class 9070 Type	Class 9070 Type	Class 9070 Type	Class 9070 Type
0 & 1	SB & SC	T100	T150	T200	T300♦
2	SD	T100	T150	T300★	T300★
3	SE	T150	T150	T300	T500
4	SF	T300	T300	T500	T500
5	SG	T50 and 8501XO20	T100 and 8501XO20	T150 and 8501XO20	T300 and 8501XO20
6	SH	EO3S2 is standard	EO3S2 and T50	EO3S2 and T100	EO3S2 and T200
7	SJ	EO19S2 is standard	EO19S2 and T50	EO19S2 and T100	EO3S2 and T200

- ♦ Requires oversized enclosure. (Size 2 reversing enclosure.)
- ★ Available in standard enclosure with Mag-Gard® circuit breaker and non-fusible disconnect switch. Requires oversized enclosure with thermal-magnetic circuit breakers and fusible disconnect switches. (Size 2 reversing enclosure.)
- ▼ Complete the contactor or starter Class and Type with Voltage Code, see page 16-110.

**Internal Auxiliary Switch**—Circuit breakers can be supplied with a factory installed auxiliary switch for remote indication of an open and/or tripped or a closed breaker. One (specify **Form Y741**) or two (specify **Form Y751**) auxiliary switches can be supplied. The switches are supplied with normally open and normally closed circuits with a common connection. Contacts must be used on the same polarity and are rated 15 Amps at 240 Vac. The auxiliary switches are located internally and are furnished with 19-20 inch long leads.

**Alarm Switch**—The alarm switch only operates when the breaker is tripped. It is used to actuate bell alarms and warning lights. The alarm switch is factory installed only (specify **Form Y742**) and consists of a single pole single throw switch which is normally open except when the breaker is tripped. The contacts are rated 4 Amps at 240 Vac. This switch is located in the breaker and is supplied with 19-20 inch long leads.

**Transformer Selection**—Space and drilling are provided in all disconnect switch and circuit breaker combination starters in NEMA 1, 4 & 4X stainless and polyester, 12 and 7 & 9 bolted enclosures for the field addition (or factory installation) of a Class 9070 control circuit transformer and Class 9999 Type SFR4 fuse holder. This kit can be either panel mounted or side mounted on the Type S starter. For standard control transformer selection in combination starters, see Table 16.109. Consult field office for transformer additions to NEMA 7 & 9 SPIN TOP® enclosures. For secondary fuse holder order 9080PF1.

**Fuse Block Mounting Brackets**—The standard capacity transformer, Class 9070 Type T100, for the Size 0 and 1 starters mounts to the right of the magnetic starter.

**Standards**—Most combination starters and forms are UL Listed in file E152395, Category NKJH, and CSA File CR 584.



**Approximate Dimensions**

**Table 16.110: NEMA 1 Enclosure—Figure 1**

NEMA Size	Class	Type	Dimensions in Inches ▲																Top & Bottom		Sides	Wt. (lbs.)
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	W	X	Y	
0-1	8538 & 8539	SBG SCG	9-1/2	22-1/2	8-11/32	6-3/8	20-1/2	14-21/32	1-13/16	1-11/16	3	2-5/16	1-1/16	3-1/4	2-3/16	1-1/4	7/8	—	1/2-3/4	1/2-3/4	1/2	38
2	8538 & 8539	SDG	10-1/2	26	9-19/32	7-3/8	24	16-29/32	2-1/8	2	4	2-5/16	1-1/16	3-1/4	2-3/16	1-1/4	7/8	—	1-1-1/4	1/2-3/4	1/2	54

**Table 16.111: NEMA 1 Enclosure—Figure 2**

NEMA Size	Class	Type	Dimensions in Inches ▲																Top & Bottom		Sides	Wt. (lbs.)
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	W	X	Y	
3 ■	8538 & 8539	SEG	15-1/4	42	10-19/32	9-1/4	3	22-23/32	41	1/2	—	2-53/64	3-17/32	5	2-11/16	5-3/8	1-9/32	29/32	1-1-1/4 2-2-1/2	1/2-3/4	1/2	102
4	8538	SFG	16	52-1/2	10-17/32	10	3	23-21/32	51-1/2	1/2	—	2-53/64	3-17/32	5	2-11/16	5-3/8	1-9/32	29/32	2-1/2	1/2-3/4	1/2	163
	8539	SFG	16	52-1/2	10-17/32	10	3	23-21/32	51-1/2	1/2	—	2-53/64	3-17/32	5	2-11/16	5-3/8	1-9/32	29/32	2-1/2	1/2-3/4	1/2	163
5	8538	SGG	20	78	15-1/2	12	4	29-13/32	77	1/2	—	3-33/64	4-39/64	9-1/4	3-3/16	—	—	—	1/2-3/4 ♦	3	—	450
	8539	SGG	20	66	13-23/32	12	4	29-13/32	65	1/2	—	3-33/64	4-39/64	5	3-3/16	—	—	—	1/2-3/4	3	—	420
6 ▼	8538 & 8539	SHG	36	90	21-1/32	—	—	41-3/8	—	—	—	—	—	5	—	—	—	—	—	—	—	—

**Table 16.112: NEMA 12/3R Enclosure—Figure 3**

NEMA Size	Class	Type	Dimensions in Inches ★										Wt. (lbs.)
			A	B	C	D	E	F	G	H	I	J	
0-1	8538 & 8539	SBA SCA	9-1/2	8-11/32	24	3-1/4	2-1/2	4-1/2	23-1/2	19/32	4-7/16	14-5/16	40
2	8538 & 8539	SDA	10-1/2	9-19/32	27-3/4	3-1/4	2-1/2	5-1/2	27	3/8	4-1/8	16-9/16	55
3 ■	8538 & 8539	SEA	15-1/4	10-19/32	42	5	3	9-1/4	41	1/2	5-1/16	22-5/16	111
4	8538	SFA	16	10-17/32	52-1/2	5	3	10	51-1/2	1/2	4-3/16	22-31/32	170
	8539	SFA	16	10-17/32	52-1/2	5	3	10	51-1/2	1/2	5-3/16	22-31/32	170
5	8538	SGA	20	13-23/32	78	9-1/4	4	12	77	1/2	7-25/32	29-13/32	—
	8539	SGA	20	13-23/32	66	5	4	12	65	1/2	7-25/32	27-13/32	440
6 ▼	8538 & 8539	SHA	36	17	90	5	—	—	—	—	—	47-3/8	—

**Table 16.113: NEMA 4 and 4X Stainless Steel Enclosures—Figure 4**

NEMA Size	Class	Type	Dimensions in Inches ▲												Bottom	Top & Bot.	Wt. (lbs.)
			A	B	C	D	E	F	G	H	I	J	K	L	W	X	
0-1	8538 & 8539	SBW SCW	9-1/2	8-11/32	24-1/16	3-1/4	2-1/2	4-1/2	23-1/2	19/32	3-1/32	1-5/16	2-5/16	14-9/32	3/4 Hub	1 Hub	40
2	8538 & 8539	SDW	10-1/2	9-19/32	27-3/4	3-1/4	2-1/2	5-1/2	27	19/32	3	2	2-5/8	16-17/32	3/4 Hub	1-1/2 Hub	55
3 ■	8538 & 8539	SEW	15-1/4	10-19/32	42	5	3-3/16	10-1/4	40-1/2	19/32	3	2-9/16	3-3/16	22-3/16	3/4 Hub	2-1/2 Hub	111
4	8538	SFW	16	10-17/32	52-1/2	5	3-9/16	11	51	19/32	3	2-9/16	3-3/16	22-15/32	3/4 Hub	2-1/2 Hub	158
	8539	SFW	16	10-17/32	52-1/2	3-1/4	2-1/2	11	51	19/32	3	2-9/16	3-3/16	22-15/32	3/4 Hub	2-1/2 Hub	120
5	8538	SGW	20	13-23/32	78	9-1/4	4	12	77	9/16	4-1/2	3	3-1/2	29-13/32	3/4 Hub	3-1/2 Hub	—
	8539	SGW	20	13-23/32	66	5	4	12	65	9/16	4-1/2	3	3-1/2	29-13/32	3/4 Hub	3-1/2 Hub	440
6 ▼	8538 & 8539	SHW	36	17	90	—	—	—	—	—	—	—	—	47-7/8	—	—	—

- ▲ Dimensions also for Form F4T (standard control transformer). Form F4T11 (100 VA extra capacity) and Form F4T12 (200 VA extra capacity) could require the use of an oversized enclosure. Refer to control transformer selection table on page 16-40.
  - Class 8538 Size 3 devices with 200 A fuse clips use dimensions for Class 8538 Size 4.
  - ♦ Left side only.
  - ★ Dimensions include space for control circuit transformers.
  - ▼ Size 6 enclosures are floor mounting.
- Note: Illustrations may not represent the actual enclosure; they are intended for dimensional information only.
- △ (4) .31 in (8 mm) dia. mtg. holes for sizes 0, 1, and 2, (4) .44 in (11 mm) dia. mtg. holes for sizes 3 and 4, (4) .56 in (14 mm) dia. mtg. holes located on external flanges for size 8.

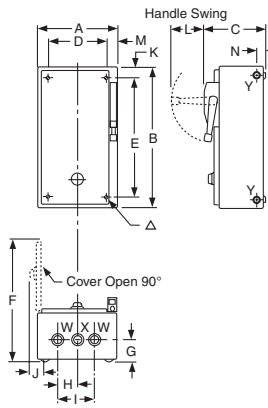


Figure 1  
NEMA 1 Enclosure

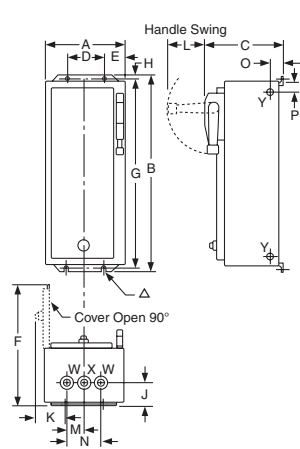


Figure 2  
NEMA 1 Enclosure

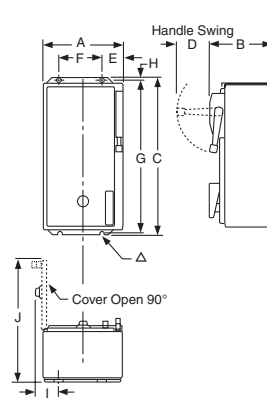


Figure 3  
NEMA 12 Enclosure

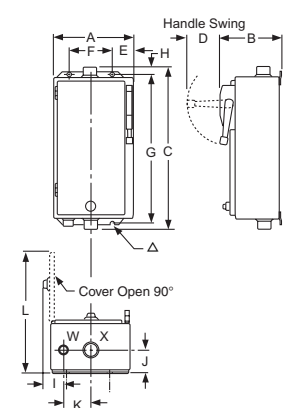
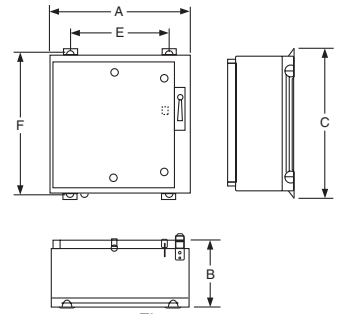


Figure 4  
NEMAs 4 and 4X  
Stainless Steel Enclosure

**Table 16.114: NEMA 4X Polyester Enclosure—Figure 1**

NEMA Size	Class	Type	Dimensions in Inches ▲				
			A	B	C	E	F
0, 1	8538	SBW	13.72	11.4	26.94	6.25	25.75
0, 1	8539	SCW					
0, 1, & 2	8738, 8739	SDW					
2	8538, 8539	SBW	25.25	11.4	27.00	17.88	25.75
2	8538, 8539	SCW					
3-4	8538, 8738 8539, 8739	SEW SFW ■	26.31	11.4	33.50	18.50	32.25

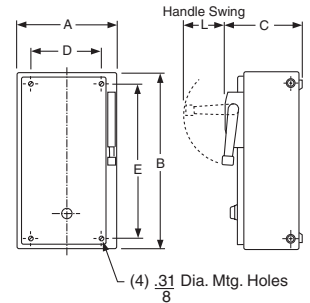
▲ Dimensions also for Form F4T (standard control transformer) and Form F4T10 (50 VA additional capacity). Other control transformers may require the use of oversized enclosures. refer to the control transformer selection table on page 16-40.  
■ 8539 Size 4 only.



**Figure 1**  
NEMA 4X Polyester Enclosure

**Table 16.115: NEMA 1, 4, 4X Stainless, 12/3R Oversize Enclosure—Figure 2**

NEMA Size	NEMA Type Encl.	Dimensions in Inches						Mounting	
		Wide A	High B	Deep C	Handle L	D	E		
0-2	1	15	2-3/4	9-19/32	3-1/4	11-5/8	26-1/4		
	4	15	30-1/32	9-19/32	3-1/4	10	29-3/4		
	12	15	31	10-31/32	3-1/4	9	30-1/4		

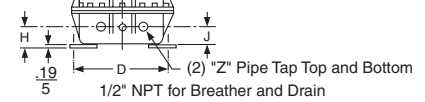
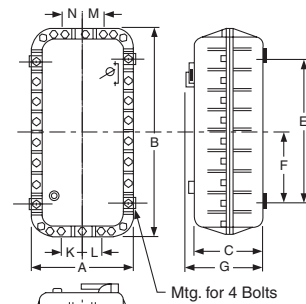


**Figure 2**  
Class 8538 and 8539  
in Oversize Enclosures —  
NEMA 1, 4 & 4X Stainless and 12

**Table 16.116: Class 8539—NEMA 7 & 9 Bolted Enclosure—Figure 3**

NEMA Size	Type	Dimensions in Inches											Wt. (lbs.)
		A	B	C	D	E	F	G	H, J	K, L, M, N	P	Z	
0-2	SBT SCT SDT	14-1/4	27-5/8	9-1/2	1-1/4	19-1/4	9-5/8	11	2-3/8	3-1/8	1-1/2	1-1/2	115
3-4	SET SFT	18-1/8	31-5/8	10	16-1/4	19-1/4	9-5/8	12-5/8	2-3/8	3-3/4	2-1/2	2-1/2	180
5	SGT	24-1/2	45-5/8	13-3/4	22-1/2	27-1/2	13-3/4	15-3/8	3-7/16	4	4	4	500

Note: Bolted enclosure comes equipped with 3 closing plates in the door.



**Figure 3**  
Class 8539  
NEMA 7 and 9 Bolted Enclosure

**Table 16.117: Class 8539—NEMA 7 & 9 SPIN TOP® Enclosure—Figure 4**

NEMA Size	Type	Conduit Sizes LOC. A, B, C and D	Dimensions in Inches														Wt. (lbs.)
			E	F	G	H	J	K	L	M	N	P	Q	R	S	T	
0-1	SBR SCR	1-1/4	10-5/8	26	15-1/4	8	4-3/4	5-3/8	1-1/2	1-1/16	7-1/2	11	7-5/16	2-1/16	—	—	70
2	SDR	1-1/2	13-7/8	30-1/2	19-1/4	8	4-3/4	5-1/4	1-1/2	1-1/16	7	18	9-3/8	2-3/4	—	—	115
3-4	SER SFR	2-1/2	13-3/8	39-1/2	20-1/4	8	4-3/4	7-1/2	2-1/2	—	10-1/2	23	8-5/8	3	—	—	140
5	SGR	4	19	53-1/2	27-3/4	—	—	11-1/4	4	1/8	16	20-5/8	11-3/8	4-5/16	12	6-1/2	290

**Information on Hubs**

Hubs are supplied with each NEMA Type 4X combination starter as shown in the table below. Note that hubs are only installed in stainless steel enclosures; they are not installed in polyester enclosures.

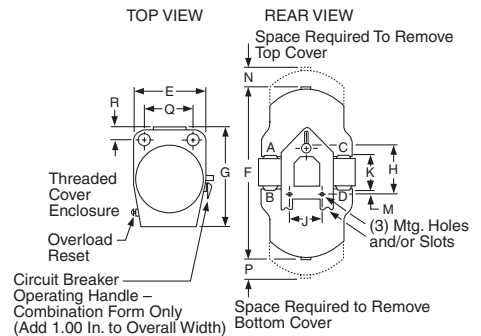
**Table 16.118: Hub Sizes**

NEMA Size	Quantity	Hub Size
0 & 1	1	0.75"
	2	1.00"
2	1	0.75"
	2	1.50"
3 & 4	1	0.75"
	2	2.50"

Note: Illustrations may not represent the actual enclosure; they are intended for dimensional information only.

**Table 16.119: Conduit Sizes LOC A, B, C and D**

NEMA Size	Std.
0-1	1-1/4
2	1-1/2
3-4	2-1/2
5	4



**Figure 4**  
Class 8539  
NEMA 7 and 9 SPIN TOP Enclosure



NEMA 00, 0, 1  
Reversing Contactor

Class 8702 Type S reversing magnetic contactors are used for starting, stopping, and reversing AC motors where overload protection is separately provided. Class 8702 reversing contactors consist of two Class 8502 contactors mechanically and electrically interlocked. Open type devices, Sizes 0–5, are available in either horizontal or vertical arrangements. Sizes 00, 6, and 7 are available as horizontal only. Enclosed devices, Size 00–7, use horizontally arranged components. Type S reversing contactors are designed for operation at 600 Vac, 50–60 Hz.

**Table 16.120:**

NEMA Size	Continuous Current Ratings	Motor Voltage	Max. Hp	Open Type			NEMA Type 1 General Purpose Enclosure		NEMA Type 4 & 4X Watertight, Dusttight Brushed Stainless Steel Enclosure (Sizes 0–5)▲		NEMA 7 & 9 ♦ Hazardous Locations, Div. 1 & 2 Class I, Groups C & D Class II, Groups E, F & G			NEMA 12/3R* Dusttight & Driptight Industrial Use Enclosure		
				Vertical Type	Horizontal Type	\$ Price	Type	\$ Price	Type	\$ Price	Bolted Type Aluminum	\$ Price	SPIN TOP® Type	\$ Price	Type	\$ Price
00	9	200 230 460 575	1-1/2 1-1/2 2 2	— — SAO4■	855.00	SAG4■	917.00	Use Size 0		Use Size 0		Use Size 0		Use Size 0		
0	18	200 230 460 575	3 3 5 5	SBO12■	SBO4■	1026.00	SBG4■	1088.00	SBW14■	1742.00	SBT49■	3716.00	SBR9■	4649.00	SBA4■	1344.00
1	27	200 230 460 575	7-1/2 7-1/2 10 10	SCO7■	SCO8■	1169.00	SCG8■	1259.00	SCW14■	2241.00	SCT49■	3900.00	SCR9■	4877.00	SCA4■	1515.00
2	45	200 230 460 575	10 15 25 25	SDO1■	SDO2■	2222.00	SDG2■	2456.00	SDW11■	3936.00	SDT43■	6507.00	SDR3■	8139.00	SDA1■	2883.00
3	90	200 230 460 575	25 30 50 50	SEO1■	SEO2■	3689.00	SEG2■	4094.00	SEW11■	6287.00	SET43■	10439.00	SER3■	13050.00	SEA1■	5034.00
4	135	200 230 460 575	40 50 100 100	SFO1■	SFO3■	9201.00	SFG3■	9945.00	SFW11■	13820.00	—	—	—	—	SFA1■	11399.00
5	270	200 230 460 575	75 100 200 200	SGO1■	SGO3■	16592.00	SGG3■	20885.00	SGW11■	24017.00	—	—	—	—	SGA1■	24017.00
6	540	200 230 460 575	150 200 400 400	—	SHO1■	41489.00	SHG1■	48614.00	SHW1■	55736.00	—	—	—	—	SHA1■	52461.00
7	810	200 230 460 575	— 300 600 600	—	SJO1■	59372.00	SJG1■	66816.00	SJW1■	73619.00	—	—	—	—	SJA1■	70343.00

- ▲ NEMA 4 and 4X stainless steel enclosures (sizes 0–5) have a brushed finish. Sizes 6 and 7 are painted sheet steel and are rated NEMA 4 only.
- Coil voltage code must be specified to order this product. Refer to standard coil voltage codes listed in selection table below.
- ♦ NEMA 7 and 9 bolted are not UL listed.
- \* NEMA 12 enclosure may be field modified for outdoor non-corrosive and non-service-entrance-rated application; see page 16-104 for more information.

**Table 16.121: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24▼△	—	V01	No Charge
120△	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

- ▼ 24 V coils are not available on Sizes 4-7. On Sizes 00-3, where 24 V coils are available, **Form S** (separate control) must be specified (i.e., order as 8702SAO4V01S).
  - △ These voltage codes must include **Form S** (supplied at no charge) (i.e., order as 8702SAO4V02S)
- Note: For voltage codes used with control transformers, see page 16-110.  
Form S (separate control) is used when a separate source of power is available for the control (coil) voltage.  
Form S is supplied at no charge.

Dimensions .....page 16-47  
Factory Modifications (Forms) .....page 16-109  
Separate Enclosures (Class 9991) .....page 16-102  
Replacement Parts (Class 9998) .....page 16-114  
Type S Accessories (Class 9999) .....page 16-117

For How to Order Information, see page 16-12.

**Table 16.122: 600 Vac Maximum—50–60 Hz**

NEMA Size	Continuous Current Ratings	Motor Voltage	Max. Hp	Type of Motor	Open Type			NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight, Dusttight Brushed Stainless Steel Enclosure		NEMA 7 & 9 ■ Hazardous Locations, Div. 1 & 2 Class I, Groups C & D Class II, Groups E, F & G				NEMA 12/3R ◆ Dusttight & Driptight Industrial Use Enclosure				
					Vertical Type	Horizontal Type	\$ Price	Type	\$ Price	Type	\$ Price	Bolted Type	\$ Price	SPIN TOP® Type	\$ Price	Type	\$ Price			
<b>2-Pole Single Phase</b>																				
00	9	115 230	1/3 1	Single Phase 3-Wire	—	SAO1▲	827.	SAG1▲	887.	Use Size 0		Use Size 0		Use Size 0		Use Size 0				
0	18	115 230	1 2		SBO9▲	SBO1▲	998.	SBG1▲	1061.	SBW11▲	1715.	SBT46▲	3686.	SBR6▲	4613.	SBA1▲	1314.			
1	27	115 230	2 3		SCO1▲	SCO2▲	1139.	SCG2▲	1229.	SCW11▲	2142.	SCT46▲	3873.	SCR6▲	4841.	SCA1▲	1485.			
<b>3-Pole Single Phase</b>																				
00	9	115 230	1/3 1	4-Wire Rep.-Ind.	—	SAO2▲	855.	SAG2▲	917.	Use Size 0		Use Size 0		Use Size 0		Use Size 0				
		115 230	1/3 1	4-Wire Split Ph.	—	SAO3▲	855.	SAG3▲	917.	Use Size 0		Use Size 0		Use Size 0		Use Size 0				
0	18	115 230	1 2	4-Wire Rep.-Ind.	SBO10▲	SBO2▲	1026.	SBG2▲	1088.	SBW12▲	1742.	SBT47▲	3716.	SBR7▲	4649.	SBA2▲	1344.			
		115 230	1 2	4-Wire Split Ph.	SBO11▲	SBO3▲	1026.	SBG3▲	1088.	SBW13▲	1742.	SBT48▲	3716.	SBR8▲	4649.	SBA3▲	1344.			
1	27	115 230	2 3	4-Wire Rep.Ind.	SCO3▲	SCO4▲	1169.	SCG4▲	1259.	SCW12▲	2169.	SCT47▲	3900.	SCR7▲	3227.	SCA2▲	1515.			
		115 230	2 3	4-Wire Split Ph.	SCO5▲	SCO6▲	1169.	SCG6▲	1259.	SCW13▲	2169.	SCT48▲	3900.	SCR8▲	3227.	SCA3▲	1515.			
<b>4-Pole Polyphase</b>																				
0	18	200 230 460 575	3 3 5 5	2 Phase 4-Wire	SBO13▲	SBO5▲	1310.	SBG5▲	1368.	SBW15▲	2028.	Consult Square D/ Schneider Electric CIC at 1-888-SquareD (1-888-778-2733)	SBR10▲	5040.	SBA5▲	1629.				
		1	27		200 230 460 575	7-1/2 7-1/2 10 10	SCO9▲	SCO10▲	1497.	SCG10▲	1557.		SCW15▲	2469.	SCR10▲	5297.	SCA5▲	1814.		
2	45	200 230 460 575	10 15 25 25		—	SDO4▲	2820.	SDG4▲	3054.	SDW12▲	4620.		—	—	—	—	—	—		
		3	90		200 230 460 575	25 30 50 50	—	SEO4▲	4671.	SEG4▲	5103.		SEW12▲	7238.	—	—	—	—	SEA2▲	6017.
4	135	200 230 460 575	40 50 100 100		—	SFO4▲	11879.	SFG4▲	12653.	SFW12▲	16556.		—	—	—	—	—	—	SFA2▲	14129.

- ▲ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes listed in selection table on page 16-43.
- NEMA 7 and 9 bolted are not UL listed.
- ◆ NEMA 12 enclosure may be field modified for outdoor non-corrosive and non-service-entrance-rated application; see page 16-104 for more information.

**Table 16.123: Auxiliary Units—Class 8702, 8736 and 8810**

The table below shows the maximum number of auxiliary units (in addition to the holding circuit and interlocking contacts) that can be added to either the forward or reverse contactor or starter.

NEMA Size (Type)	No. of Poles of Basic Contactor	Maximum number of auxiliary units on each contactor, forward or reverse. (In addition to internal holding circuit and interlocking contacts.)
00 (SA)	2 or 3	2 single circuit auxiliary contacts (N.O. or N.C.)
0, 1 and 2 (SB, SC and SD)	2 or 3	4 single circuit auxiliary contacts (N.O. or N.C.)★
	4	2 single circuit auxiliary contacts (N.O. or N.C.)
3, 4, 5, 6, and 7 (SE, SF, SG, SH, and SJ)	Any	2 single circuit auxiliary contacts (N.O. or N.C.)

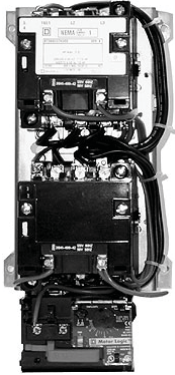
★ When adding 4 external auxiliary contacts to one Size 0 or 1 contactor, remove one of the return springs.

- Dimensions . . . . . page 16-47
- Factory Modifications (Forms) . . . . . page 16-109
- Separate Enclosures (Class 9991) . . . . . page 16-102
- Replacement Parts (Class 9998) . . . . . page 16-114
- Type S Accessories (Class 9999) . . . . . page 16-117

For How to Order Information, see page 16-12.



NEMA Sizes 00, 0, 1  
Reversing Starter  
(Horizontal Type)



NEMA Sizes 00, 0, 1  
Reversing Starter  
(Vertical Type)

Class 8736 Type S reversing magnetic starters are used for full-voltage starting, stopping, and reversing AC squirrel cage motors. Class 8736 starters consist of one Class 8502 contactor and one Class 8536 starter mechanically and electrically interlocked. Open type devices, Sizes 0–5, are available in either horizontal or vertical arrangements. Sizes 00, 6, and 7 are available as horizontal only. Enclosed devices use horizontally arranged components. Type S starters are designed for operation at 600 Vac, 50–60 Hz.

**Overload Relays**

Class 8736 Type S Size 00–6 reversing starters are provided with melting alloy thermal overload relay as standard. Interchangeable thermal units are available in standard trip Sizes 00–6, as are bimetallic overload relays. Ambient compensated and non-compensated versions are supplied with manual or automatic reset, trip current adjustment, and an alarm contact on Sizes 0–2.

Quick trip is available on Sizes 00–4, and slow trip on Sizes 00–3.

Single phase starters use one thermal unit; three phase starters use three thermal units. See page 16-125 for selection information.

**Solid State Overload Relay Protection (MOTOR LOGIC®)**

These ambient insensitive overload relays are available on three phase sizes 00 through 6 and standard on size 7. They provide phase loss, phase unbalance protection. To order, add Form **H10** (for Class 10), **H20** (for Class 20), or **H30** (for selectable trip class protection). For more information about MOTOR LOGIC overload relays, see page 16-91.

Table 16.124:

NEMA Size	Continuous Current Ratings	Motor Voltage	Max. Hp	Open Type			NEMA 1 General Purpose Enclosure		NEMA Type 4 & 4X Watertight, Dusttight Brushed Stainless Steel Enclosure (Sizes 0–5)▲		NEMA 7 & 9 ♦ Hazardous Locations Class I, Groups C & D Class II, Groups E, F & G			NEMA Type 12/3R* Dusttight & Driptight Industrial Use Enclosure	
				Vertical Type	Horizontal Type	\$ Price	Type	\$ Price	Type	\$ Price	Bolted Type	\$ Price	SPIN-TOP® Type	\$ Price	Type
00	9	200 230 460 575	1-1/2 1-1/2 2 2	— — — —	SAO16■	926.	SAG16■	989.	Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0
0	18	200 230 460 575	3 3 5 5	SBO10■	SBO4■	1097.	SBG4■	1160.	SBW14■	1814.	SBT49■	3794.	SBR9■	4742.	SBA4■ 1416.
1	27	200 230 460 575	7-1/2 7-1/2 10 10	SCO7■	SCO8■	1241.	SCG8■	1331.	SCW14■	2241.	SCT49■	3978.	SCR9■	4976.	SCA4■ 1587.
2	45	200 230 460 575	10 15 25 25	SDO1■	SDO2■	2349.	SDG2■	2583.	SDW11■	4064.	SdT43■	6642.	SDR3■	8064.	SDA1■ 3011.
3	90	200 230 460 575	25 30 50 50	SEO1■	SEO2■	3902.	SEG2■	4307.	SEW11■	6501.	SET43■	10673.	SER3■	13343.	SEA1■ 5247.
4	135	200 230 460 575	40 50 100 100	SFO1■	SFO3■	9530.	SFG3■	10274.	SFW11■	14148.	—	—	—	—	SFA1■ 11727.
5	270	200 230 460 575	75 100 200 200	SGO1■	SGO3■	18309.	SGG3■	22602.	SGW11■	25734.	—	—	—	—	SGA1■ 25734.
6	540	200 230 460 575	150 200 400 400	—	SHO1■	43205.	SHG1■	50331.	SHW1■	57452.	—	—	—	—	SHA1■ 54176.
7	810	200 230 460 575	— 300 600 600	—	SJO1■	61250.	SJG1■	68736.	SJW1■	75497.	—	—	—	—	SJA1■ 72221.

▲ NEMA 4 and 4X stainless steel enclosures (sizes 0–5) have a brushed finish. Sizes 6 and 7 are painted sheet steel and are rated NEMA 4 only.  
■ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown on page 16-46.  
♦ NEMA 7 and 9 bolted are not UL listed.  
★ NEMA 12 enclosure may be field modified for outdoor non-corrosive and non-service-entrance-rated application; see page 16-104 for more information.

For How to Order Information, see page 16-12.

**Table 16.125: 600 Vac Maximum—50–60 Hz**

Note that prices shown do not include thermal units. Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

NEMA Size	Continuous Current Ratings	Motor Voltage	Max. Hp	Type of Motor	Open Type			NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight, Dusttight Brushed Stainless Steel Enclosure		NEMA 7 & 9 ■ Hazardous Locations Class I, Groups C & D Class II, Groups E, F & G				NEMA 12/3R ♦ Dusttight & Driptight Industrial Use Enclosure	
					Vertical Type	Horizontal Type	\$ Price	Type	\$ Price	Type	\$ Price	Bolted Type	\$ Price	SPIN TOP® Type	\$ Price	Type	\$ Price
<b>2-Pole Single Phase—1 Thermal Unit Required</b>																	
00	9	115 230	1/3 1	Single Phase 3-Wire	—	SAO13▲	863.	SAG13▲	923.	Use Size 0	Use Size 0	Use Size 0	Use Size 0	Use Size 0	Use Size 0	Use Size 0	
0	18	115 230	1 2		SBO7▲	SBO1▲	1034.	SBG1▲	1094.	SBW11▲	1751.	SBT46▲	3722.	SBR6▲	4656.	SBA1▲	1350.
1	27	115 230	2 3		SCO1▲	SCO2▲	1175.	SCG2▲	1265.	SCW11▲	2177.	SCT46▲	3909.	SCR6▲	4883.	SCA1▲	1521.
<b>3-Pole Single Phase—1 Thermal Unit Required</b>																	
00	9	115 230	1/3 1	4-Wire Rep.-Ind.	—	SAO14▲	891.	SAG14▲	953.	Use Size 0	Use Size 0	Use Size 0	Use Size 0	Use Size 0	Use Size 0	Use Size 0	
		115 230	1/3 1	4-Wire Split Ph.	—	SAO15▲	594.	SAG15▲	635.	Use Size 0	Use Size 0	Use Size 0	Use Size 0	Use Size 0	Use Size 0	Use Size 0	
0	18	115 230	1 2	4-Wire Rep.-Ind.	SBO8▲	SBO2▲	1062.	SBG2▲	1124.	SBW12▲	1778.	SBT47▲	3752.	SBR7▲	4692.	SBA2▲	1380.
		115 230	1 2	4-Wire Split Ph.	SBO9▲	SBO3▲	1062.	SBG3▲	1124.	SBW13▲	1778.	SBT48▲	3752.	SBR8▲	4692.	SBA3▲	1380.
1	27	115 230	2 3	4-Wire Rep.Ind.	SCO3▲	SCO4▲	1205.	SCG4▲	1295.	SCW12▲	2205.	SCT47▲	3942.	SCR7▲	4932.	SCA2▲	1551.
		115 230	2 3	4-Wire Split Ph.	SCO5▲	SCO6▲	1205.	SCG6▲	1295.	SCW13▲	2205.	SCT48▲	3942.	SCR8▲	4932.	SCA3▲	1551.
<b>4-Pole Polyphase—2 Thermal Units Required</b>																	
0	18	200 230 460 575	3 5 5	2 Phase 4-Wire	SBO11▲	SBO5▲	1382.	SBG5▲	1443.	SBW15▲	2100.	Contact your nearest Square D/Schneider Electric sales office.		SBR10▲	5133.	SBA5▲	1670.
1	27	200 230 460 575	7-1/2 7-1/2 10 10		SCO9▲	SCO10▲	1566.	SCG10▲	1629.	SCW15▲	2541.	Contact your nearest Square D/Schneider Electric sales office.		SCR10▲	5396.	SCA5▲	1886.
2	45	200 230 460 575	10 15 25 25		—	SDO4▲	2948.	SDG4▲	3182.	SDW12▲	4748.	Contact your nearest Square D/Schneider Electric sales office.		SDR4▲	9248.	SDA2▲	3609.
3	90	200 230 460 575	25 30 50 50		—	SEO4▲	4886.	SEG4▲	5318.	SEW12▲	7482.	—	—	—	—	SEA2▲	6228.
4	135	200 230 460 575	40 50 100 100		—	SFO4▲	12207.	SFG4▲	12981.	SFW12▲	16883.	—	—	—	—	SFA2▲	14462.

- ▲ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown below.
- NEMA 7 and 9 bolted are not UL listed.
- ♦ NEMA 12 enclosure may be field modified for outdoor non-corrosive and non-service-entrance-rated application; see page 16-104 for more information.

**Table 16.126: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24▼★	—	V01	No Charge
120▼	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

★ 24 V coils are not available on Sizes 4–7. On Sizes 00–3, where 24 V coils are available, **Form S** (separate control) must be specified (i.e., order as 8736SCO1U01S).  
 ▼ These voltage codes must include **Form S** (supplied at no charge) (i.e., order as 8736SBO7V02S).  
 Note: For voltage codes used with control transformers, see page 16-110.  
 Form S (separate control) is used when a separate source of power is available for the control (coil) voltage. Form S is supplied at no charge.

Dimensions . . . . . page 16-47  
 Factory Modifications (Forms) . . . . . page 16-109  
 Separate Enclosures (Class 9991) . . . . . page 16-102  
 Replacement Parts (Class 9998) . . . . . page 16-114  
 Type S Accessories (Class 9999) . . . . . page 16-117

For How to Order Information, see page 16-12.

**Approximate Dimensions**

**Table 16.127: Open Type—2 or 3-Pole Only**

Class	NEMA Size	Type	Mounting	Figure Number	Dimensions—Inches													Weight (lbs.)
					A	B	C	D	E	F	G	H	I	J	K	L	M	
8702	00	SAO	Horizontal	1	7-1/8	5	5-5/16	—	—	3-13/32	15/32	4-11/32	3/16	5-1/2	29/32	—	—	12
	0, 1	SBO, SCO	Horizontal	1	7-1/8	5	5-5/16	—	—	3-13/32	15/32	4-11/32	3/16	5-1/2	29/32	—	—	12
			Vertical	1▲	5-15/32	9-7/32	5-5/16	5-1/2	7/32	—	—	39/64	8	39/64	5-1/2	7/32	—	—
	2	SDO	Horizontal	1	9	6-7/8	6-1/32	—	—	4-1/2	3/8	5-5/8	1/4	6	1-1/2	—	—	16
			Vertical	1▲	6-3/4	11-3/8	6-1/32	6-1/4	1/4	—	1/2	10-3/8	1/2	1/4	1-1/4	—	—	16
	3	SEO	Horizontal	1	12-23/32	7-31/32	7	11-3/4	31/64	—	31/64	7	31/64	11-3/4	31/64	—	—	35
			Vertical	1▲	7-13/64	19	7	6-1/4	31/64	—	1-1/64	17	63/64	6-1/4	31/64	—	—	35
	4	SFO	Horizontal	1	14-1/4	11-11/16	7	13-1/4	1/2	—	1/2	8	1-27/32	13-1/4	1/2	—	—	45
Vertical			1▲	7-31/32	23-29/32	7	7	31/64	—	1-13/16	20-1/4	1-3/16	7	31/64	—	—	45	
5	SGO	Horizontal	1	19-5/16	16-3/16	9-3/8	18	21/32	—	1-1/32	14	1-5/32	18	21/32	—	—	98	
		Vertical	1▲	10-3/4	34-13/32	9-3/8	9-1/2	5/8	—	1-1/4	32	1-5/32	9-1/2	5/8	—	—	98	
6	SHO	Horizontal	1	22-3/8	28-3/64	9-33/64	18	40/64	—	3-53/64	21-3/16	3-1/32	18	49/64	—	—	195	
7	SJO	Horizontal	1	24-1/4	37-1/4	13-13/16	19-3/4	1-33/64	—	—	30	—	—	—	—	—	310	
8736	00	SAO	Horizontal	2	7-1/8	6-29/32	5-5/16	—	—	3-13/32	15/32	4-11/32	6-7/32	4-17/32	5-1/16	21/32	—	13
	0, 1	SBO, SCO	Horizontal	2	7-1/8	6-29/32	5-5/16	—	—	3-13/32	15/32	4-11/32	6-7/32	4-17/32	5-1/16	21/32	—	13
			Vertical	2▲	5-15/32	11-33/64	5-5/16	5-1/32	7/32	—	—	39/64	8	10-45/64	2-33/64	5-1/16	7/32	5-1/32
	2	SDO	Horizontal	2	9	8-1/2	6-1/32	—	—	4-1/2	3/8	5-5/8	7-1/2	5	5-5/32	1-1/2	—	18
			Vertical	2▲	6-3/4	13-31/64	6-1/32	6-1/4	1/4	—	25/32	10-3/8	12-31/32	3-1/8	5-5/32	1/4	6	—
	3	SEO	Horizontal	2	12-23/32	11-23/32	7	11-3/4	31/64	—	31/64	7	11-3/4	6-1/4	31/64	11-3/4	6-1/4	38
			Vertical	2▲	7-5/16	22-1/4	7	6-1/4	31/64	—	1-1/64	20-3/4	10-3/4	6-1/4	31/64	6-1/4	6-1/4	11-3/4
	4	SFO	Horizontal	2	14-1/4	14-19/32	7	13-1/4	1/2	—	1-27/32	12-1/4	12-1/4	13-1/4	6-1/4	1/2	13-1/4	48
Vertical			2▲	7-31/32	26-13/16	7	7	31/64	—	1-27/32	24-1/2	—	4-3/64	6-1/4	31/64	7	48	
5	SGO	Horizontal	2	19-5/16	20-29/32	9-3/8	18	21/32	—	1-9/32	19	19	18	6-5/8	5/8	18	115	
		Vertical	2▲	10-3/4	39-5/32	9-3/8	9-1/2	21/32	—	1-9/32	371/4	37-1/4	9-1/2	6-5/8	5/8	9-1/2	115	
6	SHO	Horizontal	2	22-3/8	28-3/64	9-33/64	18	44/64	—	3-53/64	21-3/16	3-1/32	18	49/64	—	—	200	
7	SJO	Horizontal	1	24-1/4	37-1/4	13-13/16	19-3/4	1-33/64	—	—	30	—	—	—	—	—	315	

▲ Vertical type design differs from that shown on the corresponding NEMA size horizontal type figure, but dimensions listed apply to that figure.

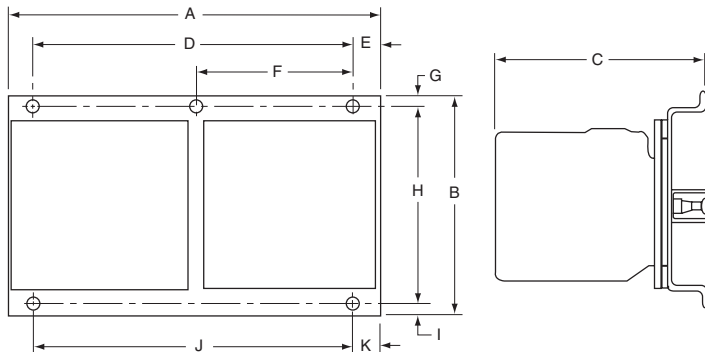


Figure 1 (Class 8702 Open Type)

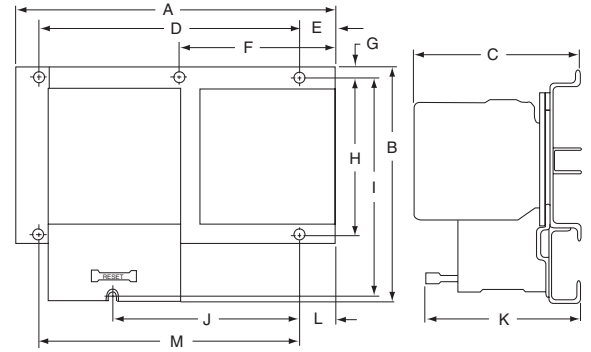


Figure 2 (Class 8736 Open Type)

**Table 16.128: NEMA 1 (Class 8702 and 8736)**

NEMA Size	Dimensions—Inches										Weight (lbs.)		
	A	B	C		D	E	F	G	H	I	8702	8736	
			8702	8736									
00, 0	11-7/8	11-7/8	7-13/32	7-17/32	9-3/4	1-1/16	1-1/16	9-3/4	1-1/16	5/16	16	17	
1	14-7/8	14-1/8	7-9/16	7-21/32	12-3/4	1-1/16	1-1/16	12	1-1/16	5/16	24	25	
3	18-5/32	29-5/32	9-1/4	9-1/4	15-1/2	1-21/64	1-21/64	26-1/2	1-21/64	7/16	95	98	
4	35-7/32	46-7/32	12-13/16	12-15/16	31	2-7/64	2-7/64	42	2-7/64	9/16	298	315	
5	36-7/32	62-7/32	19-15/32		Floor Mounting.							400	405
6	34-1/2	93	23-1/2		Floor Mounting.							—	—
7	Floor Mounting.											—	—

■ Standard enclosure has space for a fused control transformer, Form F4T, on Sizes 0-2, except for Size 0 & 1 4-Pole devices.  
♦ 3-Pole only.

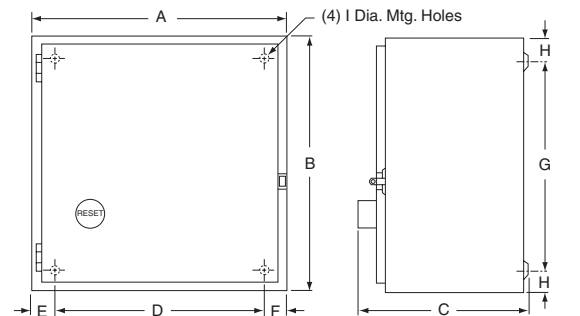


Figure 3—NEMA 1

Approximate Dimensions

Table 16.129: NEMA 4 & 4X—Stainless Steel♦

NEMA Size	Class Number	Dimensions—Inches												Hub Dia.		Weight (lbs.)		
		A	B	C	D	E	F	G	H	I	J	K	L	W Bot. Only	X Top & Bot.	8702	8736	
0▲	8702 & 8736	12-5/8	7-13/16	14-11/16	2-9/16	7-1/2	13-1/2	19/32	3-7/8	18-13/32	1-21/32	2-5/16	5/16	3/4	1	25	26	
1▲	8702 & 8736	14-7/8	8-1/4	15-3/4	2-9/16	9-3/4	15	3/8	3-7/8	20-7/8	1-23/32	2-5/8	5/16	3/4	1-1/2	33	35	
3■	8702	18-5/32	8-3/4	32-7/32	3-5/64	12	30-1/2	7/8	3-11/16	26-23/32	2-9/16	3-3/16	7/16	3/4	2-1/2	96	—	
	8736	18-5/32	9-9/16	32-7/32	3-5/64	12	30-1/2	7/8	4-1/2	26-23/32	2-9/16	3-3/16	7/16	3/4	2-1/2	—	99	
4■	8702	35-7/32	12-1/8	49-7/32	4-7/64	27	48	5/8	4-19/32	45-13/16	2-31/32	3-1/2	9/16	3/4	3-1/2	300	—	
	8736	35-7/32	12-15/16	49-7/32	4-7/64	27	48	5/8	5-13/32	45-13/16	2-31/32	3-1/2	9/16	3/4	3-1/2	—	317	
5	8702 & 8736	36-7/32	19-15/32	70-1/8	Floor Mounting												500	505
6	8702 & 8736	34-1/2	23-1/2	101	Floor Mounting												—	—

▲ Standard enclosure has space for a fused control transformer, Form F4T, on Sizes 0-2, except for Size 0 & 1 4-Pole devices.  
 ■ 3-Pole only.  
 ♦ Size 6 & 7 are sheet steel enclosures and are rated NEMA 4 only.

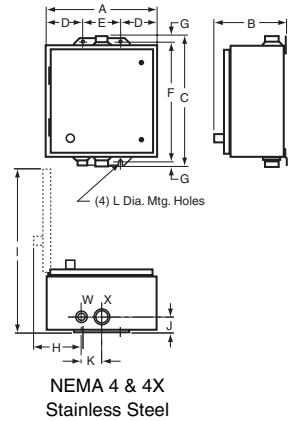


Table 16.130: NEMA 4X—Watertight and Corrosion Resistant Glass Polyester Enclosure

See page 16-25 for drawing of enclosure.

NEMA Size	Class	Type	No. of Poles	Dimensions—Inches				
				A	B	C	E	F
0-2	8702/36	SBW SCW SDW	All	16-7/8	9-25/32	22-3/4	10-1/8	21-1/2
0-2★	8702/36	SBW SCW SDW	All	24-5/8	11-15/16	27	17-7/8	25-3/4
3-4	8702/36	SEW SFW	2,3	26-5/16	11-15/16	33-1/2	18-1/2	32-1/4
3-4★	8702/36	SEW SFW	4	32-1/2	12-1/8	39-5/16	23-7/8	38-1/8

★ With control power transformer (Form F4T).

Table 16.131: NEMA 7 and 9 Bolted Enclosure

See page 16-26 for drawing of enclosure.

NEMA Size	Type	Dimensions—Inches ▼										Wt. (lbs.)
		G	H	J	K	L	N	P	Q, R	S, T, U, V		
0-2	SBT SCT SDT	14-1/4	27-5/8	9-1/2	12-1/4	19-1/4	9-5/8	11-1/2	2-3/8	3-1/8	115	
3-4	SET SFT	24-1/2	45-5/8	13-3/4	22-1/2	27-1/2	13-3/4	15-3/8	3-7/16	4	180	

▼ Dimensions shown for 2 or 3-Pole devices only.

Table 16.132: NEMA 7 & 9 SPIN TOP® Enclosure

See page 16-25 for drawing of enclosure.

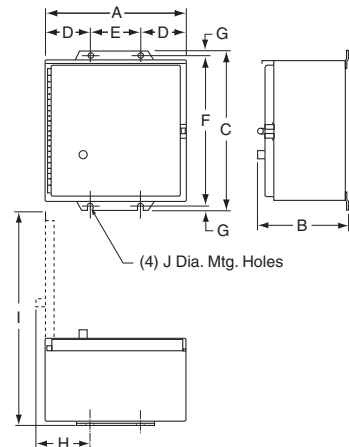
NEMA Size	Type	Dimensions—Inches																		Wt. (lbs.)			
		A	B▲	B□	C▲	C□	D	E▲	E□	F	G▲	G□	H▲	H□	J▲	J□	K	L	M		N	P	R
0-1	SBR SCR	12	41-1/16	46-1/8	68-1/16	79-1/8	16-3/4	7-1/4	12-1/4	7-11/16	26-1/8	26-1/8	3	9	24	24	8-1/2	2-1/16	9-3/8	5-1/4	1-1/2	3/8	70
2	SDR	16-1/8	48-1/2	50-1/2	81-1/2	85	20-1/4	12-1/8	9-1/8	8-5/8	27-3/4	32-3/4	8	4-1/2	25	30	12	2-5/8	11	5-1/2	2-1/2	3/8	100
3	SER	Consult Square D/Schneider Electric CIC at 1-888-SquareD (1-888-778-2733)																					

▲ Without control transformer.  
 □ With control transformer (Form F4T).

Table 16.133: NEMA 12/3R

NEMA Size	Class Number	Dimensions—Inches												Weight (lbs.)				
		A	B	C	D	E	F	G	H	I	J	8702	8736					
0◇	8702 & 8736	11-7/8	7-3/4	13-3/4	2-9/16	6-3/4	12-3/4	1/2	3-21/32	18-1/8	5/16	23	24					
1◇	8702 & 8736	14-7/8	7-7/8	16	2-9/16	9-3/4	15	1/2	3-21/32	21-1/4	5/16	31	32					
3★	8702	18-5/32	9-1/4	31-1/2	3-5/64	12	30-1/2	1/2	3-11/16	26-23/32	7/16	96	—					
	8736	18-5/32	9-9/16	31-1/2	3-5/64	12	30-1/2	1/2	4-1/2	26-23/32	7/16	—	99					
5	8702	35-7/32	13-1/8	49	4-1/8	27	48	1/2	5-5/16	45-7/8	9/16	302	—					
	8736	35-7/32	13-15/16	49	4-1/8	27	48	1/2	6-1/8	45-7/8	9/16	—	319					
6	8702 & 8736	36-7/32	19-15/32	62-7/32	Floor Mounting												490	495
7	8702 & 8736	34-1/2	23-1/2	93	Floor Mounting												—	—

◇ Standard enclosure has space for a fused control transformer, Form F4T, on Sizes 0-2, except for Size 0 & 1 4-Pole devices.  
 ★ 3-Pole only.





# Full Voltage Reversing Vacuum Contactors—NEMA Rated

Class 8702 / Refer to Catalog 8502CT9701



Class 8702 Type W Reversing Vacuum Contactors are used to switch capacitors, transformers and electric motors where overload protection is separately provided. Type W reversing vacuum contactors are designed for operation at 600 Volts, 50/60 Hz.

**Auxiliary Contacts**—An auxiliary contact block, Class 9999 Type WX11, with one normally open contact and one normally closed contact, is used with Size 4, 5 and 6 vacuum contactors. Additional auxiliary contact units may be added to the Size 4 and 5 reversing contactors in the field. A maximum of 2 units may be added to the Size 4; a maximum of 1 unit may be added to the Size 5.

**Termination Means**—The Size 4 reversing vacuum contactor is supplied with line and load side lugs. The Size 5 and 6 reversing vacuum contactors are supplied without line and load side lugs.

**Table 16.134: Class 8702 Full Voltage Reversing Vacuum Contactors (Horizontal Only) 3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

NEMA Size	Enclosed Ampere Rating	Motor Voltage	Maximum Horsepower	Open Type	
				Type	\$ Price
4	135	200	40	WFO3▲	10659.00
		230	50		
		380	75		
		460	100		
		575	100		
5	270	200	75	WGO3▲	18678.00
		230	100		
		380	150		
		460	200		
		575	200		
6	540	200	150	WHO3V▲	45666.00
		230	200		
		380	300		
		460	400		
		575	400		

▲ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes listed on page 16-50. Replacement coils are listed on page 16-27.

**Table 16.135: Class 9998—Replacement Coils for Class 8702 Reversing Contactors**

Size	Type	Poles	Class & Type	Suffix Number (Complete Coil Number Consists of Class and Type Followed by Suffix Number)				\$ Price
				120 Volts 110 Volts	240 Volts 220 Volts	480 Volts 440 Volts	600 Volts 550 Volts	
4	WF	All	9998WF	120	240	480	600	732.00
5	WG	All	9998WG	120	240	480	600	1724.00
6	WH	All	9998WH	120	240	480	600	1904.00

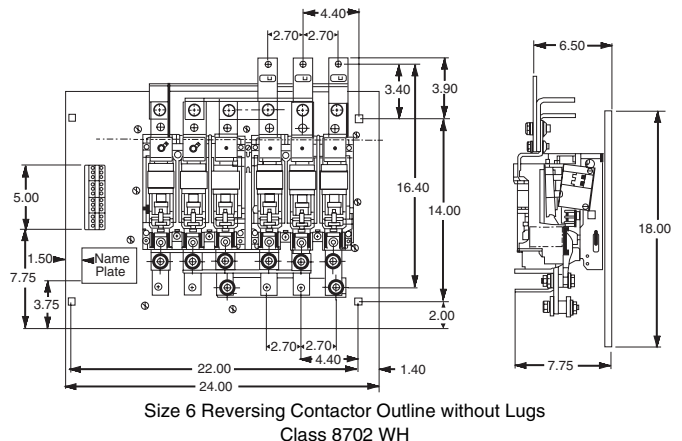
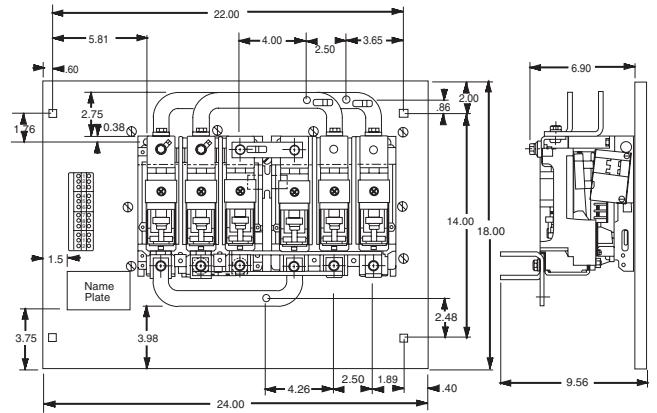
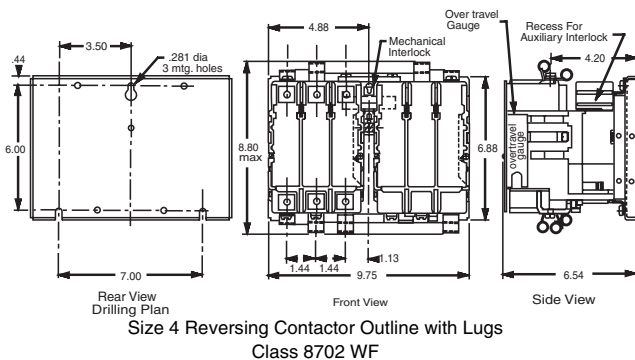
**Table 16.136: Class 9999—Vacuum Starter Kits**

For Use With		Kit Description	Class 9999 Type	\$ Price
Type	Size			
WF-WG WH	4-5 6	Auxiliary Contacts, Non-Convertible 1 N.O. & 1 N.C. Isolated Contacts	WX11	122.00
WF WG-WH	4 5-6	Coil Circuit Auxiliary Contacts 1 N.O. & 1 N.C. Isolated Contacts, Delayed Break 1 N.C. Isolated Contact	WCX11 WLX01	114.00 503.00
WG	5	Lug Kits (6) lugs included	LUW5	275.00

**Table 16.137: Coil Voltage Codes**

Volts	110	120	220	240	440	480	550	600
50 Hz	V02		V03		V06		V07	
60 Hz		V02		V03		V06		V07

## Approximate Dimensions



For How to Order Information, see page 16-12.

Class 8738 and 8739 Type S reversing combination starters combine the requirements of motor overload and short circuit protection into one convenient package. Type S reversing combination starters are manufactured in accordance with NEMA standards, and are UL Listed (although some Form numbers may not be listed—contact your nearest Square D/Schneider Electric sales office for further information). Class 8738 and 8739 reversing combination starters are designed to operate at 600 Vac, 50–60 Hz—and are supplied with melting alloy overload relays as standard. For Class J fuses, use form Y1072 (No Charge).

**Class 8738 Fusible Disconnect Switch Type**

Note: that the prices shown do not include thermal units. Devices require 3 thermal units. Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

**Table 16.138: Class 8738 Full-Voltage Type, Fusible (With Class H Fuse Clips) Reversing with Melting Alloy Overload Relays—3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

Motor Voltage (Starter Voltage)	Ratings			NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304)		NEMA 4X Watertight, Dusttight and Corrosion Resistant Polyester Enclosure		NEMA 12/3R▲ Dusttight and Driptight Industrial Use Enclosure		
	Max. Hp Poly-phase	NEMA Size	Fuse Clip Size Amps	Type	\$ Price	Type	\$ Price	Type	\$ Price	With External Reset	Without External Reset	\$ Price
										Type	Type	
200 (208)	3	0	30	SBG12■	2169.00	SBW12■	3909.00	SBW22■	4491.00	SBA22■	SBA12■	2654.00
	5	1	30	SCG12■	2313.00	SCW12■	4050.00	SCW22■	4656.00	SCA22■	SCA12■	2798.00
	7-1/2		60	SCG13■	2340.00	SCW13■	4077.00	SCW23■	4692.00	SCA23■	SCA13■	2825.00
	10	2	60	SDG12■	3851.00	SDW12■	6501.00	SDW22■	7149.00	SDA22■	SDA12■	4478.00
	20	3	100	SEG15■	6357.00	SEW15■	11001.00	—	—	SEA25■	SEA15■	7182.00
	40	4	200	SFG15■	13409.00	SFW15■	19277.00	—	—	SFA25■	SFA15■	15672.00
230 (240)	75	5	400	SGG15■	25605.00	SGW15■	40589.00	—	—	SGA25■	SGA15■	30990.00
	3	0	30	SBG12■	2169.00	SBW12■	3909.00	SBW22■	4491.00	SBA22■	SBA12■	2654.00
	5		30	SCG12■	2313.00	SCW12■	4050.00	SCW22■	4656.00	SCA22■	SCA12■	2798.00
	7-1/2	1	60	SCG13■	2340.00	SCW13■	4077.00	SCW23■	4692.00	SCA23■	SCA13■	2825.00
	15	2	60	SDG12■	3851.00	SDW12■	6501.00	SDW22■	7149.00	SDA22■	SDA12■	4478.00
	25	3	100	SEG15■	6357.00	SEW15■	11001.00	—	—	SEA25■	SEA15■	7182.00
460 (480)	50	4	200	SFG15■	13409.00	SFW15■	19277.00	—	—	SFA25■	SFA15■	15672.00
	100	5	400	SGG15■	25605.00	SGW15■	40589.00	—	—	SGA25■	SGA15■	30990.00
	5	0	30	SBG13■	2199.00	SBW13■	3936.00	SBW23■	4527.00	SBA23■	SBA13■	2682.00
	10		1	30	SCG14■	2340.00	SCW14■	4077.00	SCW24■	4692.00	SCA24■	SCA14■
	15	2	30	SDG16■	3873.00	SDW16■	6515.00	SDW26■	7163.00	SDA26■	SDA16■	4491.00
	25		60	SDG14■	3893.00	SDW14■	6543.00	SDW24■	7199.00	SDA24■	SDA14■	4521.00
50	3	100	SEG13■	6443.00	SEW13■	11087.00	—	—	SEA23■	SEA13■	7268.00	
575 (600)	100	4	200	SFG13■	13464.00	SFW13■	19332.00	—	—	SFA23■	SFA13■	15728.00
	200	5	400	SGG13■	26204.00	SGW13■	41187.00	—	—	SGA23■	SGA13■	31589.00
	5	0	30	SBG13■	2199.00	SBW13■	3936.00	SBW23■	4527.00	SBA23■	SBA13■	2682.00
	10		1	30	SCG14■	2340.00	SCW14■	4077.00	SCW24■	4692.00	SCA24■	SCA14■
	15	2	30	SDG16■	3873.00	SDW16■	6515.00	SDW26■	7163.00	SDA26■	SDA16■	4491.00
	25		60	SDG14■	3893.00	SDW14■	6543.00	SDW24■	7199.00	SDA24■	SDA14■	4521.00
50	3	100	SEG13■	6443.00	SEW13■	11087.00	—	—	SEA23■	SEA13■	7268.00	

▲ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information. For class J fuse clip, use Form Y1072 (no charge).  
■ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown below.

**Table 16.139: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24★◆	—	V01	No Charge
120★	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

◆ 24 V coils are not available on Sizes 4–7. On Sizes 00–3, where 24 V coils are available, Form S (separate control) must be specified (i.e., order as 8738SBG12V01S).  
★ These voltage codes must include Form S (supplied at no charge) (i.e., order as 8738SC13V02S).  
Note: For voltage codes used with control transformers, see page 16-110. Form S (separate control) is used when a separate source of power is available for the control (coil) voltage. Form S is supplied at no charge.

Dimensions..... page 16-56  
Factory Modifications (Forms)..... page 16-109  
Replacement Parts (Class 9998)..... page 16-114  
Type S Accessories (Class 9999)..... page 16-117

For How to Order Information, see page 16-12.

**3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

Note: that the prices shown do not include thermal units. Devices require 3 thermal units. Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

**Table 16.140: Non-Fusible Disconnect Switch Type—Full-Voltage Type  
Reversing with Melting Alloy Overload Relays**

Motor Voltage (Starter Voltage)	Ratings			NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304)		NEMA 4X Watertight, Dusttight and Corrosion Resistant Polyester Enclosure		NEMA 12/3R+ Dusttight and Driptight Industrial Use Enclosure		
	Max. Hp Poly-Phase	NEMA Size	Fuse Clip Size Amps	Type	\$ Price	Type	\$ Price	Type	\$ Price	With External Reset	Without External Reset	\$ Price
										Type	Type	
200 (208)	3	0	None	SBG11	2127.00	SBW11	3866.00	SBW21	4442.00	SBA21	SBA11	2613.00
	7-1/2	1	None	SCG11	2271.00	SCW11	4008.00	SCW21	4607.00	SCA21	SCA11	2754.00
	10	2	None	SDG11	3794.00	SDW11	6443.00	SDW21	7083.00	SDA21	SDA11	4419.00
	25	3	None	SEG11	6287.00	SEW11	10929.00	—	—	SEA21	SEA11	7113.00
	40	4	None	SFG11	13166.00	SFW11	19034.00	—	—	SFA21	SFA11	15431.00
230 (240)	75	5	None	SGG11	25691.00	SGW11	40674.00	—	—	SGA21	SGA11	31076.00
	3	0	None	SBG11	2127.00	SBW11	3866.00	SBW21	4442.00	SBA21	SBA11	2613.00
	7-1/2	1	None	SCG11	2271.00	SCW11	4008.00	SCW21	4607.00	SCA21	SCA11	2754.00
	15	2	None	SDG11	3794.00	SDW11	6443.00	SDW21	7083.00	SDA21	SDA11	4419.00
	30	3	None	SEG11	6287.00	SEW11	10929.00	—	—	SEA21	SEA11	7113.00
460 (480)	50	4	None	SFG11	13166.00	SFW11	19034.00	—	—	SFA21	SFA11	15431.00
	100	5	None	SGG11	25691.00	SGW11	40674.00	—	—	SGA21	SGA11	31076.00
	5	0	None	SBG11	2127.00	SBW11	3866.00	SBW21	4442.00	SBA21	SBA11	2613.00
	10	1	None	SCG11	2271.00	SCW11	4008.00	SCW21	4607.00	SCA21	SCA11	2754.00
	25	2	None	SDG11	3794.00	SDW11	6443.00	SDW21	7083.00	SDA21	SDA11	4419.00
575 (600)	50	3	None	SEG11	6287.00	SEW11	10929.00	—	—	SFA21	SFA11	15431.00
	100	4	None	SFG11	13166.00	SFW11	19034.00	—	—	SFA21	SFA11	15431.00
	200	5	None	SGG11	25691.00	SGW11	40674.00	—	—	SGA21	SGA11	31076.00

- ▲ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
- Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown on page 16-59.

**Table 16.141: Fusible Disconnect Switch Type With Class R Fuse Clips—100,000 AIC Rating**

Motor Voltage (Starter Voltage)	Ratings			NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304)		NEMA 4X Watertight, Dusttight and Corrosion Resistant Polyester Enclosure▼		NEMA 12/3R+ Dusttight and Driptight Industrial Use Enclosure		
	Max. Hp Poly-Phase	NEMA Size	Fuse Clip Size Amps	Type	\$ Price	Type	\$ Price	Type	\$ Price	With External Reset	Without External Reset	\$ Price
										Type	Type	
200 (208)	3	0	30	SBG32★	2192.00	SBW32★	3929.00	SBW42★	4521.00	SBA42★	SBA32★	2676.00
	5	1	30	SCG32★	2334.00	SCW32★	4071.00	SCW42★	4685.00	SCA42★	SCA32★	2817.00
	7-1/2		60	SCG33★	2363.00	SCW33★	4100.00	SCW43★	4706.00	SCA43★	SCA33★	2847.00
	10	2	60	SDG32★	3873.00	SDW32★	6521.00	SDW42★	7176.00	SDA42★	SDA32★	4499.00
	20	3	100	SEG35★	6399.00	SEW35★	11043.00	—	—	SEA45★	SEA35★	7226.00
	40	4	200	SFG35★	13451.00	SFW35★	19319.00	—	—	SFA45★	SFA35★	15714.00
230 (240)	75	5	400	SGG35★	25707.00	SGW35★	40689.00	—	—	SGA45★	SGA35★	31089.00
	3	0	30	SBG32★	2192.00	SBW32★	3929.00	SBW42★	4521.00	SBA42★	SBA32★	2676.00
	5	1	30	SCG32★	2334.00	SCW32★	4071.00	SCW42★	4685.00	SCA42★	SCA32★	2817.00
	7-1/2		60	SCG33★	2363.00	SCW33★	4100.00	SCW43★	4706.00	SCA43★	SCA33★	2847.00
	15	2	60	SDG32★	3873.00	SDW32★	6521.00	SDW42★	7176.00	SDA42★	SDA32★	4499.00
	25	3	100	SEG35★	6399.00	SEW35★	11043.00	—	—	SEA45★	SEA35★	7226.00
460 (480)	50	4	200	SFG35★	13451.00	SFW35★	19319.00	—	—	SFA45★	SFA35★	15714.00
	100	5	400	SGG35★	25707.00	SGW35★	40689.00	—	—	SGA45★	SGA35★	31089.00
	5	0	30	SBG33★	2219.00	SBW33★	3959.00	SBW43★	4548.00	SBA43★	SBA33★	2705.00
	10	1	30	SCG34★	2363.00	SCW34★	4100.00	SCW44★	4712.00	SCA44★	SCA34★	2847.00
	15		30	SDG36★	3893.00	SDW36★	6534.00	SDW46★	7191.00	SDA46★	SDA36★	4514.00
	25	2	60	SDG34★	3915.00	SDW34★	6564.00	SDW44★	7433.00	SDA44★	SDA34★	4541.00
575 (600)	50	3	100	SEG33★	6485.00	SEW33★	11129.00	—	—	SEA43★	SEA33★	7311.00
	100	4	200	SFG33★	13508.00	SFW33★	19376.00	—	—	SFA43★	SFA33★	15771.00
	200	5	400	SGG33★	26303.00	SGW33★	41288.00	—	—	SGA43★	SGA33★	31688.00
	5	1	30	SBG33★	2219.00	SBW33★	3959.00	SBW43★	4548.00	SBA43★	SBA33★	2705.00
	10		30	SCG34★	2363.00	SCW34★	4100.00	SCW44★	4712.00	SCA44★	SCA34★	2847.00
	15	2	30	SDG36★	3893.00	SDW36★	6534.00	SDW46★	7191.00	SDA46★	SDA36★	4514.00
25	2	60	SDG34★	3915.00	SDW34★	6564.00	SDW44★	7433.00	SDA44★	SDA34★	4541.00	
50		3	100	SEG33★	6485.00	SEW33★	11129.00	—	—	SEA43★	SEA33★	7311.00
100	4	200	SFG33★	13508.00	SFW33★	19376.00	—	—	SFA43★	SFA33★	15771.00	
200	5	400	SGG33★	26303.00	SGW33★	41288.00	—	—	SGA43★	SGA33★	31688.00	

- ♦ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
- ★ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown on page 16-52.
- ▼ 5,000 AIC Rating

For How to Order Information, see page 16-12.

3-Pole Polyphase—600 Vac Maximum—50–60 Hz

Note that the prices shown do not include thermal units. Devices require 3 thermal units. Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

Table 16.142: Full-Voltage Type, Reversing with Melting Alloy Overload Relays

Ratings				NEMA Type 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight and Dusttight Enclosure Stainless Steel (304) (Sizes 0-5)▲		NEMA 4X Watertight Dusttight and Corrosion Resistant Polyester Enclosure		NEMA 7 & 9■ For Hazardous Locations Class I, Groups C & D Class II, Groups E, F & G				NEMA 12/3R◆ Dusttight and Driptight Industrial Use Enclosure			
Motor Voltage (Starter Voltage)	Hp Range Poly-phase	NEMA Size	Circuit Breaker (See Page 7-32 for Breaker Adjustment Range)	Type	\$ Price	Type	\$ Price	Type	\$ Price	SPIN TOP® Type	\$ Price	Bolted Type	\$ Price	With External Reset Type	Without External Reset Type	\$ Price	
				SBG41★	SBG42★	SBG43★	SBW41★	SBW42★	SBW43★	SBW51★	SBW52★	SBW53★	SBR41★	SBR42★	SBR43★	SBT41★	SBT42★
200 (208)	1/4–1/3 1/2–1 11/2–3	0	GJL36003M01 GJL36007M02 GJL36015M03	SBG41★ SBG42★ SBG43★	2555.	SBW41★ SBW42★ SBW43★	4292.	SBW51★ SBW52★ SBW53★	4932.	SBR41★ SBR42★ SBR43★	5297.	SBT41★ SBT42★ SBT43★	5297.	SBA51★ SBA52★ SBA53★	SBA41★ SBA42★ SBA43★	3038.	
	1/4–1/3 1/2–1 11/2–3 5 7-1/2	1	GJL36003M01 GJL36007M02 GJL36015M03 GJL36030M04 GJL36050M05	SCG41★ SCG42★ SCG43★ SCG44★ SCG45★	2726.	SCW41★ SCW42★ SCW43★ SCW44★ SCW45★	4463.	SCW51★ SCW52★ SCW53★ SCW54★ SCW55★	5133.	SCR41★ SCR42★ SCR43★ SCR44★ SCR45★	5489.	SCT41★ SCT42★ SCT43★ SCT44★ SCT45★	5489.	SCA51★ SCA52★ SCA53★ SCA54★ SCA55★	SCA41★ SCA42★ SCA43★ SCA44★ SCA45★	3209.	
	1-1/2–3 5 71/2–10	2	GJL36015M03 GJL36030M04 GJL36050M05	SDG41★ SDG42★ SDG43★	4350.	SDW41★ SDW42★ SDW43★	6998.	SDW51★ SDW52★ SDW53★	7695.	SDR41★ SDR42★ SDR43★	8153.	SDT41★ SDT42★ SDT43★	8153.	SDA51★ SDA52★ SDA53★	SDA41★ SDA42★ SDA43★	4976.	
	15–25	3	FAL3610018M	SEG42★	6501.	SEW42★	11142.	SEW52★	12254.	—	—	—	—	—	SEA52★	SEA42★	7326.
	30 40	4	KAL3625025M KAL3625026M	SFG42★ SFG43★	14718.	SFW42★ SFW43★	20586.	SFW52★ SFW53★	22644.	—	—	—	—	—	SFA52★ SFA53★	SFA42★ SFA43★	16982.
	50 60 75	5	KAL3625030M LAL3640032M LAL3640033M	SGG42★ SGG44★ SGG45★	29808.	SGW42★ SGW44★ SGW45★	44792.	—	—	—	—	—	—	—	SGA52★ SGA54★ SGA55★	SGA42★ SGA44★ SGA45★	35190.
	100 125 150	6	LAL3640036M MAL3660040M MAL3660042M	SHG43★ SHG44★ SHG45★	64274.	SHW43★ SHW44★ SHW45★	71396.	—	—	—	—	—	—	—	SHA53★ SHA54★ SHA55★	SHA43★ SHA44★ SHA45★	68120.
	230 (240)	1/4–1/3 1/2–1 11/2–3	0	GJL36003M01 GJL36007M02 GJL36015M03	SBG41★ SBG42★ SBG43★	2555.	SBW41★ SBW42★ SBW43★	4292.	SBW51★ SBW52★ SBW53★	4932.	SBR41★ SBR42★ SBR43★	5297.	SBT41★ SBT42★ SBT43★	5297.	SBA51★ SBA52★ SBA53★	SBA41★ SBA42★ SBA43★	3038.
		1/4–1/3 1/2–1 11/2–3 5–7-1/2	1	GJL36003M01 GJL36007M02 GJL36015M03 GJL36030M04	SCG41★ SCG42★ SCG43★ SCG44★	2726.	SCW41★ SCW42★ SCW43★ SCW44★	4463.	SCW51★ SCW52★ SCW53★ SCW54★	5133.	SCR41★ SCR42★ SCR43★ SCR44★	5489.	SCT41★ SCT42★ SCT43★ SCT44★	5489.	SCA51★ SCA52★ SCA53★ SCA54★	SCA41★ SCA42★ SCA43★ SCA44★	3209.
		1-1/2–3 5–7-1/2 10 15	2	GJL36015M03 GJL36030M04 GJL36050M05 GJL36075M06	SDG41★ SDG42★ SDG43★ SDG44★	4350.	SDW41★ SDW42★ SDW43★ SDW44★	6998.	SDW51★ SDW52★ SDW53★ SDW54★	7695.	SDR41★ SDR42★ SDR43★ SDR44★	8153.	SDT41★ SDT42★ SDT43★ SDT44★	8153.	SDA51★ SDA52★ SDA53★ SDA54★	SDA41★ SDA42★ SDA43★ SDA44★	4976.
15–30		3	FAL3610018M	SEG42★	6501.	SEW42★	11142.	SEW52★	12254.	—	—	—	—	—	SEA52★	SEA42★	7326.
40 50		4	KAL3625026M KAL3625029M	SFG43★ SFG44★	14718.	SFW43★ SFW44★	20586.	SFW53★ SFW54★	22644.	—	—	—	—	—	SFA53★ SFA54★	SFA43★ SFA44★	16982.
60 75 100		5	KAL3625031M LAL3640032M LAL3640035M	SGG43★ SGG44★ SGG46★	29808.	SGW43★ SGW44★ SGW46★	44792.	—	—	—	—	—	—	—	SGA53★ SGA54★ SGA56★	SGA43★ SGA44★ SGA46★	35190.
125–150 200		6	MAL3660040M MAL3660044M	SHG44★ SHG46★	64274.	SHW44★ SHW46★	71396.	—	—	—	—	—	—	—	SHA54★ SHA56★	SHA44★ SHA46★	68120.

- ▲ NEMA Size 6 starters are NEMA 4 painted sheet steel enclosures.
- NEMA 7 & 9 bolted are not UL Listed.
- ◆ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
- ★ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes listed below.

Table 16.143: Coil Voltage Codes

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24△▼	—	V01	No Charge
120△	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

- ▼ 24 V coils are not available on Sizes 4–7. On Sizes 00–3, where 24 V coils are available, Form S (separate control) must be specified (i.e., order as 8739SBG41V01S).
  - △ These voltage codes must include Form S (supplied at no charge) (i.e., order as 8739SCG41V02S).
- Note: For voltage codes used with control transformers, see page 16-110.  
Form S (separate control) is used when a separate source of power is available for the control (coil) voltage.  
Form S is supplied at no charge.

Dimensions ..... page 16-56  
 Factory Modifications (Forms) ..... page 16-109  
 Replacement Parts (Class 9998) ..... page 16-114  
 Type S Accessories (Class 9999) ..... page 16-117

For How to Order Information, see page 16-12.

**3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

Note that the prices shown do not include thermal units. Devices require 3 thermal units. Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

**Table 16.144: Full-Voltage Type, Reversing with Melting Alloy Overload Relays**

Ratings				NEMA Type 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304) (Sizes 0–5)▲		NEMA 4X Watertight Dusttight and Corrosion Resistant Polyester Enclosure		NEMA 7 & 9■ For Hazardous Locations Class I, Groups C & D Class II, Groups E, F & G				NEMA 12/3R◆ Dusttight and Driptight Industrial Use Enclosure			
Motor Voltage (Starter Voltage)	Hp Range Poly-phase	NEMA Size	Circuit Breaker (See Page 7-32 for Breaker Adjustment Range)	Type	\$ Price	Type	\$ Price	Type	\$ Price	SPIN TOP® Type	\$ Price	Bolted Type	\$ Price	With External Reset Type	Without External Reset Type	\$ Price	
				SBG41★ SBG42★ SBG43★	SBW41★ SBW42★ SBW43★	SBW51★ SBW52★ SBW53★	SBR41★ SBR42★ SBR43★	SBT41★ SBT42†† SBT43★	SBA51★ SBA52★ SBA53★	SBA41★ SBA42★ SBA43★							
460 (480)	1/4–1 1-1/2–3 5	0	GJL36003M01 GJL36007M02 GJL36015M03	SBG41★ SBG42★ SBG43★	2555.	SBW41★ SBW42★ SBW43★	4292.	SBW51★ SBW52★ SBW53★	4932.	SBR41★ SBR42★ SBR43★	5297.	SBT41★ SBT42†† SBT43★	5297.	SBA51★ SBA52★ SBA53★	SBA41★ SBA42★ SBA43★	3038.	
	1/4–1 1-1/2–3 5–7-1/2 10	1	GJL36003M01 GJL36007M02 GJL36015M03 GJL36030M04	SCG41★ SCG42★ SCG43★ SCG44★	2726.	SCW41★ SCW42★ SCW43★ SCW44★	4463.	SCW51★ SCW52★ SCW53★ SCW54★	5133.	SCR41★ SCR42★ SCR43★ SCR44★	5489.	SCT41★ SCT42★ SCT43★ SCT44★	5489.	SCA51★ SCA52★ SCA53★ SCA54★	SCA41★ SCA42★ SCA43★ SCA44★	3209.	
	5–7-1/2 10–15 20–25	2	GJL36015M03 GJL36030M04 GJL36050M05	SDG41★ SDG42★ SDG43★	4350.	SDW41★ SDW42★ SDW43★	6998.	SDW51★ SDW52★ SDW53★	7695.	SDR41★ SDR42★ SDR43★	8153.	SDT41★ SDT42★ SDT43★	8153.	SDA51★ SDA52★ SDA53★	SDA41★ SDA42★ SDA43★	4976.	
	20–25 30–50	3	GJL36050M05 FAL3610018M	SEG41★ SEG42★	6501.	SEW41★ SEW42★	11142.	SEW51★ SEW52★	12254.	—	—	—	—	—	SEA51★ SEA52★	SEA41★ SEA42★	7326.
	60–75 100	4	KAL3625025M KAL3625029M	SFG42★ SFG44★	14718.	SFW42★ SFW44★	20586.	SFW52★ SFW54★	22644.	—	—	—	—	—	SFA52★ SFA54★	SFA42★ SFA44★	16982.
	125 150 200	5	KAL3625031M LAL3640032M LAL3640035M	SGG43★ SGG44★ SGG46★	29808.	SGW43★ SGW44★ SGW46★	44792.	—	—	—	—	—	—	—	SGA53★ SGA54★ SGA56★	SGA43★ SGA44★ SGA46★	35190.
250 300 350 400	6	LAL3640036M MAL3660040M MAL3660042M MAL3660044M	SHG43★ SHG44★ SHG45★ SHG46★	64274.	SHW43★ SHW44★ SHW45★ SHW46★	71396.	—	—	—	—	—	—	—	SHA53★ SHA54★ SHA55★ SHA56★	SHA43★ SHA44★ SHA45★ SHA46★	68120.	
575 (600)	1/4–1 1-1/2–3 5	0	GJL36003M01 GJL36007M02 GJL36015M03	SBG41★ SBG42★ SBG43★	2555.	SBW41★ SBW42★ SBW43★	4292.	SBW51★ SBW52★ SBW53★	4932.	SBR41★ SBR42★ SBR43★	5297.	SBT41★ SBT42†† SBT43★	5297.	SBA51★ SBA52★ SBA53★	SBA41★ SBA42★ SBA43★	3038.	
	1/4–1 1-1/2–3 5–10	1	GJL36003M01 GJL36007M02 GJL36015M03	SCG41★ SCG42★ SCG43★	2726.	SCW41★ SCW42★ SCW43★	4463.	SCW51★ SCW52★ SCW53★	5133.	SCR41★ SCR42★ SCR43★	5489.	SCT41★ SCT42★ SCT43★	5489.	SCA51★ SCA52★ SCA53★	SCA41★ SCA42★ SCA43★	3209.	
	5–10 15–20 25	2	GJL36015M03 GJL36030M04 GJL36050M05	SDG41★ SDG42★ SDG43★	4350.	SDW41★ SDW42★ SDW43★	6998.	SDW51★ SDW52★ SDW53★	7695.	SDR41★ SDR42★ SDR43★	8153.	SDT41★ SDT42★ SDT43★	8153.	SDA51★ SDA52★ SDA53★	SDA41★ SDA42★ SDA43★	4976.	
	25–30 40–50	3	GJL36050M05 FAL3610018M	SEG41★ SEG42★	6501.	SEW41★ SEW42★	11142.	SEW51★ SEW52★	12254.	—	—	—	—	—	SEA51★ SEA52★	SEA41★ SEA42★	7326.
	60–100	4	KAL3625025M	SFG42★	14718.	SFW42★	20586.	SFW52★	22644.	—	—	—	—	—	SFA52★	SFA42★	16982.
	125 150 200	5	KAL3625029M KAL3625030M LAL3640032M	SGG41★ SGG42★ SGG44★	29808.	SGW41★ SGW42★ SGW44★	44792.	—	—	—	—	—	—	—	SGA51★ SGA52★ SGA54★	SGA41★ SGA42★ SGA44★	35190.
250 300 350–400	6	LAL3640035M LAL3640036M MAL3660040M	SHG42★ SHG43★ SHG44★	64274.	SHW42★ SHW43★ SHW44★	71396.	—	—	—	—	—	—	—	SHA52★ SHA53★ SHA54★	SHA42★ SHA43★ SHA44★	68120.	

- ▲ NEMA Size 6 starters are NEMA 4 painted sheet steel enclosures.
- NEMA 7 & 9 bolted are not UL Listed.
- ◆ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
- ★ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes listed below.

**Table 16.145: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24Δ▼	—	V01	No Charge
120Δ	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

- ▼ 24 V coils are not available on Sizes 4–7. On Sizes 00–3, where 24 V coils are available, **Form S** (separate control) must be specified (i.e., order as 8739SBG41V01S).
  - Δ These voltage codes must include **Form S** (supplied at no charge) (i.e., order as 8739SCG41V02S).
- Note: For voltage codes used with control transformers, see page 16-110.  
Form S (separate control) is used when a separate source of power is available for the control (coil) voltage.  
Form S is supplied at no charge.

Dimensions .....	page 16-56
Factory Modifications (Forms) .....	page 16-109
Replacement Parts (Class 9998) .....	page 16-114
Type S Accessories (Class 9999) .....	page 16-117

For How to Order Information, see page 16-12.

**3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

Note that the prices shown do not include thermal units. Devices require 3 thermal units. Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

**Table 16.146: Full-Voltage Type, Reversing with Melting Alloy Overload Relays**

Ratings				NEMA Type 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304) (Sizes 0-5)▲		NEMA 4X Watertight Dusttight and Corrosion Resistant Polyester Enclosure		NEMA 7 & 9■ For Hazardous Locations Class I, Groups C & D Class II, Groups E, F & G				NEMA 12/3R◆ Dusttight and Driptight Industrial Use Enclosure			
Motor Voltage (Starter Voltage)	Max. Hp Poly-phase	NEMA Size	Circuit Breaker		Type	\$ Price	Type	\$ Price	Type	\$ Price	SPIN TOP® Type	\$ Price	Bolted Type	\$ Price	With External Reset	Without External Reset	\$ Price
			Type	Ampere Rating											Type	Type	
200 (208)	2-3	0	FAL▼	15-20	SBG1★ SBG3★	2228.	SBW1★ SBW3★	3965.	SBW11★ SBW13★	4563.	SBR1★ SBR3★	4940.	SBT1★ SBT3★	4940.	SBA11★ SBA13★	SBA1★ SBA3★	2712.
	5-7-1/2	1	FAL▼	35-50	SCG5★ SCG2★	2399.	SCW5★ SCW2★	4136.	SCW15★ SCW12★	4761.	SCR5★ SCR2★	5126.	SCT5★ SCT2★	5126.	SCA15★ SCA12★	SCA5★ SCA2★	2883.
	10	2	FAL▼	60	SDG1★	4022.	SDW1★	6672.	SDW11★	7340.	SDR1★	7788.	SDT1★	7788.	SDA11★	SDA1★	4649.
	15-20-25	3	FAL KAL	90-110	SEG3★ SEG1★ SEG5★	6501.	SEW3★ SEW1★ SEW5★	11142.	SEW13★ SEW11★ SEW15★	12254.	—	—	—	—	SEA13★ SEA12★ SEA15★	SEA3★ SEA1★ SEA5★	7326.
	30-40	4	KAL	125-200	SFG3★ SFG4★	14718.	SFW3★ SFW4★	20586.	SFW13★ SFW14★	22644.	—	—	—	—	SFA13★ SFA14★	SFA3★ SFA4★	16982.
	50-60-75	5	LAL	200-300	SGG6★ SGG1★ SGG4★	29808.	SGW6★ SGW1★ SGW4★	44792.	—	—	—	—	—	—	SGA16★ SGA11★ SGA14★	SGA6★ SGA1★ SGA4★	35190.
	100-125-150	6	MAL	450-600	SHG4★ SHG3★ SHG5★	64274.	SHW4★ SHW3★ SHW5★	71396.	—	—	—	—	—	—	SHA14★ SHA13★ SHA15★	SHA4★ SHA3★ SHA5★	68120.
	2-3	0	FAL▼	15-20	SBG1★ SBG3★	2228.	SBW1★ SBW3★	3965.	SBW11★ SBW13★	4563.	SBR1★ SBR3★	4940.	SBT1★ SBT3★	4940.	SBA11★ SBA13★	SBA1★ SBA3★	2712.
	5-7-1/2	1	FAL▼	30-45	SCG1★ SCG6★	2399.	SCW1★ SCW6★	4136.	SCW11★ SCW16★	4761.	SCR1★ SCR6★	5126.	SCT1★ SCT6★	5126.	SCA11★ SCA16★	SCA1★ SCA6★	2883.
	10-15	2	FAL▼	60-80	SDG1★ SDG7★	4022.	SDW1★ SDW7★	6672.	SDW11★ SDW17★	7340.	SDR1★ SDR7★	7788.	SDT1★ SDT7★	7788.	SDA11★ SDA17★	SDA1★ SDA7★	4649.
20-25-30	3	FAL KAL	90-110	SEG3★ SEG1★ SEG5★	6501.	SEW3★ SEW1★ SEW5★	11142.	SEW13★ SEW11★ SEW15★	12254.	—	—	—	—	SEA13★ SEA11★ SEA15★	SEA3★ SEA1★ SEA5★	7326.	
40-50	4	KAL	150-200	SFG1★ SFG4★	14718.	SFW1★ SFW4★	20586.	SFW11★ SFW14★	22644.	—	—	—	—	SFA11★ SFA14★	SFA1★ SFA4★	16982.	
60-75-100	5	LAL	225-350	SGG3★ SGG1★ SGG2★	29808.	SGW3★ SGW1★ SGW2★	44792.	—	—	—	—	—	—	SGA13★ SGA11★ SGA12★	SGA3★ SGA1★ SGA2★	35190.	
125-150-200	6	MAL	450-800	SHG4★ SHG3★ SHG7★	64274.	SHW4★ SHW3★ SHW7★	71396.	—	—	—	—	—	—	SHA14★ SHA13★ SHA17★	SHA4★ SHA3★ SHA7★	68120.	

- ▲ NEMA Size 6 starters are NEMA 4 painted sheet steel enclosures.
- NEMA 7 and 9 bolted are not UL Listed.
- ◆ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
- ★ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown below.
- ▼ Rated 250 volts max.

**Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24□△	—	V01	No Charge
120□	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

- △ 24 V coils are not available on Sizes 4–7. On Sizes 00–3, where 24 V coils are available, **Form S** (separate control) must be specified (i.e., order as 8739SBG1V01S).
- These voltage codes must include **Form S** (supplied at no charge) (i.e., order as 8739SCG5V02S).
- Note: For voltage codes used with control transformers, see page 16-110.
- Form S (separate control) is used when a separate source of power is available for the control (coil) voltage. Form S is supplied at no charge.

- Dimensions . . . . . page 16-56
- Factory Modifications (Forms) . . . . . page 16-109
- Replacement Parts (Class 9998) . . . . . page 16-114
- Type S Accessories (Class 9999) . . . . . page 16-117

For How to Order Information, see page 16-12.

**3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

Note that the prices shown do not include thermal units. Devices require 3 thermal units. Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

**Table 16.147: Full-Voltage Type, Reversing with Melting Alloy Overload Relays**

Ratings					NEMA Type 1 General Purpose Enclosure	NEMA 4 & 4X Watertight and Dusttight Enclosure Stainless Steel (304) (Sizes 0 - 5) <sup>▲</sup>	NEMA 4X Watertight Dusttight and Corrosion Resistant Polyester Enclosure	NEMA 7 & 9 <sup>■</sup> For Hazardous Locations Class I, Groups C & D Class II, Groups E, F & G				NEMA 12/3R <sup>♦</sup> Dusttight and Driptight Industrial Use Enclosure						
Motor Voltage (Starter Voltage)	Max. Hp Poly- phase	NEMA Size	Circuit Breaker		Type	\$ Price	Type	\$ Price	Type	\$ Price	SPIN TOP <sup>®</sup> Type	\$ Price	Bolted Type	\$ Price	With External Reset	Without External Reset	\$ Price	
			Type	Ampere Rating											Type	Type		
460 (480)	5	0	FAL	15	SBG2★	2555.	SBW2★	4292.	SBW12★	4932.	SBR2★	5297.	SBT2★	5297.	SBA12★	SBA2★	3038.	
	7-1/2 10	1	FAL	20 25	SCG3★ SCG7★	2726.	SCW3★ SCW7★	4463.	SCW13★ SCW17★	5133.	SCR3★ SCR7★	5489.	SCT3★ SCT7★	5489.	SCA13★ SCA7★	SCA3★ SCA7★	3209.	
	15 20 25	2	FAL	40 60 70	SDG3★ SDG4★ SDG5★	4350.	SDW3★ SDW4★ SDW5★	6998.	SDW13★ SDW14★ SDW15★	7695.	SDR3★ SDR4★ SDR5★	8153.	SDT3★ SDT4★ SDT5★	8153.	SDA13★ SDA14★ SDA15★	SDA3★ SDA4★ SDA5★	4976.	
	30 40 50	3	FAL	80 90 100	SEG6★ SEG3★ SEG1★	6501.	SEW6★ SEW3★ SEW1★	11142.	SEW16★ SEW13★ SEW11★	12254.	—	—	SET6★ SET3★ SET1★	13599.	SEA16★ SEA13★ SEA11★	SEA6★ SEA3★ SEA1★	7326.	
	60 75 100	4	KAL	110 125 200	SFG5★ SFG3★ SFG4★	14718.	SFW5★ SFW3★ SFW4★	20586.	SFW15★ SFW13★ SFW14★	22644.	—	—	SFT5★ SFT3★ SFT4★	26132.	SFA15★ SFA13★ SFA14★	SFA5★ SFA3★ SFA4★	16982.	
	125 150 200	5	LAL	225 250 350	SGG3★ SGG1★ SGG2★	29808.	SGW3★ SGW1★ SGW2★	44792.	—	—	—	—	—	—	—	SGA13★ SGA11★ SGA12★	SGA3★ SGA3★ SGA2★	35190.
	250 300 350 400	6	MAL	450 600 600 800	SHG4★ SHG3★ SHG5★ SHG7★	64274.	SHW4★ SHW3★ SHW5★ SHW7★	71396.	—	—	—	—	—	—	—	SHA14★ SHA13★ SHA15★ SHA17★	SHA4★ SHA3★ SHA5★ SHA7★	68120.
	575 (600)	5	0	FAL	15	SBG2★	2555.	SBW2★	4292.	SBW12★	4932.	SBR2★	5297.	SBT2★	5297.	SBA12★	SBA2★	3038.
		7-1/2 10	1	FAL	15 20	SCG8★ SCG3★	2726.	SCW8★ SCW3★	4463.	SCW18★ SCW13★	5133.	SCR8★ SCR3★	5489.	SCT8★ SCT3★	5489.	SCA18★ SCA13★	SCA8★ SCA3★	3209.
		15 20 25	2	FAL	35 45 60	SDG8★ SDG9★ SDG4★	4350.	SDW8★ SDW9★ SDW4★	6998.	SDW18★ SDW19★ SDW14★	7695.	SDR8★ SDR9★ SDR4★	8153.	SDT8★ SDT9★ SDT4★	8153.	SDA18★ SDA19★ SDA14★	SDA8★ SDA9★ SDA4★	4976.
		30 40 50	3	FAL	60 80 90	SEG4★ SEG6★ SEG3★	6501.	SEW4★ SEW6★ SEW3★	11142.	SEW14★ SEW16★ SEW13★	12254.	—	—	SET4★ SET6★ SET3★	13599.	SEA14★ SEA16★ SEA13★	SEA4★ SEA6★ SEA3★	7326.
		60 75 100	4	FAL KAL KAL	100 110 150	SFG6★ SFG5★ SFG1★	14718.	SFW6★ SFW5★ SFW1★	20586.	SFW16★ SFW15★ SFW11★	22644.	—	—	SFT6★ SFT5★ SFT1★	26132.	SFA16★ SFA15★ SFA11★	SFA6★ SFA5★ SFA1★	16982.
125 150 200		5	KAL LAL LAL	200 200 250	SGG7★ SGG6★ SGG1★	29808.	SGW7★ SGW6★ SGW1★	44792.	—	—	—	—	—	—	—	SGA17★ SGA16★ SGA11★	SGA7★ SGA6★ SGA1★	35190.
250 300 350 400	6	MAL	350 400 500 600	SHG6★ SHG4★ SHG2★ SHG3★	64274.	SHW6★ SHW4★ SHW2★ SHW3★	71396.	—	—	—	—	—	—	—	SHA16★ SHA14★ SHA12★ SHA13★	SHA6★ SHA4★ SHA2★ SHA3★	68120.	

- ▲ NEMA Size 6 starters are NEMA 4 painted sheet steel enclosures.
- NEMA 7 and 9 bolted are not UL Listed.
- ♦ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.
- ★ Coil voltage code must be specified to order this product. Refer to standard coil voltage codes shown below.

**Table 16.148: Class 8738 UL Listed Short Circuit Ratings**

NEMA Size	Fuse Clip Type	Enclosure	Amps Interrupting Capability Rating (AIC)
0-3	Standard	Standard▼	5,000
0-3	Class R	Standard▼	100,000
4-5	Standard	Standard▼	10,000
4-5	Class R	Standard▼	100,000

▼ Standard enclosure includes: NEMAs 1, 4 & 4X stainless, and 12/3R.

**Table 16.149: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24□△	—	V01	No Charge
120□	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

- △ 24 V coils are not available on Sizes 4–7. On Sizes 00–3, where 24 V coils are available, **Form S** (separate control) must be specified (i.e., order as 8739SBG2V01S).
- These voltage codes must include **Form S** (supplied at no charge) (i.e., order as 8739SDG3V02S).

Note: For voltage codes used with control transformers, see page 16-110. Form S (separate control) is used when a separate source of power is available for the control (coil) voltage. Form S is supplied at no charge.

**Table 16.150: Class 8739 UL Listed Short Circuit Ratings**

Mag-Gard <sup>®</sup> Motor Circuit Protector Type			
NEMA Size	Voltage	Enclosure	Amps Interrupting Capability Rating (AIC)
0 & 1, 2 (GJL)	0 – 480	Standard♦	100,000
0 & 1 (FAL)	0 – 480	Standard♦	22,000
0, 1, 2, & 3 (GJL)	481 – 600	Standard♦	10,000
0 & 1	481 – 600	Standard♦	10,000
2 – 6	600	Standard♦	22,000
Thermal Magnetic Circuit Breaker Type			
0-3	600	Standard♦	5,000
4 & 5	600	Standard♦	10,000
6	600	Standard♦	18,000

♦ Standard enclosure includes: NEMAs 1, 4 & 4X stainless, and 12.

For How to Order Information, see page 16-12.

Approximate Dimensions

Table 16.151: NEMA 1 Enclosure (Size 0–2) Figure 1

NEMA Size	Class	Type	Dimensions (in inches) ♦—see Figure 1														Top & Bottom		Sides	Wt. (lbs.)		
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	W		X	Y
0–1	8738 & 8739	SBG SCG	13-3/4	23	8-11/32	10-5/8	21	18-29/32	1-7/8	1-7/8	3-3/4	2-5/16	1-1/16	3-1/4	2-3/16	1-1/4	7/8	—	1/2–3/4–1	1/2–3/4–1	1/2	49
2	8738 & 8739	SDG	15	28-3/4	9-19/32	11-5/8	26-1/4	21-15/32	2-3/16	2	4	2-9/16	1-1/4	3-1/4	2-3/16	1-1/4	29/32	—	1–1-1/4	1–1-1/4	1/2	80

Table 16.152: NEMA 1 Enclosure (Size 3–6) Figure 2

NEMA Size	Class	Type	Dimensions (in inches) ♦—see Figure 2														Top & Bottom		Sides	Wt. (lbs.)		
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	W		X	Y
3	8738 & 8739	SEG	18-1/2	44	10-19/32	12-1/2	3	25-31/32	43-1/2	1/4	—	2-13/16	3-1/2	5	2-11/16	5-3/8	1-7/32	29/32	1–1-1/4 2–2-1/4	1/2–3/4	1/2	245
4	8738	SFG	21	51-1/2	10-17/32	15	3	30-23/32	51	1/4	—	2-13/16	3-1/2	5	2-11/16	5-3/8	1-7/32	29/32	2-1/2	1/2–3/4	1/2	—
	8739	SFG	18-1/2	44	10-19/32	12-1/2	3	25-31/32	43-1/2	1/4	—	2-13/16	3-1/2	5	2-11/16	5-3/8	1-7/32	29/32	1–1-1/4 2–2-1/4	1/2–3/4	1/2	—
5	8738	SGG	30	77	15-1/2	22	4	39-13/32	76	1/2	—	3-1/2	6-9/32	9-1/4	3-3/16	—	—	—	1/2–3/4	3	—	—
	8739	SGG	30	65	13-23/32	22	4	39-13/32	64	1/2	—	3-1/2	6-9/32	5	3-3/16	—	—	—	1/2–3/4	3	—	—
6	8738 & 8739	SHG	36	90	17-1/32	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 16.153: NEMA 12/3R Enclosure Figure 3

NEMA Size	Class	Type	Dimensions (in inches) ♦—see Figure 3										Wt. (lbs.)
			A	B	C	D	E	F	G	H	I	J	
0–1	8738 & 8739	SBA SCA	13-3/4	10-3/32	24-3/4	3-1/4	2-1/2	8-3/4	24	3/8	3-3/4	20-5/16	52
2	8738 & 8739	SDA	15	10-31/32	31	3-1/4	3	9	30-1/4	3/8	3-3/4	23-7/16	95
3	8738 & 8739	SEA	18-1/2	10-19/32	45	5	3	12-1/2	44	1/2	3-3/4	25-19/32	255
4	8738	SFA	21	10-19/32	52-1/2	5	3	15	51-1/2	1/2	3-3/4	30-11/32	—
	8739	SFA	18-1/2	10-19/32	45	3-1/4	3	12-1/2	44	1/2	3-3/4	25-19/32	—
5	8738	SGA	30	15-1/2	78	9-1/4	4	22	77	1/2	7-1/2	39-13/32	—
	8739	SGA	30	15-1/2	66	—	4	22	65	1/2	7-1/2	37-7/8	—
6▲	8739	SHA	36	17-1/32	90	—	—	—	—	—	—	—	—

▲ Size 6 enclosures are floor mounting.

Table 16.154: NEMA 4X Polyester Enclosure Figure 4

NEMA Size	Class	Type	Dimensions (in inches) ♦—see Figure 4				
			A	B	C	F	
0-2	8738 & 8739	SBW SCW SDW	25.25	11.4	27.00	17.88	25.75
3-4	8739	SEW SFW	26.31	11.4	33.50	18.50	32.25

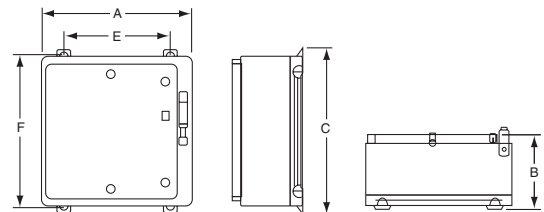


Figure 4: NEMA 4X Polyester Enclosure

■ See page 16-57 for important information on hubs for NEMA 4X enclosures.  
♦ The dimensions shown in all tables above are also for Form F4T (standard control transformer), Form F4T11 (100 VA extra-capacity), and Form F4T12 (200 VA extra-capacity).

NOTE: Illustrations may not represent the actual enclosure; they are intended for dimensional information only.

16 NEMA/DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS

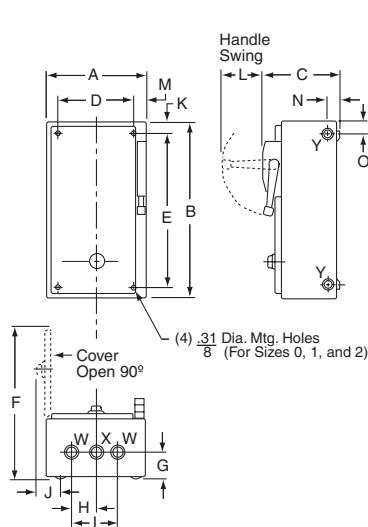


Figure 1: NEMA 1 Enclosure (Sizes 0–2)

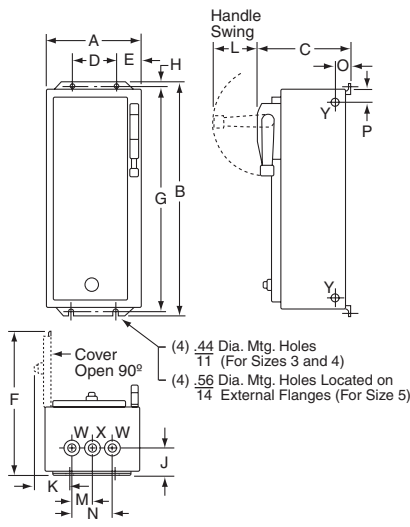


Figure 2: NEMA 1 Enclosure (Sizes 3–6)

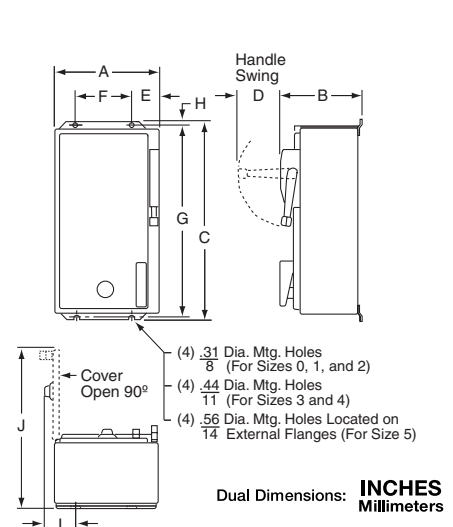


Figure 3: NEMA 12 Enclosure

Dual Dimensions: INCHES  
Millimeters



**Approximate Dimensions**

**Table 16.155: NEMA 4 & 4X Stainless Enclosure Figure 1**

NEMA Size	Class	Type	Dimensions (in inches)▲—see Figure 1													Bottom	Top & Bot.	Wt. (lbs.)
			A	B	C	D	E	F	G	H	I	J	K	L				
0-1	8738 & 8739	SBW SCW	13-3/4	8-11/32	25-3/16	3-1/4	2-1/2	8-3/4	24	19/32	3	1-5/8	2-5/16	18-17/32	3/4 Hub	1 Hub	52	
2	8738 & 8739	SDW	15	9-19/32	30-1/32	3-1/4	2-1/2	10	29-3/4	5/8	3	2	2-5/8	21-1/32	3/4 Hub	1-1/2 Hub	95	
3	8738 & 8739	SEW	18-1/2	10-9/16	45-3/16	5	3	12-1/2	44	19/32	3-1/2	2-5/8	3-3/16	25-1/2	3/4 Hub	2-1/2 Hub	255	
4	8738	SFW	21	10-17/32	52-11/16	5	3	15	51-1/2	19/32	3-1/2	2-5/8	3-3/16	30-1/4	3/4 Hub	2-1/2 Hub	—	
	8739	SFW	18-1/2	10-9/16	45-3/16	5	3	12-1/2	44	19/32	3-1/2	2-5/8	3-3/16	25-1/2	3/4 Hub	2-1/2 Hub	—	
5	8738	SGW	30	15-1/2	78-3/32	9-1/4	4	22	77	9/16	6-3/32	3	3-1/2	39-13/32	3/4 Hub	3-1/2 Hub	—	
	8739	SGW	30	13-57/64	66-3/32	5	4	22	65	9/16	6-3/32	3	3-1/2	37-7/8	3/4 Hub	3-1/2 Hub	—	
6	8739	SHW	36	17-1/32	98	—	—	—	—	—	—	—	—	—	—	—	—	

▲ Above dimensions also for Form F4T (standard control transformer), Form F4T11 (100 VA extra capacity) and Form F4T12 (200 VA extra capacity).

**Table 16.156: Class 8739—NEMA 7 & 9 Bolted Enclosure Figure 2**

Note: Enclosure has 3 door mounted Closing Plates.

NEMA Size	Type	Dimensions (in inches)—see Figure 2											Wt. (lbs.)
		G	H	J	K	L	N	P	Q, R	S, T, U, V	Z		
0-1	SBT SCT	14-1/4	27-5/8	9-1/2	12-1/4	19-1/4	9-5/8	11	2-3/8	3-1/8	1-1/2	115	
2	SDT	18-1/8	31-5/8	10	16-1/4	19-1/4	9-5/8	12-5/8	2-3/8	3-3/4	2-1/2	180	

**Table 16.157: Class 8739—NEMA 7 & 9 SPIN TOP® Enclosure Figure 3**

NEMA Size	Type	Conduit Sizes Loc. A, B, C and D	Dimensions (in inches)—see Figure 3												Wt. (lbs.)
			E	F	G	H	J	K	L	M	N	P	Q	R	
0-1	SBR SCR	1-1/2	13-7/8	45-1/4	19-1/4	8	4-3/4	5-1/4	1-1/2	1-1/16	7	18	9-3/8	2-3/4	120
2	SDR	2	13-3/8	52-1/2	20-1/4	8	4-3/4	7-1/2	2-1/2	—	7-3/4	23	8-5/8	3	130

**NOTE:** Illustrations may not represent the actual enclosure; they are intended for dimensional information only.

**Information on Hubs**

Hubs are supplied with each NEMA 4X combination starter as shown in the table below.

Note that hubs are only installed in stainless steel enclosures; they are not installed in polyester enclosures.

**Table 16.158:**

NEMA Size	Quantity	Hub Size
0 & 1	1	0.75"
	2	1.00"
2	1	0.75"
	2	1.50"
3 & 4	1	0.75"
	2	2.50"

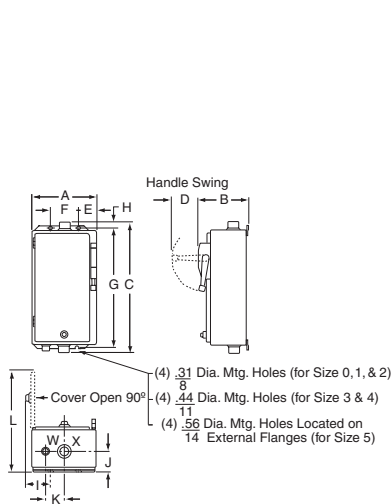


Figure 1:  
NEMA 4 & 4X Stainless Enclosure

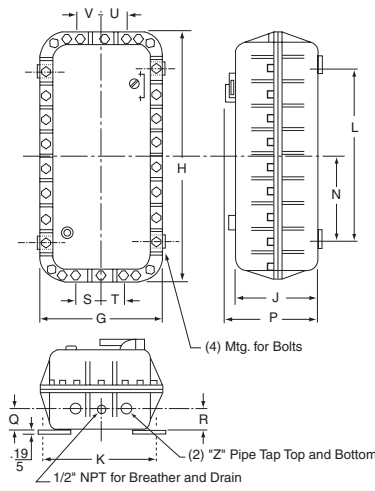


Figure 2:  
NEMA 7 & 9 Bolted Enclosure

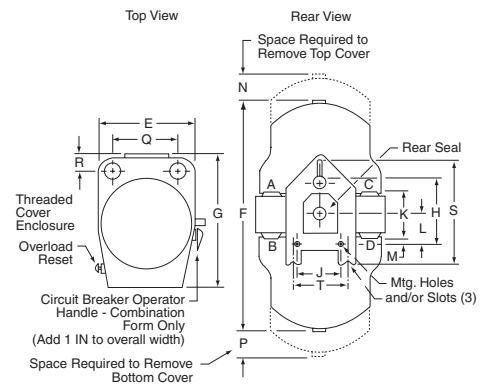


Figure 3:  
NEMA 7 & 9 SPIN TOP Enclosure

**Application Data**

Multispeed motors are available in two basic versions: 1) Consequent pole, and 2) separate winding. A separate winding motor has a winding for each speed while a consequent pole motor has a winding for every two speeds (three speed motors have two windings). The motor connections (and thus the types of controllers) for two speed starters are exemplified by the schematic diagrams shown below. Note that consequent pole two speed controllers involve a 5-pole and a 3-pole starter while separate winding controllers have two 3-pole starters. **The type of motor must be verified prior to ordering.** Field modification of starters to match the motor **may not be possible.**

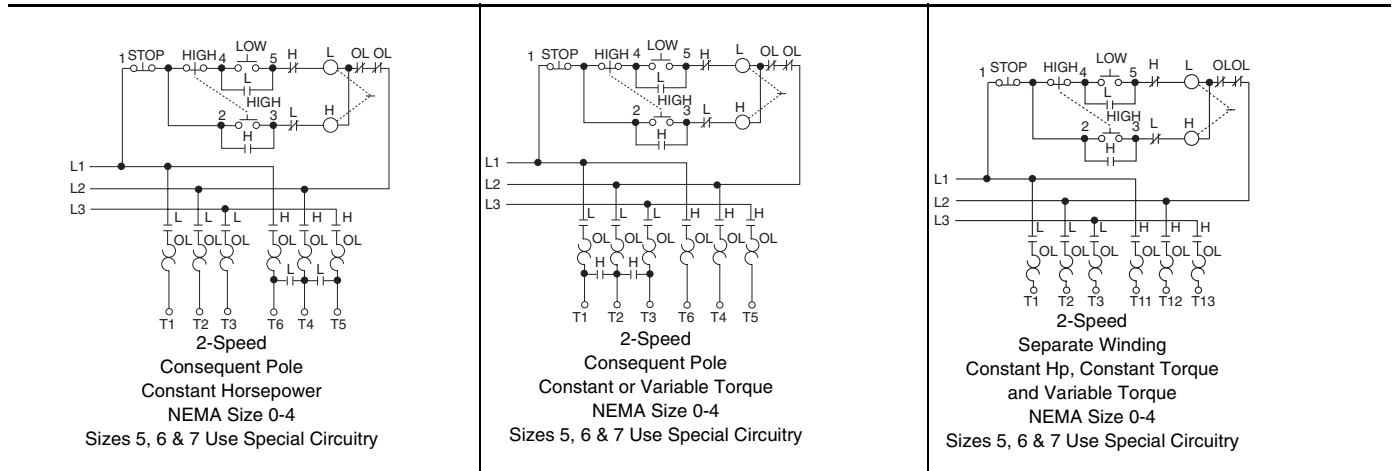
Separate winding motors are usually chosen when flexibility is important, since the speeds of a consequent pole motor are usually limited to a 2/1 ratio; a broad range of speeds can be obtained on a separate winding motor.

Both consequent pole and separate winding motors are available in three types: 1) Constant horsepower, 2) Constant torque, and 3) Variable torque. Typical applications for these different types of motors are shown below. **Note:** For detailed information involving the technical aspects of flexibility of the starters used in the multispeed controllers, see Classes 8702, 8736 and 8810 application data.

**Table 16.159: Typical Applications**

Constant Hp	Constant Torque	Variable Torque
A. Spindles	A. Conveyors	A. Fans
B. Cutting Tools	B. Mills	B. Centrifugal Pumps
1. Lathes	C. Dough Mixers	
2. Saws	D. Reciprocating Pumps	

**Table 16.160: Typical Schematic Diagrams**



**Additional Features—Special Relays for Non-Reversing and Reversing Multispeed Starters**

**General.** Some applications require special relays to control the speed change and/or starting of the motor. The descriptions below cover the four common relay schemes for these applications.

**Form R1 Compelling Relay.** This relay requires the motor to be started at low speed before any higher speed can be selected. This arrangement ensures that the motor will always start the load at low speed. The stop button must be pressed before it is possible to change from a higher to a lower speed. (Not available with **Form R2.**)

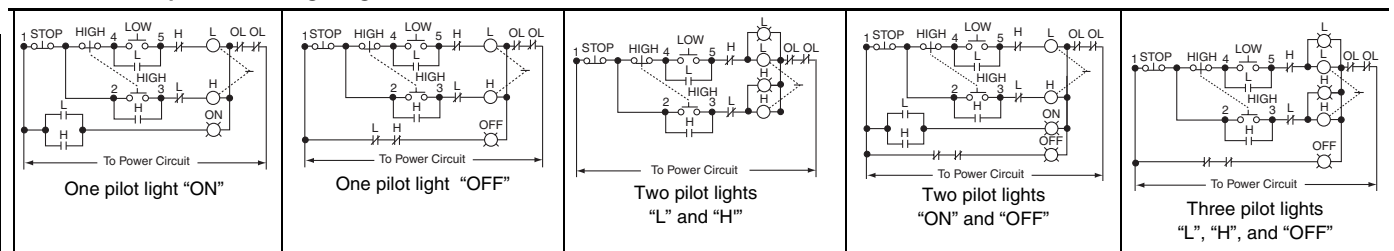
**Form R2 Accelerating Relay/Timer.** With **Form R2** accelerating relays, the ultimate speed is determined by the button which is pressed, but the starter will start the motor at low speed and automatically accelerate it through successive steps until the selected speed is reached. Definite time intervals must elapse between each speed change. Individual adjustable timing relays are provided for each interval. The stop button must be pressed before it is possible to change from a higher to a lower speed. (Not available with **Form R1.**)

**Form R3 Decelerating Relay/Timer.** This is similar in action to **Form R2** accelerating relays, except that they function to prevent immediate transfer from a higher to a lower speed. A definite time interval, preset on the timer, must elapse between each speed change.

**Form R10 Antiplugging Relays/Timers.** This form imposes a time delay when transferring from the forward to the reverse direction or reverse to forward, for **reversing** multispeed starters. This provides up to a 60 second delay in the transfer of the direction of the motor, and can help prevent damage which could result from plugging.

**Overload Relay Modification. Form Y81 (Low Speed)**—For NEMA size 3 and 4, when the low speed full load current does not appear on the appropriate thermal unit selection tables, include **Form Y81 (Low Speed)** (No Charge for this form). This form modifies the overload relay block to accept Type B thermal units. Consult your nearest Square D/Schneider Electric sales office for assistance on thermal unit selection.

**Table 16.161: Special Pilot Lighting**



**16** NEMA/DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS

Multispeed motors are available in two basic versions: 1) Consequent pole, and 2) separate winding. A separate winding motor has a winding for each speed while a consequent pole motor has a winding for every two speeds (three speed motors have two windings).

**3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

Note that the prices shown do not include thermal units. Devices require 6 thermal units (Sizes 0–6). Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

**Table 16.162: Class 8810—Non-Combination Type**

Type of Motor	NEMA Size	Maximum Polyphase Horsepower Ratings						NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure (Stainless Steel) (304) (Sizes 0–5) Sheet Steel (Size 6)		NEMA 4X* Watertight, Dusttight and Corrosion Resistant Enclosure		NEMA 7 and 9 For Hazardous Locations Class I Groups C & D Class II Groups E, F & G		NEMA 12/3RΔ Dusttight and Drip Tight Industrial Use Enclosure		Open Type	
		Constant Horsepower Motors			Constant Torque or Variable Torque Motors			Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price
		200 V	230 V	460–575 V	200 V	230 V	460–575 V												
<b>Single Winding (Consequent Pole) 5-Pole-3-Pole</b>																			
Constant Hp	0	2	2	3	—	—	—	SBG1♦	2199.	SBW1♦	3567.	SBW51♦	4100.	SCR1♦	5895.	SBA1♦	2640.	SBO1♦	2142.
	1	5	5	7-1/2	—	—	—	SCG1♦	2370.	SCW1♦	3708.	SCW51♦	4278.	SCR2♦	5895.	SCA1♦	2811.	SCO1♦	2285.
	2	7-1/2	10	20	—	—	—	SDG1♦	4307.	SDW1♦	5958.	SDW51♦	6557.	SDR1♦	10947.	SDA1♦	4932.	SOD1♦	4050.
	3	20	25	40	—	—	—	SEG1♦	6501.	SEW1♦	8837.	—	—	SER1♦	17553.	SEA1♦	7925.	SEO1♦	6101.
	4	30	40	75	—	—	—	SFG1♦	17352.	SFW1♦	22365.	—	—	—	—	SFA1♦	20172.	SFO1♦	15786.
	5	60	75	150	—	—	—	SGG1♦	34286.	SGW1♦	46008.	—	—	—	—	SGA1♦	46008.	SGO1♦	31197.
6	100	150	300	—	—	—	SHG1♦	77286.	SHW1♦	93308.	—	—	—	—	SHA1♦	83753.	SHO1♦	70799.	
Constant Torque or Variable Torque	0	—	—	—	3	3	5	SBG2♦	2199.	SBW2♦	3567.	SBW52♦	4100.	SCR2♦	5895.	SBA2♦	2640.	SBO2♦	2142.
	1	—	—	—	7-1/2	7-1/2	10	SCG2♦	2370.	SCW2♦	3708.	SCW52♦	4278.	SCR3♦	5895.	SCA2♦	2811.	SCO2♦	2285.
	2	—	—	—	10	15	25	SDG2♦	4307.	SDW2♦	5958.	SDW52♦	6557.	SDR2♦	10947.	SDA2♦	4932.	SOD2♦	4050.
	3	—	—	—	25	30	50	SEG2♦	6501.	SEW2♦	8837.	—	—	SER2♦	17553.	SEA2♦	7925.	SEO2♦	6101.
	4	—	—	—	40	50	100	SFG2♦	17352.	SFW2♦	22365.	—	—	—	—	SFA2♦	20172.	SFO2♦	15786.
	5	—	—	—	75	100	200	SGG2♦	34286.	SGW2♦	46008.	—	—	—	—	SGA2♦	46008.	SGO2♦	31197.
6	—	—	—	150	200	400	SHG2♦	77286.	SHW2♦	93308.	—	—	—	—	SHA2♦	83753.	SHO2♦	70799.	
<b>Two Winding (Separate Winding) 3-Pole-3-Pole</b>																			
Constant Hp	0	2	2	3	—	—	—	SBG3♦	1571.	SBW3♦	2939.	SBW53♦	3384.	—	—	SBA3♦	2015.	SBO3♦	1515.
	1	5	5	7-1/2	—	—	—	SCG3♦	1772.	SCW3♦	3110.	SCW53♦	3567.	SCR3♦	4968.	SCA3♦	2213.	SCO3♦	1686.
	2	7-1/2	10	20	—	—	—	SDG3♦	3167.	SDW3♦	3231.	SDW53♦	3564.	SDR3♦	5264.	SDA3♦	2529.	SOD3♦	1956.
	3	20	25	40	—	—	—	SEG3♦	4962.	SEW3♦	7412.	—	—	SER3♦	12018.	SEA3♦	6386.	SEO3♦	4590.
	4	30	40	75	—	—	—	SFG3♦	12168.	SFW3♦	17181.	—	—	—	—	SFA3♦	14988.	SFO3♦	11429.
	5	60	75	150	—	—	—	SGG3♦	28718.	SGW3♦	40440.	—	—	—	—	SGA3♦	40440.	SGO3♦	26994.
	6	100	150	300	—	—	—	SHG3♦	58755.	SHW3♦	66090.	—	—	—	—	SHA3♦	65195.	SHO3♦	51848.
7	—	225	450	—	—	—	SJG3♦	76032.	—	—	—	—	—	—	SJA3♦	82826.	SJO3♦	69195.	
Constant Torque or Variable Torque	0	—	—	—	3	3	5	SBG4♦	1571.	SBW4♦	2939.	SBW54♦	3384.	—	—	SBA4♦	2015.	SBO4♦	1515.
	1	—	—	—	7-1/2	7-1/2	10	SCG4♦	1772.	SCW4♦	3110.	SCW54♦	3567.	SCR4♦	4968.	SCA4♦	2213.	SCO4♦	1686.
	2	—	—	—	10	15	25	SDG4♦	3167.	SDW4♦	3231.	SDW54♦	3564.	SDR4♦	5264.	SDA4♦	2529.	SOD4♦	1956.
	3	—	—	—	25	30	50	SEG4♦	4962.	SEW4♦	7412.	—	—	SER4♦	12018.	SEA4♦	6386.	SEO4♦	4590.
	4	—	—	—	40	50	100	SFG4♦	12168.	SFW4♦	17181.	—	—	—	—	SFA4♦	14988.	SFO4♦	11429.
	5	—	—	—	75	100	200	SGG4♦	28718.	SGW4♦	40440.	—	—	—	—	SGA4♦	40440.	SGO4♦	26994.
	6	—	—	—	150	200	400	SHG4♦	58755.	SHW4♦	66090.	—	—	—	—	SHA4♦	65195.	SHO4♦	51848.
7	—	—	—	300	600	—	SJG4♦	76032.	—	—	—	—	—	—	SJA4♦	82826.	SJO4♦	69195.	

**Table 16.163: Class 8810—Combination Circuit Breaker Type (Thermal Magnetic Breakers)▲▼**

Type of Motor	NEMA Size	Maximum Polyphase Horsepower Ratings						NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusttight Enclosure (Stainless Steel) (304) (Sizes 0–5) Sheet Steel (Size 6)		NEMA 4X* Watertight, Dusttight and Corrosion Resistant Enclosure		NEMA 7 and 9 For Hazardous Locations Class I Groups C & D Class II Groups E, F & G		NEMA 12/3RΔ Dusttight and Drip Tight Industrial Use Enclosure		Open Type	
		Constant Horsepower Motors			Constant Torque or Variable Torque Motors			Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price
		200 V	230 V	460–575 V	200 V	230 V	460–575 V												
<b>Single Winding (Consequent Pole) 5-Pole-3-Pole</b>																			
Constant Hp	0	2	2	3	—	—	—	CBG1♦	4206.	CBW1♦	6429.	CBW51♦	6962.	CCR1♦	8757.	CBA1♦	4676.	—	—
	1	5	5	7-1/2	—	—	—	CCG1♦	4377.	CCW1♦	6566.	CCW51♦	7140.	CCR2♦	8757.	CCA1♦	4867.	—	—
	2	7-1/2	10	20	—	—	—	CDG1♦	6758.	CDW1♦	10089.	CDW51♦	10089.	CDR1♦	14705.	CDA1♦	7497.	—	—
	3	20	25	40	—	—	—	CEG1♦	9162.	CEW1♦	13836.	—	—	CER1♦	22437.	CEA1♦	10787.	—	—
	4	30	40	75	—	—	—	CFG1♦	22224.	CFW1♦	29460.	—	—	—	—	CFA1♦	26753.	—	—
	5	60	75	150	—	—	—	CGG1♦	43758.	CGW1♦	57816.	—	—	—	—	CGA1♦	56847.	—	—
6	100	150	300	—	—	—	CHG1♦	91229.	CHW1♦	68843.	—	—	—	—	CHA1♦	65841.	—	—	
Constant Torque or Variable Torque	0	—	—	—	3	3	5	CBG2♦	4206.	CBW2♦	6429.	CBW52♦	6962.	CCR2♦	8757.	CBA2♦	4676.	—	—
	1	—	—	—	7-1/2	7-1/2	10	CCG2♦	4377.	CCW2♦	6566.	CCW52♦	7140.	CCR3♦	8757.	CCA2♦	4867.	—	—
	2	—	—	—	10	15	25	CDG2♦	6758.	CDW2♦	10089.	CDW52♦	10089.	CDR2♦	14705.	CDA2♦	7497.	—	—
	3	—	—	—	25	30	50	CEG2♦	9162.	CEW2♦	13836.	—	—	CER2♦	22437.	CEA2♦	10787.	—	—
	4	—	—	—	40	50	100	CFG2♦	22224.	CFW2♦	29460.	—	—	—	—	CFA2♦	26753.	—	—
	5	—	—	—	75	100	200	CGG2♦	43758.	CGW2♦	57816.	—	—	—	—	CGA2♦	56847.	—	—
6	—	—	—	150	200	400	CHG2♦	91229.	CHW2♦	68843.	—	—	—	—	CHA2♦	65841.	—	—	
<b>Two Winding (Separate Winding) 3-Pole-3-Pole</b>																			
Constant Hp	0	2	2	3	—	—	—	CBG3♦	3581.	CBW3♦	5801.	CBW53♦	6251.	—	—	CBA3♦	4050.	—	—
	1	5	5	7-1/2	—	—	—	CCG3♦	3780.	CCW3♦	5972.	CCW53♦	6429.	CCR3♦	7830.	CCA3♦	4248.	—	—
	2	7-1/2	10	20	—	—	—	CDG3♦	5616.	CDW3♦	8379.	CDW53♦	8879.	CDR3♦	11429.	CDA3♦	6357.	—	—
	3	20	25	40	—	—	—	CEG3♦	7626.	CEW3♦	12297.	—	—	CER3♦	16905.	CEA3♦	9248.	—	—
	4	30	40	75	—	—	—	CFG3♦	17040.	CFW3♦	16182.	—	—	—	—	CFA3♦	14379.	—	—
	5	60	75	150	—	—	—	CGG3♦	38190.	CGW3♦	52248.	—	—	—	—	CGA3♦	51278.	—	—
	6	100	150	300	—	—	—	CHG3♦	72629.	CHW3♦	84306.	—	—	—	—	CHA3♦	80199.	—	—
7	—	225	450	—	—	—	CJG3♦	95358.	—	—	—	—	—	—	CJA3♦	103217.	—	—	
Constant Torque or Variable Torque	0	—	—	—	3	3	5	CBG4♦	3581.	CBW4♦	5801.	CBW54♦	6251.	—	—	CBA4♦	4050.	—	—
	1	—	—	—	7-1/2	7-1/2	10	CCG4♦	3780.	CCW4♦	5972.	CCW54♦	6429.	CCR4♦	7830.	CCA4♦	4248.	—	—
	2	—	—	—	10	15	25	CDG4♦	5616.	CDW4♦	8379.	CDW54♦	8879.	CDR4♦	11429.	CDA4♦	6357.	—	—
	3	—	—	—	25	30	50	CEG4♦	7626.	CEW4♦	12297.	—	—	CER4♦	16905.	CEA4♦	9248.	—	—
	4	—	—	—	40	50	100	CFG4♦	17040.	CFW4♦	16182.	—	—	—	—	CFA4♦	14379.	—	—
	5	—	—	—	75	100	200	CGG4♦	38190.	CGW4♦	52248.	—	—	—	—	CGA4♦	51278.	—	—
	6	—	—	—	150	200	400	CHG4♦	72629.	CHW4♦	84306.	—	—	—	—	CHA4♦	80199.	—	—
7	—	—	—	300	600	—	CJG4♦	95358.	—	—	—	—	—	—	CJA4♦	103217.	—	—	

- ▲ The NEC 1300% maximum setting for instantaneous trip circuit breakers may be inadequate for multispeed motors.
- ◆ Prices and type numbers shown for three phase, separate-winding motor starters apply only when motor windings are Wye connected. When motor windings are connected open delta, use the prices shown for three phase consequent pole motor starters.
- ♦ Voltage code must be specified to order this product. Refer to standard voltage codes shown on page 16-60.
- ★ NEMA 4X hubs are included with each starter at no additional cost.
- ▼ Not available in Mag-Gard versions.
- ▲ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service entrance rated applications. See page 16-104 for more information.

**3-Pole Polyphase—600 Vac Maximum—50–60 Hz**

Note that the prices shown do not include thermal units.

Devices require 6 thermal units (Sizes 0–6). Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

**Table 16.164: Class 8810—Combination Disconnect Switch Type (Class H Fuse Clips)**

Type of Motor	NEMA Size	Maximum Polyphase Horsepower Ratings						Fuse Clip Size Amps	NEMA 1 General Purpose Enclosure		NEMA 4 & 4X Watertight and Dusstight Enclosure Stainless Steel (304) (Sizes 0–5) Sheet Steel (Size 6 not 4X)		NEMA 12/3R+ Dusstight and Driptight Industrial Use Enclosure	
		Constant Horsepower Motors			Constant Torque or Variable Torque Motors				Type	\$ Price	Type	\$ Price	Type	\$ Price
		200 V	230 V	460–575 V	200 V	230 V	460–575 V							
Constant Horsepower	0	2	2	3	—	—	—	None 30♦	UBG1■ 3537.00	UBW1■ 5759.00	UBA1■ 4008.00	DBG1■ 3765.00	DBW1■ 5988.00	DBA1■ 4235.00
	1	5	5	7-1/2	—	—	—	None 30♦	UCG1■ 3708.00	UCW1■ 5903.00	UCA1■ 4179.00	DCG1■ 3936.00	DCW1■ 6129.00	DCA1■ 4406.00
	2	7-1/2	10	20	—	—	—	None 60	UDG1■ 6015.00	UDW1■ 8751.00	UDA1■ 6758.00	DDG1■ 6129.00	DDW1■ 8864.00	DDA1■ 6870.00
	3	20	25	40	—	—	—	None 100	UEG1■ 8666.00	UEW1■ 13337.00	UEA1■ 10287.00	DEG1■ 8837.00	DEW1■ 13508.00	DEA1■ 10458.00
	4	30	40	75	—	—	—	None 200	UFG1■ 19517.00	UFW1■ 27693.00	UFA1■ 24987.00	DFG1■ 20970.00	DFW1■ 25964.00	DFA1■ 22500.00
	5	60	75	150	—	—	—	None 400	UGG1■ 39644.00	UGW1■ 35799.00	UGA1■ 34622.00	DGG1■ 40154.00	DGW1■ 54212.00	DGA1■ 52446.00
	6	100	150	300	—	—	—	None 600	UHG1■ 87789.00	UHW1■ 99824.00	UHA1■ 95324.00	DHG1■ 91085.00	DHW1■ 103121.00	DHA1■ 98621.00
Constant Torque or Variable Torque	0	—	—	—	3	3	5	None 30♦	UBG2■ 3537.00	UBW2■ 5759.00	UBA2■ 4008.00	DBG2■ 3765.00	DBW2■ 5988.00	DBA2■ 4235.00
	1	—	—	—	7-1/2	7-1/2	10	None 30♦	UCG2■ 3708.00	UCW2■ 5903.00	UCA2■ 4179.00	DCG2■ 3936.00	DCW2■ 6129.00	DCA2■ 4406.00
	2	—	—	—	10	15	25	None 60	UDG2■ 6015.00	UDW2■ 8751.00	UDA2■ 6758.00	DDG2■ 6129.00	DDW2■ 8864.00	DDA2■ 6870.00
	3	—	—	—	25	30	50	None 100	UEG2■ 8666.00	UEW2■ 13337.00	UEA2■ 10287.00	DEG2■ 8837.00	DEW2■ 13508.00	DEA2■ 10458.00
	4	—	—	—	40	50	100	None 200	UFG2■ 19517.00	UFW2■ 27693.00	UFA2■ 24987.00	DFG2■ 20970.00	DFW2■ 25964.00	DFA2■ 22500.00
	5	—	—	—	75	100	200	None 400	UGG2■ 39644.00	UGW2■ 35799.00	UGA2■ 34622.00	DGG2■ 40154.00	DGW2■ 54212.00	DGA2■ 52446.00
	6	—	—	—	150	200	400	None 600	UHG2■ 87789.00	UHW2■ 99824.00	UHA2■ 95324.00	DHG2■ 91085.00	DHW2■ 103121.00	DHA2■ 98621.00
Constant Horsepower ▲	0	2	2	3	—	—	—	None 30♦	UBG3■ 2910.00	UBW3■ 5133.00	UBA3■ 3380.00	DBG3■ 3140.00	DBW3■ 5360.00	DBA3■ 3609.00
	1	5	5	7-1/2	—	—	—	None 30♦	UCG3■ 3110.00	UCW3■ 5304.00	UCA3■ 3581.00	DCG3■ 3338.00	DCW3■ 5531.00	DCA3■ 3807.00
	2	7-1/2	10	20	—	—	—	None 60	UDG3■ 4877.00	UDW3■ 7640.00	UDA3■ 5616.00	DDG3■ 4991.00	DDW3■ 7754.00	DDA3■ 5732.00
	3	20	25	40	—	—	—	None 100	UEG3■ 7127.00	UEW3■ 11798.00	UEA3■ 8751.00	DEG3■ 7866.00	DEW3■ 11969.00	DEA3■ 9491.00
	4	30	40	75	—	—	—	None 200	UFG3■ 15159.00	UFW3■ 22509.00	UFA3■ 19803.00	DFG3■ 17324.00	DFW3■ 23021.00	DFA3■ 21852.00
	5	60	75	150	—	—	—	None 400	UGG3■ 34073.00	UGW3■ 48131.00	UGA3■ 50439.00	DGG3■ 34586.00	DGW3■ 48644.00	DGA3■ 50952.00
	6	100	150	300	—	—	—	None 600	UHG3■ 69188.00	UHW3■ 80868.00	UHA3■ 76766.00	DHG3■ 72485.00	DHW3■ 84164.00	DHA3■ 80063.00
Constant Torque or Variable Torque ▲	0	—	—	—	3	3	5	None 30♦	UBG4■ 2910.00	UBW4■ 5133.00	UBA4■ 3380.00	DBG4■ 3140.00	DBW4■ 5360.00	DBA4■ 3609.00
	1	—	—	—	7-1/2	7-1/2	10	None 30♦	UCG4■ 3110.00	UCW4■ 5304.00	UCA4■ 3581.00	DCG4■ 3338.00	DCW4■ 5531.00	DCA4■ 3807.00
	2	—	—	—	10	15	25	None 60	UDG4■ 4877.00	UDW4■ 7640.00	UDA4■ 5616.00	DDG4■ 4991.00	DDW4■ 7754.00	DDA4■ 5732.00
	3	—	—	—	25	30	50	None 100	UEG4■ 7127.00	UEW4■ 11798.00	UEA4■ 8751.00	DEG4■ 7866.00	DEW4■ 11969.00	DEA4■ 9491.00
	4	—	—	—	40	50	100	None 200	UFG4■ 15159.00	UFW4■ 22509.00	UFA4■ 19803.00	DFG4■ 17324.00	DFW4■ 23021.00	DFA4■ 21852.00
	5	—	—	—	75	100	200	None 400	UGG4■ 34073.00	UGW4■ 48131.00	UGA4■ 50439.00	DGG4■ 34586.00	DGW4■ 48644.00	DGA4■ 50952.00
	6	—	—	—	150	200	400	None 600	UHG4■ 69188.00	UHW4■ 80868.00	UHA4■ 76766.00	DHG4■ 72485.00	DHW4■ 84164.00	DHA4■ 80063.00

- ▲ Prices and type numbers shown for three phase, separate-winding motor starters apply only when motor windings are Wye connected. When motor windings are connected open delta use the prices shown for three phase consequent pole motor starters.
- Voltage code must be specified to order this product. Refer to standard voltage codes shown below.
- ♦ When separate control is specified, use V8x (see page 16-110) voltage codes to specify motor and control voltages.
- ★ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service entrance rated applications. See page 16-104 for more information.

Dimensions . . . . . page 16-62  
Factory Modifications (Forms) . . . . . page 16-109  
Replacement Parts (Class 9998). . . . . page 16-114  
Type S Accessories (Class 9999) . . . . . page 16-117

For How to Order Information, see page 16-12.

**Table 16.165: Coil Voltage Codes**

Voltage	Code	\$ Price Adder
24Δ▼	—	V01 No Charge
120Δ	110	V02 No Charge
208	—	V08 No Charge
240	220	V03 No Charge
—	380	V05 No Charge
480	440	V06 No Charge
600	550	V07 No Charge
Specify	Specify	V99 35.60

- ▼ 24 V coils are not available on Sizes 4–7. On Sizes 00–3, where 24 V coils are available, Form S (separate control) must be specified (i.e., order as 8810UBG1V01S).
  - Δ These voltage codes must include Form S (supplied at no charge) (i.e., order as 8810UCG1V02S).
- Note: For voltage codes used with control transformers, see page 16-110. Form S (separate control) is used when a separate source of power is available for the control (coil) voltage. Form S is supplied at no charge.

**3-Pole Polyphase—600 Vac Maximum—50-60 Hz**

Note that the prices shown do not include thermal units. Devices require 6 thermal units (Sizes 0-6). Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

**Table 16.166: Class 8810—Reversing**

Type of Motor	NEMA Size	Maximum Polyphase Ratings						Reversing In One Speed Only (Specify High or Low) ■						Reversing In Both Speeds					
		Constant Horsepower Motors			Constant Torque or Variable Torque Motors			NEMA Type 1 General Purpose Enclosure		NEMA 12 Dusttight and Driptight Industrial Use Enclosure		Open Type		NEMA Type 1 General Purpose Enclosure		NEMA 12/3RΔ Dusttight and Driptight Industrial Use Enclosure		Open Type	
		200 V	230 V	460-575 V	200 V	230 V	460-575 V	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price
Single Winding Constant Horsepower	0	2	2	3	—	—	—	SBG21♦	3936.	SBA21♦	5261.	SBO21♦	3851.	SBG31♦	4563.	SBA31♦	6330.	SBO31♦	4449.
	1	5	5	7-1/2	—	—	—	SCG21♦	4248.	SCA21♦	5574.	SCO21♦	4121.	SCG31♦	4926.	SCA31♦	6728.	SCO31♦	4791.
	2	7-1/2	10	20	—	—	—	SDG21♦	6984.	SDA21♦	8522.	SDO21♦	6501.	SDG31♦	8522.	SDA31♦	10517.	SDO31♦	8010.
	3	20	25	40	—	—	—	SEG21♦	10260.	SEA21♦	13892.	SEO21♦	9662.	SEG31♦	13508.	SEA31♦	17139.	SEO31♦	11997.
	4	30	40	75	—	—	—	SFG21♦	20457.	SFA21♦	28290.	SFO21♦	19718.	SFG31♦	26810.	SFA31♦	33390.	SFO31♦	24930.
5	60	75	150	—	—	—	SGG21♦	46449.	SGA21♦	58172.	SGO21♦	42164.	SGG31♦	56946.	SGA31♦	68679.	SGO31♦	52659.	

**3-Pole Polyphase—600 Vac Maximum—50-60 Hz**

Note that the prices shown do not include thermal units. Devices require 6 thermal units (Sizes 0-6). Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

**Table 16.167: Class 8810—Non-Reversing, Vertically Arranged, Open Type, Two-Speed Starters**

Type of Motor	NEMA Size	Maximum Hp Ratings				For Consequent Pole Motors		For Separate Winding Motors	
		200 V	230 V	380 V	460-575 V	Type	\$ Price	Type	\$ Price
Constant Horsepower	0	2	2	3	3	SBO11♦	2142.00	SBO13♦	1515.00
	1	5	5	7-1/2	7-1/2	SCO11♦	2282.00	SCO13♦	1686.00
	2	7-1/2	10	20	20	SDO11♦	4050.00	SDO13♦	2939.00
	3	20	25	40	40	SEO11♦	6101.00	SEO13♦	4563.00
	4	30	40	60	75	SFO11♦	15786.00	SFO13♦	11429.00
Constant Torque or Variable Torque	0	3	3	5	5	SBO12♦	2142.00	SBO14♦	1515.00
	1	7-1/2	7-1/2	10	10	SCO12♦	2282.00	SCO14♦	1686.00
	2	10	15	25	25	SDO12♦	4050.00	SDO14♦	2939.00
	3	25	30	50	50	SEO12♦	6101.00	SEO14♦	4563.00
	4	40	50	75	100	SFO12♦	15786.00	SFO14♦	11429.00

- ▲ Prices and type numbers shown for three phase, separate winding motor starters apply only when motor windings are Wye connected. When motor windings are connected open delta use the prices shown for consequent pole motor starters.
- Specify the speed which requires reversing by adding an L (low) or an H (high) after the type number, e.g., a Class 8810 Type SBG21 with reversing in low only would be ordered as a Class 8810 Type SBG21L.
- ♦ Voltage codes must be specified to order this product. Refer to standard voltage codes listed below.

**Table 16.168: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24▼★	—	V01	No Charge
120▼	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
—	380	V05	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

- ★ 24 V coils are not available on Sizes 4-7. On Sizes 00-3, where 24 V coils are available, Form S (separate control) must be specified (i.e., order as 8810SCG21V01S).
  - ▼ These voltage codes must include Form S (supplied at no charge) (i.e., order as 8810SDG21V02S).
  - Δ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service entrance rated applications. See page 16-104 for more information.
- Note: For voltage codes used with control transformers, see page 16-110.  
Form S (separate control) is used when a separate source of power is available for the control (coil) voltage. Form S is supplied at no charge.

Dimensions . . . . . page 16-62  
Factory Modifications (Forms) . . . . . page 16-109  
Replacement Parts (Class 9998) . . . . . page 16-114  
Type S Accessories (Class 9999) . . . . . page 16-117

For How to Order Information, see page 16-12.

**16 NEMA/DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS**

Table 16.169: NEMA 1 Enclosure (see Figure 1)

Type	A	B	C	D	E	F	G	H	
SBG and SCG	11-7/8	11-7/8	7-17/32	9-3/4	1-1/16	1-1/16	9-3/4	5/16	
SDG	14-7/8	14-1/8	7-21/32	12-3/4	1-1/16	1-1/16	12	5/16	
SEG3 & 4 and SFG3 & 4	18-5/32	29-5/32	9-15/64	15-1/2	1-11/32	1-11/32	26-1/2	7/16	
SEG1 & 2 and SFG1 & 2	22-5/32	39-5/32	10-15/64	19-1/2	1-11/32	1-11/32	36-1/2	7/16	
SGG1, 2, 3, 4	20-7/32	65-3/4	16-29/64	31	2-1/8	2-1/8	42	9/16	
SHG1, 2, 3, 4	36-7/32	62-7/32	19-15/32	Floor Mount					
SJG3 & 4	Consult Square D								

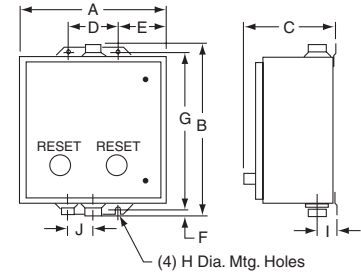


Figure 1:  
NEMA 1, 4, and 12 Enclosures

Table 16.170: NEMA 4 Enclosure (see Figure 1)

Type	A	B	C	D	E	F	G	H	I	J
SBW and SCW	12-5/8	14-11/16	7-13/16	4-1/4	4-3/16	19/32	13-1/2	5/16	1-21/32	2-5/16
SDW	14-7/8	15-3/4	8-1/4	4-1/4	5-5/16	3/8	15	5/16	2-1/32	2-5/8
SEW3 & 4 and SFW3 & 4	18-5/32	32-7/32	8-19/64	12	3-5/64	55/64	30-1/2	7/16	2-37/64	3-3/16
SEW1 & 2 and SFW1 & 2	22-5/32	42-7/32	9-49/64	16	3-5/64	55/64	40-1/2	7/16	2-21/64	2-57/64
SGW1, 2, 3, 4	35-7/32	49-7/32	12-1/8	27	4-3/32	39/64	48	9/16	2-63/64	3-1/2

Table 16.171: NEMA 12/3R Enclosure (see Figure 1)

Type	A	B	C	D	E	F	G	H	
SBA and SCA	11-7/8	13-1/2	7-3/4	4-1/4	3-13/16	3/8	12-3/4	5/16	
SDA	14-7/8	15-3/4	7-7/8	4-1/4	5-5/16	3/8	15	5/16	
SEA3 & 4 and SFA3 & 4	18-5/32	31-1/2	9-19/32	16	3-3/32	1/2	30-1/2	7/16	
SEA1 & 2 and SFA1 & 2	22-5/32	41-1/2	10-19/32	16	3-3/32	1/2	40-1/2	7/16	
SGA1, 2, 3, 4	35-7/32	49	13-7/64	27	4-7/64	1/2	48	9/16	
SHA1, 2, 3, 4	36-7/32	62-7/32	19-15/32	Floor Mount					
SJA3 & 4	Consult Square D								

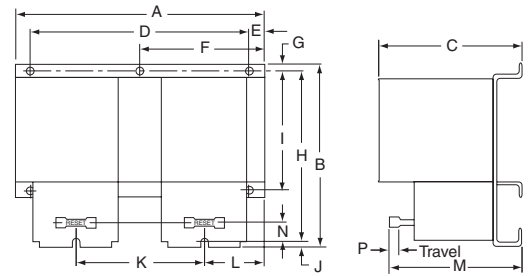


Figure 2:  
Class 8810 NEMA Sizes 0, 1, and 2

Table 16.172: Non-Reversing, Open Type

Fig. No.	NEMA Size	Type	Mtg. Holes	A	B	C	D	E	F	G	H	I	J	K	L	M	N
2	0 and 1	SBO1, 2 SCO1, 2	4	9-5/8	7-11/32	5-5/16	8	5/8	—	7/32	6-29/32	—	7/32	4-3/4	2-1/4	5-1/16	19/32
		SBO3, 4 SCO3, 4	3	7-1/8	6-29/32	5-5/16	—	—	3-13/32	15/32	6-7/32	—	7/32	3-9/16	1-5/8	5-1/16	19/32
	2	SDO1, 2	6	12-1/32	8-17/32	6-1/32	10-3/8	1/2	—	1/4	8-1/8	6-1/4	5/32	5-3/4	2-13/16	5-5/32	25/32
		SDO3, 4	3	9	8-1/16	6-1/32	—	—	4-1/2	3/8	7-1/2	—	3/16	4-11/32	2-5/32	5-5/32	25/32
3	3	SEO1, 2	4	18	14-7/16	17	12-1/4	1-1/2	11/16	1/2	6-7/16	7-3/8	1-21/32	2-5/32	—	—	—
		SEO3, 4	4	12-3/4	12-9/32	11-3/4	10-3/4	1-1/32	1/2	1/2	2-1/2	6-3/4	1-5/32	1-5/32	—	—	—
	4	SFO1, 2	4	18-5/8	15-19/32	17	12-1/4	1-27/32	1-1/2	1-1/8	6-7/16	7-21/32	1-21/32	1-21/32	—	—	—
SFO3, 4		4	14-1/4	14-19/32	13-1/4	12-1/4	1-27/32	1/2	1/2	2-15/16	7-3/8	1-21/32	1-21/32	—	—	—	
4	5	SGO1, 2▲	4	29-9/32	20-9/32	9-3/8	5-13/32	1-9/32	28	5/8	12-9/16	19	5/8	22-17/32	1/2	2-13/32	6-5/8
		SGO3, 4	4	19-9/32	20-9/32	9-3/8	5-13/32	1-9/32	18	5/8	2-5/8	19	5/8	12-17/32	1/2	2-13/32	6-5/8
4	6■	SHO1, 2▲	4	29-17/32	22-7/16	9-17/32	6-31/32	3-13/16	28	3/4	11-5/8	21-3/16	5/8	9-7/8	9/16	3-1/32	9-5/16
		SHO3, 4	4	19-17/32	22-7/16	9-17/32	6-31/32	3-13/16	18	3/4	21-3/16	1-11/16	5/8	9-7/8	9/16	3-1/32	9-5/16
—	7♦	SJO3, 4		Consult Square D/Schneider Electric CIC at 1-888-SquareD (1-888-778-2733).													

- ▲ Consequent pole type starters consist of two 3-pole starters as pictured in Figure 4 and an additional 2-pole shorting contactor (not shown), all on a common base-plate, horizontally mounted.
- Current transformers used with Size 1 overload relay blocks.
- ♦ Solid state overloads and special current transformers.

**NOTE:** Illustrations may not represent the actual enclosure; they are intended for dimensional information only. Dimensions are shown in inches.

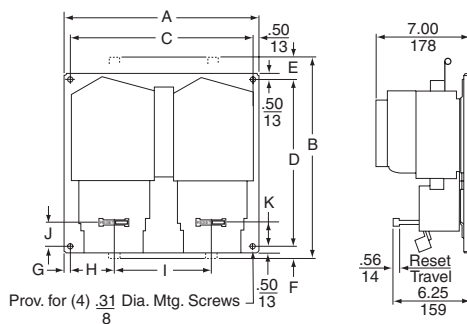


Figure 3:  
Class 8810 NEMA Sizes 3 and 4

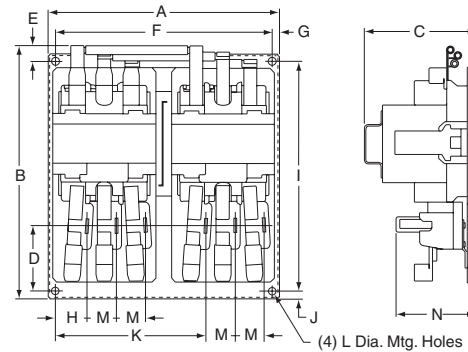


Figure 4:  
Class 8810 NEMA Size 5 and 6

**Approximate Dimensions**

**Disconnect Switch or Circuit Breaker Type**

**Table 16.173: NEMA 1 Enclosure Figure 1**

NEMA Size	Class	Type	Dimensions (in inches)—see Figure 1															Top & Bottom		Sides
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	W	X	Y
0-1	8810	CBG UBG DBG CCG UCG DCG	13-7/8	23-1/8	8-1/4	10-5/8	21	19-9/32	1-7/8	1-7/8	3-3/4	2-5/16	1-1/16	3-19/64	2-3/16	1-1/4	7/8	1/2-3/4-1	1/2-3/4-1	1/2
2	8810	CDG UDG DDG	15-5/32	28-29/32	9-9/16	11-5/8	26-1/4	21-13/16	2-3/16	2	4	2-5/8	1-21/64	3-19/64	2-7/32	1-17/64	29/32	1-1-1/4	1/2-3/4	1/2
3▲	8810	CEG UEG DEG	22-1/8	42-5/8	10-1/8	18-5/8	40	29-1/8	2-11/32	2-1/8	4-1/4	2-5/8	1-1/4	3-19/64	2-1/4	7/8	3/4	1-1-1/4-1-1/2	1/2-3/4	1/2
4▲	8810	CFG UFG DFG	22-1/8	50-1/8	10-3/16	18-5/8	47-1/2	29-3/16	2-29/32	2-11/16	5-3/8	2-5/8	1-5/16	3-19/64	2-1/4	7/8	3/4	2-1/2	1/2-3/4	1/2

**Table 16.174: NEMA 4 Enclosure Figure 2**

NEMA Size	Class	Type	Dimensions (in inches)—see Figure 2													Bottom	Top & Bottom
			A	B	C	D	E	F	G	H	I	J	K	L	W	X	
0-1	8810	CBW UBW DBW CCW UCW DCW	13-7/8	8-21/64	25-3/16	3-19/64	2-9/16	8-3/4	24	19/32	3-61/64	1-5/8	2-5/16	18-17/32	3/4 Hub	1 Hub	
2	8810	CDW UDW DDW	15-1/8	9-37/64	30-15/16	3-19/64	2-9/16	10	29-3/4	19/32	3-61/64	2	2-5/8	21-11/32	3/4 Hub	1-1/2 Hub	
3▲	8810	CEW UEW DEW	22-1/8	10-1/8	46-1/4	3-19/64	3	16	44	5/8	3-15/16	1-3/4	2-5/8	29-1/8	3/4 Hub	2 Hub	
4▲	8810	CFW UFW DFW	22-1/8	10-3/16	53-3/4	3-19/64	3	16	51-1/2	5/8	3-15/16	2-9/32	3-3/16	29-3/16	3/4 Hub	2-1/2 Hub	

**Table 16.175: NEMA 12 Enclosure Figure 3**

NEMA Size	Class	Type	Dimensions (in inches)—see Figure 3									
			A	B	C	D	E	F	G	H	I	J
0-1	8810	CBA UBA DBA CCA UCA DCA	13-7/8	10-3/32	24-3/4	3-19/64	2-9/16	8-3/4	24	3/8	3-61/64	20-9/32
2	8810	CDA UDA DDA	15-5/32	10-31/32	31-1/4	3-19/64	3-5/64	9	30-1/4	1/2	4-53/64	23-7/16
3▲	8810	CEA UEA DEA	22-1/8	10-1/8	45	3-19/64	3	16	44	5/8	3-15/16	29-1/8
4▲	8810	CFA UFA DFA	22-1/8	10-3/16	52-1/2	3-19/64	3	16	51-1/2	5/8	3-15/16	29-3/16

▲ Size 3 (5-Pole-3-Pole) with FA, KA breaker or 100 A disconnect switch.  
Size 4 (5-Pole-3-Pole) with KA breaker or 200 A disconnect switch. Size 3 & 4 (3-Pole-3-Pole) enclosures may be smaller.  
Consult Square D/Schneider Electric CIC at 1-888-SquareD (1-888-778-2733) for additional dimensional information.

**NOTE:** Illustrations may not represent the actual enclosure; they are intended for dimensional information only.

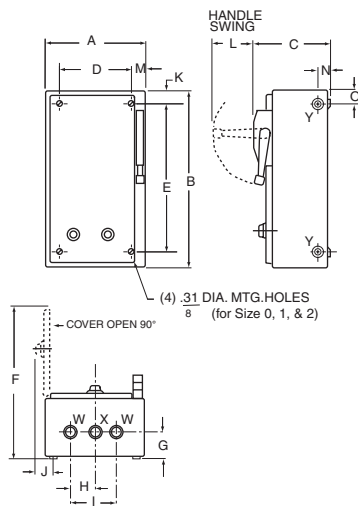


Figure 1:  
NEMA 1 Enclosure

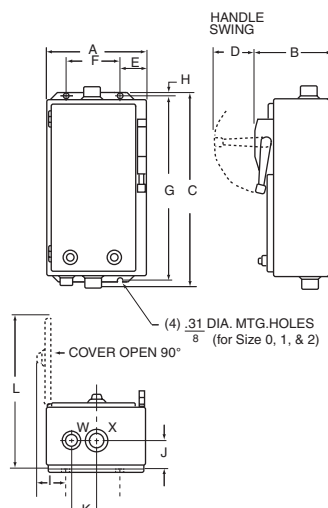


Figure 2:  
NEMA 4 Enclosure

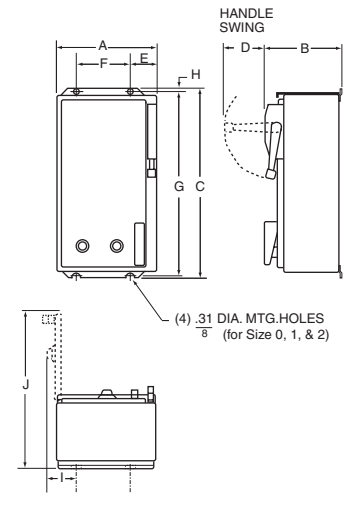


Figure 3:  
NEMA 12 Enclosure

**Multipole Lighting Contactors, Type L & LX**

**Features**

- 30 A fluorescent lighting rating, 20 A tungsten lighting rating
- Electrically and mechanically held
- 2 through 12-pole versions
- Field-convertible contacts with N.O. and N.C. indicators (8 N.C. contacts maximum\*)
- Silver-Cadmium-Oxide double break contacts



Type L



Type LX



File E78427  
CCN NRNT



File LR60905  
Class 3211 07

**Table 16.176: Multipole Lighting Contactors (50–60 Hz)**

Contact Ampere Ratings	No. of Poles	NEMA 1 General Purpose Enclosure		NEMA 1 Flush Mounting General Purpose Enclosure with Plaster Adjustment		NEMA 3R Rainproof Enclosure ▼		NEMA 4 & 4X Watertight, Dusttight and Corrosion-Resistant Glass-Polyester Enclosure		NEMA 4 & 4X Watertight, Dusttight Brushed Stainless Steel Enclosure		NEMA 12/3R▲ Dusttight and Driptight Industrial Use Enclosure		Open Type ■	
		Type	\$ Price▲	Type	\$ Price▲	Type	\$ Price▲	Type	\$ Price▲	Type	\$ Price▲	Type	\$ Price▲	Type	\$ Price▲
<b>Electrically Held★</b>															
30 ♦	2	LG20 ♦	446.00	LF20 ♦	689.00	LH20 ♦	860.00	LWW20 ♦	1146.00	LW20 ♦	917.00	LA20 ♦	860.00	LO20 ♦	404.00
	3	LG30 ♦	489.00	LF30 ♦	732.00	LH30 ♦	903.00	LWW30 ♦	1197.00	LW30 ♦	959.00	LA30 ♦	903.00	LO30 ♦	446.00
	4	LG40 ♦	617.00	LF40 ♦	860.00	LH40 ♦	1031.00	LWW40 ♦	1358.00	LW40 ♦	1088.00	LA40 ♦	1031.00	LO40 ♦	575.00
	6	LG60 ♦	890.00	LF60 ♦	1031.00	LH60 ♦	1202.00	LWW60 ♦	1571.00	LW60 ♦	1259.00	LA60 ♦	1202.00	LO60 ♦	746.00
	8	LG80 ♦	1160.00	LF80 ♦	1301.00	LH80 ♦	1472.00	LWW80 ♦	1908.00	LW80 ♦	1529.00	LA80 ♦	1472.00	LO80 ♦	1017.00
	10	LG1000 ♦	1331.00	LF1000 ♦	1472.00	LH1000 ♦	1643.00	LWW1000 ♦	2123.00	LW1000 ♦	1700.00	LA1000 ♦	1643.00	LO1000 ♦	1188.00
	12	LG1200 ♦	1529.00	LF1200 ♦	1673.00	LH1200 ♦	1844.00	LWW1200 ♦	2372.00	LW1200 ♦	1899.00	LA1200 ♦	1844.00	LO1200 ♦	1386.00
<b>Mechanically Held ▼</b>															
30 ♦	2	LXG20 ♦	702.00	LXF20 ♦	975.00	—	—	LXWW20 ♦	1728.00	LXW20 ♦	1728.00	LXA20 ♦	1017.00	LXO20 ♦	590.00
	3	LXG30 ♦	738.00	LXF30 ♦	1008.00	—	—	LXWW30 ♦	1764.00	LXW30 ♦	1764.00	LXA30 ♦	1052.00	LXO30 ♦	624.00
	4	LXG40 ♦	761.00	LXF40 ♦	1031.00	—	—	LXWW40 ♦	1785.00	LXW40 ♦	1785.00	LXA40 ♦	1074.00	LXO40 ♦	647.00
	6	LXG60 ♦	1160.00	LXF60 ♦	1430.00	—	—	LXWW60 ♦	2186.00	LXW60 ♦	2186.00	LXA60 ♦	1472.00	LXO60 ♦	1044.00
	8	LXG80 ♦	1287.00	LXF80 ♦	1557.00	—	—	LXWW80 ♦	2313.00	LXW80 ♦	2313.00	LXA80 ♦	1601.00	LXO80 ♦	1173.00
	10	LXG1000 ♦	1430.00	LXF1000 ♦	1700.00	—	—	LXWW1000 ♦	2456.00	LXW1000 ♦	2456.00	LXA1000 ♦	1742.00	LXO1000 ♦	1314.00
	12	LXG1200 ♦	1580.00	LXF1200 ♦	1850.00	—	—	LXWW1200 ♦	2604.00	LXW1200 ♦	2604.00	LXA1200 ♦	1893.00	LXO1200 ♦	1466.00

- ▲ Price does not include holding circuit contact.
- Separate enclosures are available for these devices. It may be possible to improve delivery by ordering an open type contactor and separate Class 9991 enclosure.
- ♦ Coil voltage code must be specified to order this product. Refer to standard voltage codes listed below. All lighting contactors are provided with separate control as standard.
- ★ Factory conversion of N.O. contacts to N.C., order by catalog number and add \$42.80 to price (i.e. for 6 N.O. and 2 N.C. poles on an 8 pole contactor, order as 8903LG62V02). Versions are available from the factory with up to 12 N.C. poles electrically held or 2, 4, 6 and 12 N.C. poles mechanically held. For field conversion, there is a maximum of eight N.C. poles for Type L and a maximum of six N.C. poles for Type LX contactors.
- ▼ Cannot support control transformer forms.
- ▲ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service entrance rated applications. See page 16-104 for more information.

**Table 16.177: Power Poles for Type L or LX -**

The kits below are used to add 30 Ampere power poles to existing Type L contactors when additional circuits are required. Type L lighting contactors are supplied with mounting brackets, so that adder poles may be mounted from the front by a single captive screw. Adder poles are supplied standard with N.O. contacts which are convertible to N.C.

Power Pole Adder Kit □		Can Only Be Added to Contactor Type ◇
Class 8903 Type	\$ Price	
<b>Single Pole</b>		
L1L	86.00	LO60
L1R	86.00	LXO60
<b>Double Pole</b>		
L3L	171.00	LO80
L3R	171.00	LXO80
		LO1000
		LXO1000



Type L3L

Type LO80

Type L3R

- 8903LO (electrically held) devices can accommodate 10 or 12 N.C. contacts use only 120 V 60Hz coils.
- ◇ LO60 & LXO60—add 1-pole kits only, 1 on each side, for converting to 8-pole. To maintain proper operation, it cannot be converted to greater than 8-pole contactor. LO80 & LXO80—use single-pole kits, 1 on each side, for converting to 10-pole and use two-pole kits, 1 on each side, for converting to 12-pole. LO1000 & LXO1000—remove existing single pole kit and install two-pole kits, 1 on each side, for converting to 12-pole.

**Table 16.178: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24	—	V01	No Charge
120	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
Specify	Specify	V99	35.60

Factory Modifications (Forms) ..... page 16-69  
Replacement Coils ..... pages 16-114, 16-115  
Replacement Contacts ..... page 16-116

**Table 16.179: How to Order**

To Order Specify:	Catalog Number			
• Class Number	Class	Type	Voltage Code	Form(s)
• Type Number	8903	LXG60	VO4	CF4R6
• Voltage Code				
• Form(s)				



Type L1L

Type LO60

Type L1R



## Lighting Contactors

Class 8903 / Refer to Catalog 8903CT9701R8/08

### Features

- Electrically and mechanically held
- 30–800 A lighting ratings
- 2- through 5-pole versions (5-poles through 200 A)
- UL Listed short-circuit rating up to 100,000 Amperes
- Factory wired controls and clearly marked termination points
- Quick ship on most items in 5–7 days

Table 16.180: Multipole Lighting Contactors—Type S (50–60 Hz)

Contact Amperage Ratings	No. of Poles	NEMA 1 General Purpose Enclosure		NEMA 1 Flush Mounting General Purpose Enclosure with Plaster Adjustment		NEMA 3R Rainproof Enclosure△		NEMA 4 & 4X Watertight, Dusttight and Corrosion-Resistant Glass-Polyester Enclosure		NEMA Type 4 & 4X▲ Watertight and Dusttight Enclosure		NEMA Type 12 / 3R◇ Dusttight and Driptight Industrial Use Enclosure		Open Type	
		Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price
<b>Electrically Held ▶</b>															
30	2	SMG1★	476.	SMF1★	660.	SMH1★	647.	SMW21★	989.	SMW1★	989.	SMA1★	647.	SMO1★▽	446.
	3	SMG2★	518.	SMF2★	689.	SMH2★	689.	SMW22★	1031.	SMW2★	1031.	SMA2★	810.	SMO2★▽	468.
	4	SMG3★	633.	SMF3★	818.	SMH3★	804.	SMW23★	1146.	SMW3★	1146.	SMA3★	804.	SMO3★▽	603.
60	2	SPG1★	975.	SPF1★	1215.	SPH1★	1287.	SPW21★	1998.	SPW1★	1998.	SPA1★	1287.	SPO1★▽	831.
	3	SPG2★	1031.	SPF2★	1272.	SPH2★	1344.	SPW22★	2057.	SPW2★	2057.	SPA2★	1344.	SPO2★▽	890.
	4	SPG3★	1287.	SPF3★	1529.	SPH3★	1601.	SPW23★	2712.	SPW3★	2712.	SPA3★	1601.	SPO3★▽	1146.
100	2	SQG1★	1601.	SQF1★	2015.	SQH1★	1971.	SQW21★	3815.	SQW1★	3054.	SQA1★	1971.	SQO1★▽	1314.
	3	SQG2★	1715.	SQF2★	2127.	SQH2★	2084.	SQW22★	3959.	SQW2★	3167.	SQA2★	2084.	SQO2★▽	1430.
	4	SQG3★	2114.	—	—	—	—	—	—	SQW3★	3965.	SQA3★	2484.	SQO3★▽	1827.
200	2	SVG1★	3765.	—	—	SVH1★	4991.	—	—	SVW1★	6245.	SVA1★	4991.	SVO1★	3167.
	3	SVG2★	4022.	—	—	SVH2★	5247.	—	—	SVW2★	6501.	SVA2★	5247.	SVO2★	3423.
	4	SVG3★	5285.	—	—	—	—	—	—	SVW3★	8864.	SVA3★	7011.	SVO3★	4761.
300	2	SXG1★	7952.	—	—	—	—	—	—	SXW1★	11087.	SXA1★	11087.	SXO1★	6857.
	3	SXG2★	8550.	—	—	—	—	—	—	SXW2★	11685.	SXA2★	11685.	SXO2★	7455.
	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
400	2	SYG1★	20813.	—	—	—	—	—	—	SYW1★	27935.	SYA1★	27935.	SYO1★	16299.
	3	SYG2★	23534.	—	—	—	—	—	—	SYW2★	30654.	SYA2★	27378.	SYO2★	19020.
	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
600	2	SZG1★	25550.	—	—	—	—	—	—	SZW1★	32670.	SZA1★	29394.	SZO1★	20879.
	3	SZG2★	28704.	—	—	—	—	—	—	SZW2★	35825.	SZA2★	32549.	SZO2★	24026.
	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
800	2	SJG1★	30285.	—	—	—	—	—	—	SJW1★	37535.	SJA1★	33845.	SJO1★	25457.
	3	SJG2★	33875.	—	—	—	—	—	—	SJW2★	40995.	SJA2★	37719.	SJO2★	29033.
	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—



Electrically Held



Mechanically Held

### Mechanically Held ▶

30	2	SMG10★	738.	SMF10★	923.	—	—	SMW31★	1251.	SMW10★	1251.	SMA10★	912.	SMO10★▽	710.
	3	SMG11★	782.	SMF11★	966.	—	—	SMW32★	1295.	SMW11★	1295.	SMA11★	953.	SMO11★▽	752.
	4	SMG12★	824.	SMF12★	1008.	—	—	SMW33★	1337.	SMW12★	1337.	SMA12★	995.	SMO12★▽	795.
60	2	SPG10★	1485.	SPF10★	1758.	—	—	SPW31★	2511.	SPW10★	2511.	SPA10★	1800.	SPO10★▽	1373.
	3	SPG11★	1544.	SPF11★	1814.	—	—	SPW32★	2570.	SPW11★	2570.	SPA11★	1857.	SPO11★▽	1430.
	4	SPG12★	1827.	SPF12★	2100.	—	—	SPW33★	3252.	SPW12★	3252.	SPA12★	2142.	SPO12★▽	1715.
100	2	SQG10★	2084.	SQF10★	2241.	—	—	SQW31★	4419.	SQW10★	3537.	SQA10★	2456.	SQO10★▽	1827.
	3	SQG11★	2199.	SQF11★	2357.	—	—	SQW32★	4563.	SQW11★	3653.	SQA11★	2570.	SQO11★▽	1943.
	4	SQG12★	2627.	—	—	—	—	—	—	SQW12★	4478.	SQA12★	2996.	SQO12★▽	2370.
200	2	SVG10★	5333.	—	—	—	—	—	—	SVW10★	7811.	SVA10★	6557.	SVO10★	4505.
	3	SVG11★	6015.	—	—	—	—	—	—	SVW11★	8495.	SVA11★	7241.	SVO11★	4877.
	4	SVG12★	7353.	—	—	—	—	—	—	SVW12★	10859.	SVA12★	9008.	SVO12★	6215.
300	2	SXG13★	9320.	—	—	—	—	—	—	SXW13★	12455.	SXA13★	12455.	SXO13★	7554.
	3	SXG14★	10232.	—	—	—	—	—	—	SXW14★	13365.	SXA14★	13365.	SXO14★	7811.
	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
400	2	SYG16★	22593.	—	—	—	—	—	—	SYW16★	29714.	SYA16★	26441.	SYO16★	18080.
	3	SYG17★	25316.	—	—	—	—	—	—	SYW17★	32436.	SYA17★	29160.	SYO17★	20799.
	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
600	2	SZG18★	27329.	—	—	—	—	—	—	SZW18★	34451.	SZA18★	31175.	SZO18★	22658.
	3	SZG19★	30483.	—	—	—	—	—	—	SZW19★	37605.	SZA19★	34329.	SZO19★	25806.
	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—



File E78427  
CCN NRNT



File LR60905  
(Open Devices Only)  
Class 3231 01

- ▲ NEMA 4 & 4X enclosures are brush finished stainless steel for contactors sized 30 A through 300 A. Sizes 400–800 A are painted sheet steel.
- ◆ Price does not include holding circuit contact.
- ◆ All lighting contactors are provided with separate control as standard, except electrically held 400, 600 and 800 A devices. Electrically held 400, 600 and 800 A devices are provided with common control.
- ★ Voltage code must be specified to order this product. Refer to standard voltage codes above left.
- ▽ Separate enclosures are available for these devices. It may be possible to improve delivery by ordering an open type contactor and separate Class 9991 enclosure from pages 16-102 and 16-103.
- △ Cannot support control transformer forms.
- Form F4T is provided as standard; include line voltage when ordering. Control voltage is 120–60. For 400, 600 and 800 ampere devices—must specify line voltage, not coil voltage.
- ◇ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service entrance rated applications. See page 16-104 for more information.

### Poles for Type S Only

Table 16.181:

Coil Voltage Codes ▶			
Voltage		Code	Price Adder
60 Hz	50 Hz		
24★	—	V01	N/C
120	110	V02	N/C
208	—	V08	N/C
240	220	V03	N/C
277	—	V04	N/C
480	440	V06	N/C
Specify	Specify	V99	35.60

★ 24 volt coils are not available for 200–800 A devices. Contact your nearest Square D/Schneider Electric sales office for additional information.

A single-pole or double-pole kit can be added to any 2- or 3-pole 30 or 60 A Type S lighting contactor to make a 4- or 5-pole device. Factory assembled 4- and 5-pole contactors utilize the basic 3-pole device with a single or double-pole kit installed. Only one power pole can be added per contactor. Sufficient room is provided in all enclosure styles for the addition of a power pole kit.

For How to Order Information, see page 16-12.

Table 16.182:

Amperage Rating	Description	Class 9999 Type	\$ Price
30	One N.O.	SB6	158.00
	One N.C.	SB7	158.00
	One N.O. and One N.C.	SB8	365.00
	Two N.O. and Two N.C.	SB9 SB10	365.00 365.00
60	One N.O.	SB21▽	306.00
	One N.C.	SB22▽	306.00
	One N.O. and One N.C.	SB23▽	656.00
	Two N.O. and Two N.C.	SB24▽ SB25▽	656.00 656.00

▽ When power pole is added to 60 Ampere contactor, a 4-pole coil is also required. Order from Coil Table page 16-115. 60 A power poles are suitable for use with copper or aluminum wire.

Factory Modifications (Forms) . . . . .	page 16-69
Replacement Coils . . . . .	pages 16-114, 16-115
Replacement Contacts . . . . .	page 16-116

16 NEMA/DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS

**Features**

The features include: disconnect switch and circuit breaker versions; rugged flange-mounted handle; easy installation; occupation of less space; increased operator protection; room to spare for modifications; Class R fuse clips standard; electrically and mechanically held; 30–600 Amperes.

It is desirable to install the branch-circuit protective device and lighting contactor, combining switching and over-current protection, in one enclosure. Combination lighting contactors are well suited for industrial, highway and area lighting applications, or where a lighting circuit may have to be disconnected for periodic maintenance. They may also be used for resistance heating loads.



File E16151  
CCN NRNT

**Table 16.183: Fusible or Non-Fusible Disconnect Switch (3-Pole, 50–60 Hz)**

Contactor Ampere Rating	Fuse Clip Size (A)	Fuse Clip Spacing (V)	NEMA 1 General Purpose Enclosure		NEMA 4 & 4X ■ Watertight and Dusttight Enclosure Stainless Steel		NEMA 12/3R▼ Dusttight, Oiltight Driptight, Industrial Use Enclosure	
			Type	\$ Price▲	Type	\$ Price▲	Type	\$ Price▲
<b>Electrically Held♦</b>								
30	None	—	SMG60★	1301.00	SMW60★	2669.00	SMA60★	1643.00
	30	600	SMG61★	1373.00	SMW61★	2739.00	SMA61★	1715.00
	30	250	SMG62★	1344.00	SMW62★	2712.00	SMA62★	1686.00
60	None	—	SPG60★	2042.00	SPW60★	4149.00	SPA60★	2528.00
	60	600	SPG61★	2142.00	SPW61★	4248.00	SPA61★	2627.00
	60	250	SPG62★	2100.00	SPW62★	4206.00	SPA62★	2583.00
100	None	—	SQG60★	3396.00	SQW60★	7070.00	SQA60★	4022.00
	100	600	SQG61★	3609.00	SQW61★	7284.00	SQA61★	4235.00
	100	250	SQG62★	3537.00	SQW62★	7212.00	SQA62★	4163.00
200	None	—	SVG60★	6629.00	SVW60★	11327.00	SVA60★	8366.00
	200	600	SVG61★	6926.00	SVW61★	11627.00	SVA61★	8585.00
	200	250	SVG62★	6870.00	SVW62★	11570.00	SVA62★	8607.00
300	None	—	SXG60★	13905.00	SXW60★	25898.00	SXA60★	18122.00
	400	600	SXG61★	14418.00	SXW61★	26411.00	SXA61★	18635.00
	400	250	SXG62★	14418.00	SXW62★	26411.00	SXA62★	18635.00
<b>Mechanically Held♦</b>								
30	None	—	SMG70★	1458.00	SMW70★	2825.00	SMA70★	1800.00
	30	600	SMG71★	1529.00	SMW71★	2897.00	SMA71★	1871.00
	30	250	SMG72★	1502.00	SMW72★	2867.00	SMA72★	1844.00
60	None	—	SPG70★	2583.00	SPW70★	4692.00	SPA70★	3068.00
	60	600	SPG71★	2682.00	SPW71★	4791.00	SPA71★	3167.00
	60	250	SPG72★	2640.00	SPW72★	4748.00	SPA72★	3123.00
100	None	—	SQG70★	3909.00	SQW70★	7583.00	SQA70★	4535.00
	100	600	SQG71★	4121.00	SQW71★	7797.00	SQA71★	4748.00
	100	250	SQG72★	4050.00	SQW72★	7725.00	SQA72★	4676.00
200	None	—	SVG70★	8081.00	SVW70★	12780.00	SVA70★	9818.00
	200	600	SVG71★	8379.00	SVW71★	13080.00	SVA71★	10116.00
	200	250	SVG72★	8324.00	SVW72★	13023.00	SVA72★	10061.00
300	None	—	SXG70★	14261.00	SXW70★	26253.00	SXA70★	18477.00
	400	600	SXG71★	14774.00	SXW71★	26766.00	SXA71★	18990.00
	400	250	SXG72★	14774.00	SXW72★	26766.00	SXA72★	18990.00

**Table 16.184: Coil Voltage Codes♦**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24	—	V01	N/C
120	110	V02	N/C
208	—	V08	N/C
240	220	V03	N/C
277	—	V04	N/C
480	440	V06	N/C
Specify	Specify	V99	35.60

♦ 24 volt coils are not available for 200 A or larger devices. Contact local Square D Field Sales Office for additional information.

**Table 16.185: Circuit Breaker (3-Pole, 50–60 Hz)**

Contactor Ampere Rating	Circuit Breaker		NEMA 1 General Purpose Enclosure		NEMA 4 & 4X■ Watertight and Dusttight Enclosure Stainless Steel (30-300 A)		NEMA 12/3R▼ Dusttight, Oiltight, Driptight, Industrial Use Enclosure	
	Ampere Rating	Maximum Volts	Type	\$ Price▲	Type	\$ Price▲	Type	\$ Price▲
<b>Electrically Held♦</b>								
30	30	600	SMG81★	1814.00	SMW81★	3182.00	SMA81★	2156.00
	30	240	SMG82★	1400.00	SMW82★	2768.00	SMA82★	1742.00
60	60	600	SPG81★	2541.00	SPW81★	4649.00	SPA81★	3024.00
	60	240	SPG82★	2127.00	SPW82★	4235.00	SPA82★	2613.00
100	100	600	SQG81★	3666.00	SQW81★	7340.00	SQA81★	4292.00
200	200	600	SVG81★	8181.00	SVW81★	12879.00	SVA81★	9918.00
300	300	600	SXG81★	18023.00	SXW81★	30014.00	SXA81★	21155.00
400	400	600	SYG81★	40085.00	SYW81★	47205.00	SYA81★	43929.00
600	600	600	SZG81★	45090.00	SZW81★	52212.00	SZA81★	48936.00
<b>Mechanically Held♦</b>								
30	30	600	SMG91★	1971.00	SMW91★	3338.00	SMA91★	2313.00
	30	240	SMG92★	1557.00	SMW92★	2925.00	SMA92★	1899.00
60	60	600	SPG91★	3081.00	SPW91★	5189.00	SPA91★	3567.00
	60	240	SPG92★	2669.00	SPW92★	4778.00	SPA92★	3153.00
100	100	600	SQG91★	4179.00	SQW91★	7853.00	SQA91★	4805.00
200	200	600	SVG91★	9633.00	SVW91★	14333.00	SVA91★	11970.00
300	300	600	SXG91★	18378.00	SXW91★	30371.00	SXA91★	21510.00
400	400	600	SYG91★	41864.00	SYW91★	48986.00	SYA91★	45710.00
600	600	600	SZG91★	46728.00	SZW91★	53991.00	SZA91★	50715.00

- ▲ Price does not include holding circuit contact.
- For **NEMA 4 & 4X** Watertight, Dusttight and Corrosion-Resistant Glass-Polyester enclosure pricing, multiply stainless steel enclosed price by 1.25 and add **Form G18** (limited to 100 A max.). 400 & 600 A enclosures are painted sheet steel (**NEMA Type 4 & 4X**).
- ♦ Control/coil voltage must be specified.
- ★ Coil voltage codes must be specified to order this product. Refer to standard voltage codes shown on page 16-65.
- ▼ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service entrance rated applications. See page 16-104 for more information.

For How to Order Information, see page 16-12.

**16 NEMA DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS**

NIGHT-MASTER Outdoor Combination Lighting Contactors offer disconnecting means, overcurrent protection and a lighting contactor in one NEMA 3R Rainproof enclosure. These combination units satisfy requirements of the National Electrical Code and UL 508 for service entrance equipment.



Long Version



Short Version

**Features:**

- Solid neutral standard
- Grounding lug standard
- Padlocking provisions
- Short and long versions available
- Electrically held Type S lighting contactor
- Eliminates the need for separate mounted safety switches
- Additional panel space eliminates the need for external mounting of time clocks



**Table 16.186: Disconnect Switch Type ■ (3-Pole)**

Contactor Ampere Rating	Fuse Clip Size (A)	Fuse Clip Spacing (V)	Short Version			Long Version				
			Class 8903 Type 3R	\$ Price▲	Class 8903 Type 3R Stainless Steel	\$ Price▲	Class 8903 Type 3R	\$ Price▲	Class 8903 Type 3R Stainless Steel	\$ Price▲
30	30	600	SMC61♦	2015.00	SMH61♦	3263.00	SMC63♦	2199.00	SMH63♦	3600.00
	30	250	SMC62♦	1956.00	SMH62♦	3150.00	SMC64♦	2177.00	SMH64♦	3488.00
60	60	600	SPC61♦	2664.00	SPH61♦	4275.00	SPC63♦	2933.00	SPH63♦	4725.00
	60	250	SPC62♦	2505.00	SPH62♦	4050.00	SPC64♦	2825.00	SPH64♦	4500.00
100	100	600	SQC61♦	4571.00	SQH61♦	7425.00	SQC63♦	4797.00	SQH63♦	7875.00
	100	250	SQC62♦	4454.00	SQH62♦	7200.00	SQC64♦	4626.00	SQH64♦	7650.00
200	200	600	SVC61♦	8171.00	SVH61♦	12525.00	SVC63♦	8949.00	SVH63♦	13725.00
	200	250	SVC62♦	7986.00	SVH62♦	12825.00	SVC64♦	8868.00	SVH64♦	13725.00

**Table 16.187: Circuit Breaker Type ■ (3-Pole)**

Contactor Ampere Rating	Circuit Breaker		Short Version			Long Version				
	Ampere Rating	Maximum Volts	Class 8903 Type 3R	\$ Price▲	Class 8903 Type 3R Stainless Steel	\$ Price▲	Class 8903 Type 3R	\$ Price▲	Class 8903 Type 3R Stainless Steel	\$ Price▲
30	30	600	SMC81♦	2475.00	SMH81♦	4050.00	SMC83♦	2807.00	SMH83♦	4500.00
60	60	600	SPC81♦	3159.00	SPH81♦	5175.00	SPC83♦	3320.00	SPH83♦	5625.00
100	100	600	SQC81♦	4544.00	SQH81♦	7425.00	SQC83♦	4841.00	SQH83♦	7875.00
200	200	600	SVC81♦	8711.00	SVH81♦	14175.00	SVC83♦	9909.00	SVH83♦	14625.00

- ▲ Price does not include holding circuit contact.
- All lighting contactors are provided with separate control as standard.
- ♦ Coil voltage codes must be specified to order this product. Refer to standard voltage codes listed below.

**UL Approved for Service Entrance**



**NIGHT-MASTER Combination Lighting Contactors**

The Class 8903 NIGHT-MASTER Outdoor Combination Lighting Contactor is the only product on the market that is UL Listed for Service Entrance. This allows the contactor to be pole mounted when used to control lighting in remote locations such as parks, monuments, group sports facilities, and streets and highways.

Factory modifications such as photocells, time switches, key operated selector switches, and the combination of photocells and time switches (photocell on, time switch off) allow the NIGHT-MASTER to be located in applications where manual operation of lights is not practical.

NIGHT-MASTER comes in long and short versions in sizes 30 through 200 Amperes. Most common modifications can be provided from the factory, or added in the field to the pre-drilled and pre-tapped panels.

**Table 16.188: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24★	—	V01	No Charge
120	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
277	—	V04	No Charge
480	440	V06	No Charge
Specify	Specify	V99	35.60

★ 24 volt coils are not available for 200 A devices. Contact your nearest Square D/Schneider Electric sales office for additional information.

For How to Order Information, see page 16-12.



Panel Mount

**General Information**

Panelboard Lighting Contactors, sometimes called remote control switches, are designed for use with lighting panelboards and motor control centers where either panel or bus mounting is desirable. Type PB lighting contactors can be used in a retrofit or new project without increasing the panelboard depth. They can be used to directly replace many inoperative existing switches.

The features include: mechanically held; compatible with Square D panelboards; short-circuit ratings to 100 kA; compact arc suppression; bus or panel mounted; fits in standard-depth lighting panelboards; easy manual operation; standard coil clearing contacts; and operates in any position.

**Table 16.189: Class 8903 Type PB Lighting Contactors**

Description		Bus Mount		Panel Mount (Includes Lugs)	
Size (A)	Poles	Type	\$ Price	Type	\$ Price
30	2	PBM 10B▲	2129.00	PBM 10▲	2640.00
	3	PBM 11B▲	2403.00	PBM 11▲	2973.00
60	2	PBP 10B▲	2237.00	PBP 10▲	2762.00
	3	PBP 11B▲	2573.00	PBP 11▲	3185.00
75	2	PBN 10B▲	2237.00	PBN 10▲	2762.00
	3	PBN 11B▲	2573.00	PBN 11▲	3185.00
100	2	PBQ 10B▲	2541.00	PBQ 10▲	3119.00
	3	PBQ 11B▲	2978.00	PBQ 11▲	3546.00
150	2	PBR 10B▲	3162.00	PBR 10▲	3897.00
	3	PBR 11B▲	4055.00	PBR 11▲	4787.00
200	2	PBV 10B▲	3551.00	PBV 10▲	4409.00
	3	PBV 11B▲	4496.00	PBV 11▲	5360.00
225	2	PBW 10B▲	3909.00	PBW 10▲	4964.00
	3	PBW 11B▲	4958.00	PBW 11▲	5990.00

▲ Voltage code must be specified to order this product. Refer to standard voltage codes listed below.

**Table 16.190: AC Coil Voltage Codes**

60 Hz	Voltage Code
120/	V02
208	V08
240/277	V39
480	V28

Note: For Replacement coils, see page 16-115.

**Table 16.191: Class 8903—Auxiliary Contacts**

Type	Description	\$ Price
PBX1	(1) Auxiliary Contact SPDT	243.00
PBX2	(2) Auxiliary Contacts SPDT	485.00

**Table 16.192: Factory Modifications**

Form	Description	\$ Price
X11	(1) Auxiliary Contact SPDT	158.00
X22	(2) Auxiliary Contacts SPDT	314.00

**Table 16.193: Dimensions (Panel Mount)**

Amps	Dimensions													
	H		W		D		A							
	IN	mm	IN	mm	IN	mm	IN	mm						
30-100	11.75	298	7.50	191	3.88	98	2.25	57	7.38	187	2.25	57	9.25	235
150-225	14.50	368	7.50	191	3.88	98	2.88	73	8.50	216	3.00	76	10.50	267

**Table 16.194: Control Distance**

Wire Gauge AWG	Maximum Distance (feet)				
	120 V	208 V	240 V	277 V	480 V
#14	550	1650	2200	2925	8800
#12	900	2700	3600	4700	14400
#10	1425	4275	5700	7550	22800

**Table 16.195: Short-Circuit Ratings**

RMS Sym. Current (A)	Max. Volts	Short Circuit Protection Device Recommended
100,000	600	Class J Fuses
22,000	600	Circuit Breaker—Square D—Type LHL
65,000	240	Circuit Breaker—Square D—Type LHL

**Table 16.196: Maximum Wire Size (AWG)**

Current Range	Power Wire (Cu/Al)	Control Wire (Cu Only)
30-100 A	#1/0 Max.	#18-#10
150-225 A	350 MCM Max.	#18-#10

**Table 16.197: Dimensions (Bus Mount)**

Amps	Dimensions									
	H		W		D		A			
	IN	mm	IN	mm	IN	mm	IN	mm		
30-100	8.31	211	7.50	191	3.38	86	2.25	57	7.38	187
150-225	9.50	241	7.50	191	3.38	86	2.88	73	8.50	216

■ Slotted mounting holes suitable for 2.88" to 3.19" mounting centers.

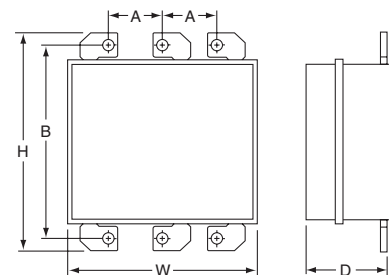
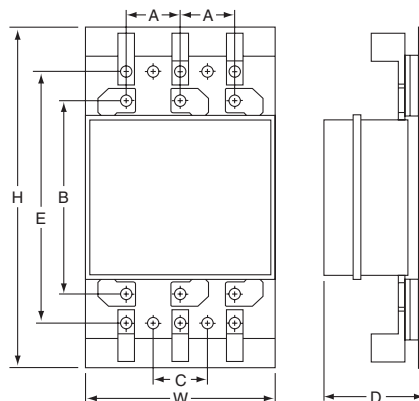


Table 16.198:

Description	Form Letter	NEMA Enclosure Type	Used On					Type L 30 Amp	30 Amp	60 Amp	100 Amp	200 Amp	300 Amp	400 600 800 Amp			
			Std.		Combo		NIGHT-MASTER ▲										
			Elec. Held	Mech. Held	Elec. Held	Mech. Held											
"ON-OFF" (momentary contact) push button	A3	1		Y		Y		336.	336.	336.	336.	336.	336.	336.			
	A3	3R, 4, 12		Y		Y		336.	336.	336.	336.	336.	336.	336.			
"ON-OFF" push button (with holding circuit interlock)	A12	Any	Y			Y	Y	336.	336.	336.	336.	336.	336.	336.			
"HAND-OFF-AUTO" selector switch. To substitute a key operated selector switch, use Form C33 and specify positions, legend marking, and key removal. This form must be used with another selector switch form (example: CC33). Add \$266. (C33) + \$224. (C) = \$490.	C	1	Y	Y▼	Y	Y▼		336.	336.	336.	336.	336.	336.	336.			
	C	3R, 4, 12	Y	Y▼	Y	Y▼	Y	336.	336.	336.	336.	336.	336.	336.			
"ON-OFF" selector switch. To substitute a key operated selector switch, use Form C33 and specify positions, legend marking, and key removal. This form must be used with another selector switch form (example: C33C6). Add \$266. (C33) + \$224. (C6) = \$490.	C6	1	Y	Y	Y	Y		336.	336.	336.	336.	336.	336.	336.			
	C6	3R, 4, 12	Y	Y	Y	Y	Y	336.	336.	336.	336.	336.	336.	336.			
Control circuit fuse (1 fuse)	F	Any	Y	Y	Y	Y	Y	314.	314.	314.	314.	314.	314.	314.			
Control circuit fuses (2 fuses)	F4	Any	Y	Y	Y	Y	Y	314.	314.	314.	314.	314.	314.	314.			
Control circuit transformer standard capacity 50/60 Hz	Fuses																
	Primary	Secondary	Transformer capacity														
	2 ■	0	Std.	F4T	1, 4, 12	Y	Y	Y	Y	Y	386.	386.	543.	797.	968.	1097. ☆	1097. ◆
	2	1	Std.	FF4T	1, 4, 12	Y	Y	Y	Y	Y	698.	698.	855.	1112.	1283.	1412. ☆	1412. ◆
	2	1	100 VA Add.	FF4T11	1, 4, 12	Y	Y	Y	Y	Y	975.	975.	1197.	1425.	1566. ☆	1710. ☆	1710. ◆
	2	1	200 VA Add.	FF4T12	1, 4, 12	Y	Y	Y	Y	Y	1241.	1241.	1467.	1695. ☆	1839. ☆	1839. ☆	1839. ◆
	2	1	300 VA Add.	FF4T13	1, 4, 12	Y	Y	Y	Y	Y	1481. ☆	1481. ☆	1737. ☆	1967. ☆	2109. ☆	2109. ☆	2109. ◆
Noise reduced enclosure and shock mounted panel	G4	Any				Y					1389.	1389.	1596.	1674.	2307.	2921.	3924.
Addition of photoelectric receptacle	G10	1★, 3R, 12	Y			Y			Y	185.	185.	185.	185.	185.	185.	185.	185.
Addition of photoelectric receptacle with photo-cell	G101	1★, 3R, 12	Y			Y			Y	399.	399.	399.	399.	399.	399.	399.	399.
Addition of photoelectric receptacle and relay (R6)▼	G10R6	1★, 12				Y			Y	549.	912.	912.	912.	1326.	1467.	1467.	1467.
With photo-cell installed ▼	G101R6	1★, 12				Y			Y	509.	750.	750.	750.	1026.	1121.	1121.	1121.
Addition of terminal blocks (other than standard). "xx" Represents the number of terminals needed. Available in multiples of 5 only.																	
(PER TERMINAL PRICE)	WIRED	G56xx	Any	Y	Y	Y	Y	Y	Y	116.	116.	116.	116.	116.	116.	116.	116.
(PER TERMINAL PRICE)	UNWIRED	G50xx	Any	Y	Y	Y	Y	Y	Y	57.	57.	57.	57.	57.	57.	57.	57.
Bracketing for internally mounted pilot device	G53	Any	Y	Y	Y	Y	Y	Y	90.	90.	90.	90.	90.	90.	90.	90.	90.
Addition of 24 hour time clock (120-277 V only)	K14	1, 4, 12	Y	Y	Y	Y	Y	Y	1197.	1197.	1197.	1197.	1197.	1197.	1197.	1197.	1197.
Addition of 24 hour time clock w/day omission (120-277 V)	K141	1, 4, 12	Y	Y	Y	Y	Y		1197.	1197.	1197.	1197.	1197.	1197.	1197.	1197.	1197.
Addition of 7 day time clock (120-277 V)	K142	1, 4, 12	Y	Y	Y	Y			1368.	1368.	1368.	1368.	1368.	1368.	1368.	1368.	1368.
Addition of 24 hour time clock (120-277 V only)	K14	3R						Y	N/A	783.	783.	783.	783.	783.	N/A	N/A	N/A
Addition of 24 hr time clock w/skip day (120-277 V)	K141	3R						Y	N/A	783.	783.	783.	783.	783.	N/A	N/A	N/A
Addition of 7 day time clock (120-277 V)	K142	3R						Y	N/A	954.	954.	954.	954.	954.	N/A	N/A	N/A
Addition of solid neutral terminal block	N	1, 4, 12	Y	Y	Y	Y	Std.		116.	116.	116.	171.	342.	714.	855.		
Red Pilot Light	P1	Any	Y	Y	Y	Y	Y	Y	336.	336.	336.	336.	336.	336.	336.	336.	336.
Two or more lights Δ (each)	P	Any	Y	Y	Y	Y	Y	Y	336.	336.	336.	336.	336.	336.	336.	336.	336.
Red Push-To-Test Pilot Light	P21	Any	Y	Y	Y	Y	Y	Y	435.	435.	435.	435.	435.	435.	435.	435.	435.
Interlock necessary for pilot light one needed for each additional pilot light	□	Any	Y	Y	Y	Y	Y	Y	◇	158.	158.	158.	158.	158.	158.	158.	158.
Two Wire Interface for Mechanically Held ▼	R6	Any		Y		Y			363.	728.	728.	728.	1139.	1283.	1283.	1283.	1283.
Addition of under and overvoltage relay	R46	Any	Y	Y	Y	Y	Y	Y	1463.	1463.	1463.	1463.	1463.	1463.	1463.	1463.	1463.
Three wire control for long distance applications ▼	R62	Any	Y	Y	Y	Y			728.	1454.	1454.	1454.	2280.	2564.	2564.	2564.	2564.
Auxiliary contacts (specify number of N.O. + N.C.)	X	Any	Y	Y	Y	Y	Y	Y	◇	158.	158.	158.	158.	158.	158.	158.	158.
Addition of DC coil to Type L (7 poles max)	Y48	Any	Y						243.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Auxiliary electrical interlock installed on disconnect switch or circuit breaker operating mechanism	Y74	Any			Y	Y	Y	Y	N/A	158.	158.	158.	158.	414.	414.	414.	414.
Coil Transient suppressor (120 Vac Only)	Y145	Any	Y		Y		Y	Y	158.	158.	158.	158.	158.	158.	158.	N/A	N/A
Coil Transient suppressor (120 Vac Only)	Y145	Any		Y		Y		Y	314.	314.	314.	314.	314.	314.	314.	314.	314.
Addition of lightning arrester	Y1532	Any	Y	Y	Y	Y	Y	Y	570.	570.	570.	570.	570.	570.	570.	570.	570.
Substitute copper only lugs for standard	Y157	Any	Y	Y	Y	Y	Y	Y	N/A	N/A	N/C	N/C	N/C	N/C	N/C	N/C	N/C

- NIGHT-MASTER maximum 200 A, minimum 30 A.
- Transformer Voltage Codes.
- ◆ Mechanically held only. Electrically held device has a control circuit requiring a 120 V secondary, therefore, a transformer is supplied. The transformer comes wired to L1 and L2 unless Form S is called for. It is supplied with two primary and one secondary fuse.
- ★ Photocell mounted on a NEMA 1 enclosure is designed for indoor areas which rely on natural light. Addition of the photocell does not make the enclosure suitable for outdoor (NEMA Type 3R) installations.
- ▼ Available for 24 V, 120 V, 240 V, 277 V and 480 V applications only.
- Δ For electrically held enclosed devices, the first pilot is wired in parallel with the coil. Operating interlocks are required for all additional pilot lights. Mechanically held devices require operating interlocks for all pilot lights.
- DO NOT use Form X for any interlock which is wired in series with pilot light, but DO specify how pilot light and interlock are to be wired into the circuit.
- ◇ Electrically held 20 A multipole contactors cannot add interlocks. Additional poles can be used for the same function, however. Mechanically held (Type LX) provide one double throw auxiliary (or status) contact as standard.
- ☆ Single primary voltage must be specified using the codes shown below.
- ▼ Form R6 must be used with Form C on mechanically held devices.

Voltage 60 Hz	Code
120-24	V89
208-120	V84
240-24	V82
240-120	V80
277-120	V85
480-24	V83
480-120	V81
480-240	V87
600-120	V86

**Order Example**

You have previously selected a Class 8903SMG2V02.

V02 means that you need a coil voltage of 120-60/110-50 wired for separate control. You would like to add form FF4T with the transformer voltages being 480 volt primary, 120 volt secondary.

The new and complete Class, Type, Voltage Code and Form number:

Class 8903      Type SMG2      Voltage Code V81      Form 0 FF4T

○ Form numbers should always be shown in alphabetical order.



Table 16.199:

Table with columns for Description, Types L & LX (30 Amp Kit, \$ Price), Type S (30 Amp, 60 Amp, 100 Amp, 200 Amp, 300 Amp, 400, 600, 800 Amp Kit, \$ Price), and Form No. Rows include Auxiliary Contacts, Control Circuit Fuse Holder, Oversized Enclosures, Standard Enclosures, Combination Lighting Contactor Disconnect Interlock Kit, Lighting Arrestor, and VERSA CRIMP Lugs.

▲ For electrically held only.  
◆ Limited to 400 and 600 A versions. 800 A is a factory modification only.  
♦ VERSA CRIMP Lug prices subject to change. 9999AL hardware kit is also required. Two 1-pole kits required.  
★ One or two lugs may be mounted on each terminal. Limited to 400 and 600 A versions. 800 A is factory modification only.

**Table 16.200: Mechanically Held**

Description	Form No.	TYPE LX		TYPE S											
		30 Amp		30 Amp		60 Amp		100 Amp		200 Amp		300 Amp		400, 600, 800 Amp	
		Kit	\$ Price	Kit	\$ Price	Kit	\$ Price	Kit	\$ Price	Kit	\$ Price	Kit	\$ Price	Kit	\$ Price
<b>PUSH BUTTON (ON-OFF)</b> NEMA 1 Enclosure	A3	9999BLX	35.60	▲	—	9001KA2	21.50	9001KA2	21.50	9001KA2	21.50	9001KA2	21.50	9001KA2	21.50
		9999LXPB	116.00			9999SA3	215.00	9999SA3	215.00	9999SA3	215.00	9999SA3	215.00	9999SA3	215.00
NEMA 3R, 4 or 12 Enclosure		9001KA2	21.50	9001KA2	21.50	9001KA2	21.50	9001KA2	21.50	9001KA2	21.50	9001KA2	21.50	9001KA2	21.50
		9999SA3	215.00	9999SA3	215.00	9999SA3	215.00	9999SA3	215.00	9999SA3	215.00	9999SA3	215.00	9999SA3	215.00
<b>SELECTOR SWITCH (2 POSITION)</b> NEMA 1 Enclosure	C6	9999BLX	35.60	9001KN244	4.40	9001KN244	4.40	9001KN244	4.40	9001KN244	4.40	9001KN244	4.40	9001KN244	4.40
		9999LXS	116.00	9001KS11BH1	96.00	9001KS11BH1	96.00	9001KS11BH1	96.00	9001KS11BH1	96.00	9001KS11BH1	96.00	9001KS11BH1	96.00
NEMA 3R, 4 or 12 Enclosure		9001KN244	4.40	9001KN244	4.40	9001KN244	4.40	9001KN244	4.40	9001KN244	4.40	9001KN244	4.40	9001KN244	4.40
		9001KS11BH1	96.00	9001KS11BH1	96.00	9001KS11BH1	96.00	9001KS11BH1	96.00	9001KS11BH1	96.00	9001KS11BH1	96.00	9001KS11BH1	96.00
<b>SELECTOR SWITCH (3 POSITION)</b> NEMA 1 Enclosure (MUST INCLUDE TWO WIRE CONTROL RELAY, Form R6)	C	9999BLX	35.60												
		9999SC2	116.00	9001KN260	4.40	9001KN260	4.40	9001KN260	4.40	9001KN260	4.40	9001KN260	4.40	9001KN260	4.40
NEMA 3R, 4 or 12 Enclosure		9001KN260	4.40	9001KS46BH2	138.00	9001KS46BH2	138.00	9001KS46BH2	138.00	9001KS46BH2	138.00	9001KS46BH2	138.00	9001KS46BH2	138.00
		9001KS46BH2	138.00												
<b>TWO WIRE CONTROL RELAY</b> (Form R6)△	R6	9999RLX	35.60	8501X011	201.00	8501X011	201.00	8501X011	201.00	8501X011	201.00	8501X011	201.00	8501X011	201.00
		CA2SK11□	95.00												

**Table 16.201: Electrically Held**

Description	Form No.	TYPE L		TYPE S											
		30 Amp		30 Amp		60 Amp		100 Amp		200 Amp		300 Amp		400, 600, 800 Amp	
		Kit	\$ Price	Kit	\$ Price	Kit	\$ Price	Kit	\$ Price	Kit	\$ Price	Kit	\$ Price	Kit	\$ Price
<b>PILOT LIGHTS (RED and GREEN)</b> NEMA 1 Enclosure NEMA 3R, 4 or 12 Enclosure	P1	9999SP28R	215.00	9999SP2R	215.00	9999SP3R	215.00	9999SP14R	215.00	9999SP28R	215.00	9999SP28R	215.00	9999SP28R	215.00
				9999SP28R	215.00	9999SP28R	215.00	9999SP28R	215.00	9999SP28R	215.00	9999SP28R	215.00	9999SP28R	215.00
<b>PUSH BUTTONS</b> ▼ NEMA 1 Enclosure	A12	9999BLX	35.60	9999SA10	116.00	9999SA10	116.00	9999SA3	215.00	9999SA3	215.00	9999SA3	215.00	9999SA3	215.00
		9999SA10	116.00												
NEMA 3R, 4 or 12 Enclosure		9999SA3	215.00	9999SA3	215.00	9999SA3	215.00	9999SA3	215.00	9999SA3	215.00	9999SA3	215.00	9999SA3	215.00
<b>SELECTOR SWITCH (2 POSITION)</b> NEMA 1 Enclosure	C6	9999BLX	35.60	9999SC22	116.00	9999SC22	116.00	9999SC22	116.00	9001KN244	4.40	9001KN244	4.40	9001KN244	4.40
		9999SC22	116.00							9001KS11BH1	96.00	9001KS11BH1	96.00	9001KS11BH1	96.00
NEMA 3R, 4 or 12 Enclosure		9001KN244	4.40	9001KN244	4.40	9001KN244	4.40	9001KN244	4.40	9001KN244	4.40	9001KN244	4.40	9001KN244	4.40
		9001KS11BH1	96.00	9001KS11BH1	96.00	9001KS11BH1	96.00	9001KS11BH1	96.00	9001KS11BH1	96.00	9001KS11BH1	96.00	9001KS11BH1	96.00
<b>SELECTOR SWITCH (3 POSITION)</b> NEMA 1 Enclosure	C	9999BLX	35.60	9999SC2	116.00	9999SC2	116.00	9999SC2	116.00	9999SC8	215.00	9999SC8	215.00	9999SC8	215.00
		9999SC2	116.00												
NEMA 3R, 4 or 12 Enclosure		9999SC8	215.00	9999SC8	215.00	9999SC8	215.00	9999SC8	215.00	9999SC8	215.00	9999SC8	215.00	9999SC8	215.00

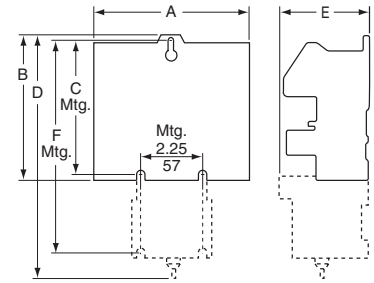
- ▲ No field installed kit available.
- Mechanically held contactors need two distinct signals to operate. An N.O. contact block must be added to the Class 9999 Type SA3 push button kit.
- ◆ Selection for 2- or 3-Pole only; for 4- or 5-Pole use Class 9999SP15R \$215.
- ★ The coil voltage must be the same as the pilot light rating. Kit contains one (1) Class 9001, Type KP1R6 120 V/60 Hz red pilot light control unit. For other voltages, refer to the Class 9001, Type KP Control Section.
- ▼ Requires holding circuit interlock for Type S or additional power pole on Type L devices.
- △ Form R6 available for 24 V, 120 V, 240 V and 277 V only.
- Insert CA2SK11( ) voltage code from page 23-20.

Approximate Dimensions

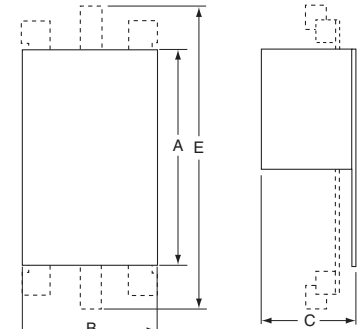
Table 16.202: Open Type

Electrically Held							Mechanically Held								
Ampere Rating	Type	Number of Poles	Dimensions				Type	Dimensions							
			A	B	C	E		A	B	C	D	E	F		
30	LO	2-4	2.88 73	5 127	4.62 117	3.12 79	LXO	2.88 73	—	—	8.81 224	3.25 83	7.70 196	—	—
		6	4.25 108	5 127	4.62 117	3.12 79		4.25 108	—	—	8.81 224	3.25 83	7.70 196		
		8-12	5.63 143	5 127	4.62 117	3.12 79		5.63 143	—	—	8.81 224	3.25 83	7.70 196		
30	SMO	2-3	4.34 110	3.22 82	4.22 107	3.50 89	—	7.15 182	3.79 96	4.68 119	—	6.04 153	—	—	—
		4-5	4.34 110	4.25 108	4.22 107	3.50 89	—	7.15 182	4.54 115	4.68 119	—	6.04 153	—	—	—
60	SPO	2-3	5.33 135	4.31 110	4.94 125	5.50 140	—	8.25 210	4.61 117	5.23 133	—	7.81 198	—	—	—
		4-5	6.22 158	5.61 142	4.94 125	5.50 140	—	8.70 221	5.90 150	5.23 133	—	7.81 198	—	—	—
100	SQO	2-3	7.09 180	5.45 138	6.50 165	7.26 184	—	10.13 257	5.94 151	6.72 171	—	7.26 184	—	—	—
		4-5	7.82 199	9.75 248	6.50 165	7.26 184	—	10.56 268	9.75 248	6.72 171	—	7.26 184	—	—	—
200	SVO	2-3	9.14 232	6.00 152	6.50 165	9.14 232	SVO	11.35 288	6.00 152	6.72 171	—	9.14 232	—	—	—
		4 & 5▲	9.14 232	9.75 248	6.50 165	9.14 232		11.55 293	9.75 248	6.72 171	—	9.14 232	—	—	—
300	SXO	2-3	12.31 313	8.66 220	8.74 222	12.25 311	SXO	12.31 313	8.66 220	10.50 267	—	12.31 313	—	—	—
400	SYO	2-3	—	12.33 313	9.00 229	27.78 706	SYO	—	8.66 220	10.50 267	—	21.00 533	—	—	
600	SZO														
800	SJO														

▲ 5-Pole, electrically held only.



Open Type L & LX



Open Type S

Table 16.203: NEMA 1 Enclosure (Non-Combination) Electrically and Mechanically Held

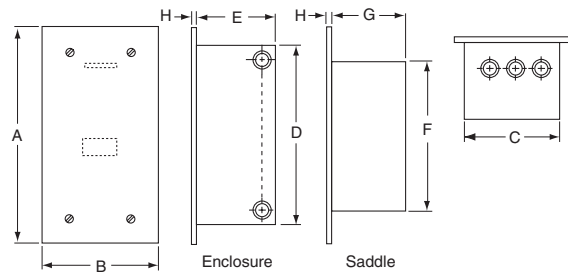
Ampere Rating	Type	Number of Poles	Form(s)	Dimensions			
				Width	Height	Depth	
30	LG, LXG	Any	Standard, A3, A12, C, C6, F, R6, Y48	7.81 198	12.69 322	6.03 153	
			P, T	11.88 302	11.88 302	7.44 189	
30			K14, K141, K142	16.00 406	22.00 559	7.13 181	
30	SMG	2-5	Electrically Held	Std., A12, C, C6, P, X	6.00 152	10.00 254	5.28 134
			Mechanically Held	Std., X	—	—	—
			Electrically Held	T	6.34 161	15.88 403	5.19 132
			Mechanically Held	N, T, N, R6	14.88 378	14.12 359	7.56 192
60	SPG	2-5	Electrically Held	Std., A12, C, C6, P, X	7.81 198	12.69 322	6.03 153
			Electrically Held & Mechanically Held	T, N, R6	14.88 378	14.12 359	7.56 192
100	SQG	2 & 3	Electrically Held	Std., A12, C, C6, F, P, X, T	11.25 286	25.15 639	8.99 228
			Mechanically Held	Std., F, X, T	—	—	—
		Electrically Held	N, R6, T, T10-T13, ■	18.15 461	29.15 740	9.24 235	
		Mechanically Held	A3, C, C6, N, R6, T, T10-T13, ■	—	—	—	
		4 & 5	Electrically Held	Std., A12, C, C6, F, P, X	11.25 286	25.15 639	8.99 228
			Mechanically Held	Std., F, X	—	—	—
			Electrically Held	■	18.15 461	29.15 740	9.24 235
			Mechanically Held	A3, C, C6, ■	—	—	—
			Electrically Held	N, R6, T, T10-T13	22.15 563	39.15 994	10.24 260
			Mechanically Held	N, R6, T, T10-T13	—	—	—
200	SVG	All	Electrically and Mechanically Held	Standard and All Forms	22.15 563	39.15 994	10.24 260
300	SXG	All	Electrically and Mechanically Held	Standard and All Forms	17.21 437	44.21 1123	12.83 326
400 and 600	SYG & SZG	All	Electrically and Mechanically Held	Standard and All Forms	20.21 513	65.75 1670	13.10 333
800	SJG	2-3	With or without any Forms	—	34.50 876	93.00 2362	23.50 597

■ All Type K Forms.

Dual Dimensions: **INCHES**  
Millimeters

Table 16.204: NEMA 1 Flush Mounted

Ampere Rating	Type	Form(s)	Dimensions							
			A	B	C	D	E	F	G	
30	LF, LXF	Standard, F, Y48, R6	15.19 386	8.94 227	7.63 194	12.88 327	5.44 138	10.94 278	5.13 130	
		A3, A12, C, C6, T, P	24.00 610	17.50 445	15.00 381	19.25 489	7.12 181	—	—	
30	SMF	Electrically Held	Std., A12, C, C6, P, X	13.44 341	7.19 183	5.88 149	11.13 283	4.75 121	9.19 233	4.50 114
		Mechanically Held	Std., X	—	—	—	—	—	—	—
		Electrically Held	T, N	24.00 610	17.50 445	15.00 381	19.25 489	5.75 146	—	—
		Mechanically Held	A3, C, C6, T, N, P, R6	—	—	—	—	—	—	—
60	SPF	Electrically Held	Std., A12, C, C6, P, X	15.19 386	8.94 227	7.63 194	12.88 327	5.44 138	10.94 278	5.13 130
		Mechanically Held	Std., X	—	—	—	—	—	—	—
		Electrically Held	T, N	24.00 610	17.50 445	15.00 381	19.25 489	5.75 146	—	—
		Mechanically Held	A3, C, C6, T, N, P, R6	—	—	—	—	—	—	—
100	SQF	With or without any Forms	31.00 787	16.75 425	14.25 362	26.25 667	8.00 203	—	—	



NEMA 1 Flush Mounted

16 NEMA/DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS



**Approximate Dimensions**

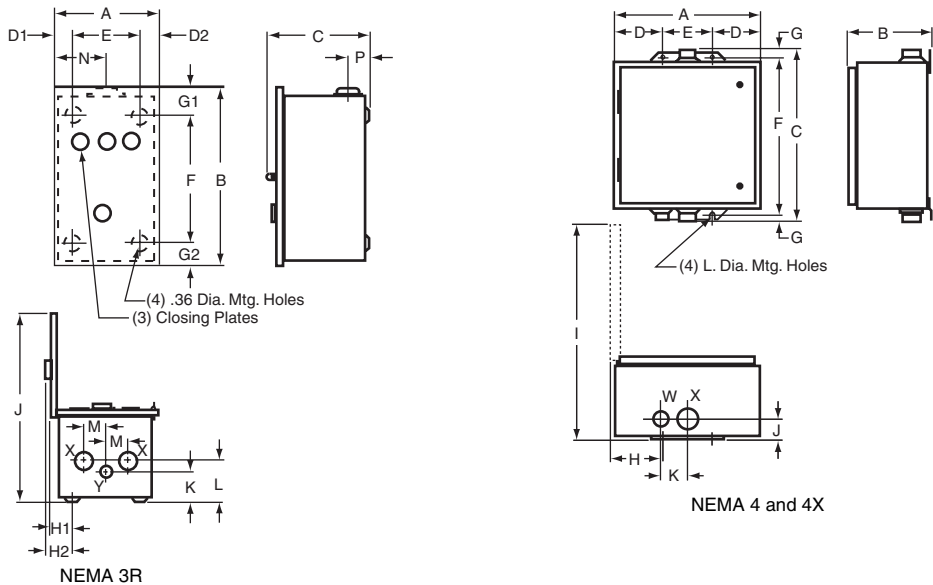
**Table 16.205: NEMA 3R**

Ampere Rating	Type	Number of Poles	A	B	C	D1	D2	E	F	G1	G2	H1	H2	J	K	L	M	N	P	K.O. X	K.O. Y
30	SMH	All	8.83 224	12.30 312	7.12 181	1.39 35	1.44 37	6.00 152	7.50 191	2.64 67	2.16 55	2.08 53	2.62 66	14.28 363	1.37 35	1.37 35	1.88 48	4.38 111	1.83 46	1/2 3/4 1	1/2 3/4 1
30 60	LH SPH	All	9.83 250	16.30 414	8.62 219	1.39 35	1.44 37	7.00 178	11.50 292	2.64 67	2.16 55	2.08 53	2.62 66	16.78 426	1.31 33	1.75 44	2.13 54	4.88 124	1.83 46	1 1 1/4 1 1/2	1/2 3/4
100	SQH	All	12.83 326	25.30 643	8.62 219	1.39 35	1.44 37	10.00 254	20.50 521	2.64 67	2.16 55	2.08 53	2.62 66	19.78 502	1.31 33	1.94 49	2.44 62	6.38 162	1.83 46	1 1 1/4 2 2 1/2	1/2 3/4
200	SVH	All	12.83 326	40.30 1024	9.12 232	1.39 35	1.44 37	10.00 254	35.50 902	2.64 67	2.16 55	2.08 53	2.62 66	20.28 515	1.31 33	2.31 59	2.69 68	6.38 162	1.83 46	1 1 1/4 2 2 1/2	1/2 3/4

**Table 16.206: NEMA 4 and 4X Stainless Steel Only♦**

Ampere Rating	Type	Number of Poles	Form(s)	Dimensions for Stainless Steel Enclosures For Glass Polyester (through 100 A), see Size 2 NEMA 4/4X dimensions on page 16-24.												Bottom Hub Only W	Top & Bottom Hub X	
				A	B	C	D	E	F	G	H	I	J	K	L			
30	LW LXW	Any	Standard, F, R6, Y48	8.13 206	7.88 200	16.19 411	1.56 40	5.00 127	15.00 381	.60 15	1.94 49	14.75 375	2.00 51	2.63 67	.31 8	3/4"	1 1/2"	
			A3, A12, C, C6, P, T	12.62 321	7.81 198	14.69 373	2.56 65	7.50 191	13.50 343	.63 16	3.38 86	18.44 468	1.69 43	2.31 59	.31 8	3/4"	1"	
30	SMW	2-5	Electrically Held Std., A12, C, C6, P, X	6.38 162	7.13 181	13.19 335	1.56 40	3.25 83	12.00 305	.63 16	1.19 30	11.81 300	1.63 41	2.31 59	.31 8	3/4"	1"	
			Mechanically Held Std., F, X	12.63 321	7.11 181	14.69 373	2.56 65	7.50 191	13.50 343	.63 16	3.19 81	18.50 470	1.64 42	2.31 59	.31 8	3/4"	1"	
			Electrically Held N, R6	14.88 378	7.25 184	16.31 414	2.56 65	9.75 248	15.00 381	.63 16	3.19 81	20.88 530	2.06 52	2.63 67	.31 8	3/4"	1 1/2"	
			Mechanically Held A3, C, C6, T, N, P, R6	8.13 206	7.88 200	16.19 411	1.56 40	5.00 127	15.00 381	.60 15	1.94 49	14.75 375	2.00 51	2.63 67	.31 8	3/4"	1 1/2"	
60	SPW	2-5	Electrically Held Std., A12, C, C6, P, X	8.13 206	7.88 200	16.19 411	1.56 40	5.00 127	15.00 381	.60 15	1.94 49	14.75 375	2.00 51	2.63 67	.31 8	3/4"	1 1/2"	
			Mechanically Held Std., A3, C, C6, P, X	14.88 378	7.25 184	16.31 414	2.56 65	9.75 248	15.00 381	.63 16	3.88 98	20.88 530	2.06 52	2.63 67	.31 8	3/4"	1 1/2"	
			Electrically Held T, N, R6	18.15 461	8.77 223	32.21 818	3.08 78	12.00 305	30.50 775	.61 15	3.67 93	26.71 678	2.58 66	3.19 81	.44 11	3/4"	2 1/2"	
			Mechanically Held A3, C, C6, T, N, P, R6	18.15 461	8.77 223	32.21 818	3.08 78	12.00 305	30.50 775	.61 15	3.67 93	26.71 678	2.58 66	3.19 81	.44 11	3/4"	2 1/2"	
100	SQW	2 & 3	Electrically Held Std., A12, C, C6, F, N, R6, P, T, T10-13, X	18.15 461	8.77 223	32.21 818	3.08 78	12.00 305	30.50 775	.61 15	3.67 93	26.71 678	2.58 66	3.19 81	.44 11	3/4"	2 1/2"	
			Mechanically Held Std., A3, C, C6, F, N, P, R6, T, T10-13, X	22.15 563	9.77 248	42.21 1072	3.08 78	16.00 406	40.50 1029	.61 15	3.67 93	31.71 805	2.33 59	2.88 73	.44 11	3/4"	2 1/2"	
		4 & 5	Electrically Held N, R6, T, T10-13	22.15 563	9.77 248	42.21 1072	3.08 78	16.00 406	40.50 1029	.61 15	3.67 93	31.71 805	2.33 59	2.88 73	.44 11	3/4"	2 1/2"	
			Mechanically Held N, R6, T, T10-13	22.15 563	9.77 248	42.21 1072	3.08 78	16.00 406	40.50 1029	.61 15	3.67 93	31.71 805	2.33 59	2.88 73	.44 11	3/4"	2 1/2"	
200	SVW	All	Electrically and Mechanically Held Standard and All Forms	22.15 563	9.77 248	42.21 1072	3.08 78	16.00 406	40.50 1029	.61 15	3.67 93	31.71 805	2.33 59	2.88 73	.44 11	3/4"	2 1/2"	
300	SXW	All	Electrically and Mechanically Held Standard and All Forms	17.21 437	12.63 321	47.21 1199	4.11 104	9.00 229	46.00 1168	.61 15	4.59 117	28.32 719	3.11 79	5.75 146	.56 14	3/4"	3 1/2"	
400 & 600	SYW & SZW	All	Electrically and Mechanically Held Standard and All Forms	20.21 513	12.13 308	65.21 1656	4.11 104	12.00 305	64.00 1626	.61 15	4.59 117	30.82 783	2.67 68	4.50 114	.56 14	3/4"	Two 3"	
800	SJW	2-3	With or without any Forms	34.50 876	23.50 597	101.00 2565	Floor Mounting											

- ▲ X hub is 1/4" left of center. W hub shown is another X hub. K dimension is distance between two X hubs. Actual W hub is located 3-3/16" to the right of X hub shown.
- All "K" forms.
- ♦ For glass polyester (through 100A), see Size 2 NEMA 4/4X dimensions on page 16-24.



Dual Dimensions: **INCHES**  
Millimeters

Approximate Dimensions

Table 16.207: NEMA 12/3R

Ampere Rating	Type	Number of Poles	Form(s)	Dimensions▲														
				A	B	C	D	E	F	G	H	I	J					
30	LA LXA	Any	Standard, F, R6, Y48	8.13 206	8.50 216	15.75 400	1.56 40	5.00 127	15.00 381	.31 8	2.13 54	14.75 375	.31 8					
			A3, A12, C, C6, P, T	11.88 302	7.75 197	13.50 343	3.81 97	4.25 108	12.75 324	.38 10	4.94 125	18.12 460	.31 8					
30	SMA	2-5	Electrically Held Std., A12, C, C6, P, X	6.38 162	8.53 217	12.75 324	1.56 40	3.25 83	12.00 305	.38 10	3.56 90	12.50 318	.31 8					
			Mechanically Held Std., F, P, X	11.88 302	7.75 197	13.50 343	2.56 65	6.75 171	12.75 324	.38 10	3.66 93	18.12 460	.31 8					
			Electrically Held T	14.88 378	7.88 200	16.00 406	2.56 65	9.75 248	15.00 381	.50 13	3.66 93	21.25 540	.31 8					
			Mechanically Held N, R6	8.13 206	9.28 236	16.00 406	1.56 40	5.00 127	15.00 381	.50 13	3.66 93	15.38 391	.31 8					
60	SPA	2-5	Electrically Held Std., A12, C, C6, P, X	8.13 206	9.28 236	16.00 406	1.56 40	5.00 127	15.00 381	.50 13	3.66 93	15.38 391	.31 8					
			Mechanically Held Std., A3, C, C6, P, X	14.88 378	7.88 200	15.75 400	2.56 65	9.75 248	15.00 381	.38 10	3.66 93	21.25 540	.31 8					
			Electrically Held T, N, R6	14.88 378	7.88 200	15.75 400	2.56 65	9.75 248	15.00 381	.38 10	3.66 93	21.25 540	.31 8					
			Mechanically Held A3, C, C6, T, N, P, R6	18.15 461	9.24 235	31.50 800	3.08 78	12.00 305	30.50 775	.50 13	3.67 93	26.71 678	.44 11					
100	SQA	2 & 3	Electrically Held Std., A12, C, C6, F, N, R6, P, T, T10-13, X	18.15 461	9.24 235	31.50 800	3.08 78	12.00 305	30.50 775	.50 13	3.67 93	26.71 678	.44 11					
			Mechanically Held Std., A3, C, C6, F, N, P, R6, T, T10-13, X	22.15 563	10.24 260	41.50 1054	3.08 78	16.00 406	40.50 1029	.50 13	3.67 93	31.71 805	.44 11					
		4 & 5	Electrically Held Std., A12, C, C6, F, N, P, ■	22.15 563	10.24 260	41.50 1054	3.08 78	16.00 406	40.50 1029	.50 13	3.67 93	31.71 805	.44 11					
			Mechanically Held Std., A3, C, C6, P, ■	22.15 563	10.24 260	41.50 1054	3.08 78	16.00 406	40.50 1029	.50 13	3.67 93	31.71 805	.44 11					
200	SVA	All	Electrically and Mechanically Held Standard and All Forms	22.15 563	10.24 260	41.50 1054	3.08 78	16.00 406	40.50 1029	.50 13	3.67 93	31.71 805	.44 11					
300	SXA	All	Electrically and Mechanically Held Standard and All Forms	17.21 437	13.33 339	47.00 1194	4.11 104	9.00 229	46.00 1168	.50 13	4.59 117	28.32 719	.56 14					
400 & 600	SYA & SZA	All	Electrically and Mechanically Held Standard and All Forms	20.21 513	13.00 330	65.00 1651	4.11 104	12.00 305	64.00 1626	.50 13	5.31 135	30.87 784	.69 18					
800	SJA	2-3	With or without any Forms	93.00 2362	34.50 876	23.50 597												Floor Mounting

▲ See Figure 1 for all dimensions except 800 A; for 800 A dimensions, see Figure 2.  
■ All Type "K" Forms using Class 9001 Type K Control Units.

Table 16.208: NIGHT-MASTER® Outdoor Lighting Contactors (Short Version)—NEMA 3R

Ampere Rating	Description	Type Number	A	B	C	D	E	F	G	H	J♦	K	L	M	Knockouts		
															N	P	Q
30	Disconnect Switch & Circuit Breaker Types	SMC61, 62 & 81	23.50 597	15.00 381	8.42 214	10.50 267	19.00 483	22.38 568	7.00 178	2.18 55	1.50 38	2.13 54	2.13 54	2.13 54	.50-.75	1-1.25 1.50	.50-.75
60	Disconnect Switch & Circuit Breaker Types	SPC61, 62 & 81	34.53 877	20.00 508	8.42 214	10.50 267	30.04 763	33.41 849	7.00 178	2.18 55	2.0 51	2.68 68	2.68 68	3.44 87	.50-.75	1-1.25 2-2.50	1-1.25 1.5-2.0
100	Disconnect Switch & Circuit Breaker Types	SQC61, 62 & 81	48.37 1229	19.00 483	9.12 232	10.53 267	44.00 1118	47.25 1200	7.00 178	2.18 55	2.50 64	2.68 68	2.68 68	3.44 87	.50-.75	1-1.25 2-2.50	1-1.25 1.5-2.0
200	Disconnect Switch Type Circuit Breaker Type	SVC61 & 62 SVC81	48.37 1229	19.00 483	9.12 232	10.53 267	44.00 1118	47.25 1200	7.00 178	2.18 55	2.50 64	2.68 68	2.68 68	3.44 87	.50-.75	1-1.25 2-2.50	1-1.25 1.5-2.0

Table 16.209: NIGHT-MASTER® Outdoor Lighting Contactors (Long Version)—NEMA 3R

Ampere Rating	Description	Type Number	A	B	C	D	E	F	G	H	J♦	K	L	M	Knockouts		
															N	P	Q
30	Disconnect Switch & Circuit Breaker Types	SMC63, 64 & 83	38.88 987	15.00 381	8.42 214	10.42 265	34.38 873	37.76 959	7.00 178	2.18 55	1.50 38	2.13 54	2.13 54	2.13 54	.50-.75	1-1.25 1.50	.50-.75
60	Disconnect Switch & Circuit Breaker Types	SPC63, 64 & 83	42.53 1080	20.00 508	8.42 214	10.42 265	38.04 966	41.41 1052	7.00 178	2.18 55	2.0 51	2.68 68	2.68 68	3.44 87	.50-.75	1-1.25 2-2.50	1-1.25 1.5-2.0
100	Disconnect Switch & Circuit Breaker Types	SQC63, 64 & 83	56.37 1432	19.00 483	9.12 232	10.53 267	52.00 1321	55.25 1403	7.00 178	2.18 55	2.50 64	2.68 68	2.69 68	3.44 87	.50-.75	1-1.25 2-2.50	1-1.25 1.5-2.0
200	Disconnect Switch Type Circuit Breaker Type	SVC63 & 64 SVC83	56.37 1432	19.00 483	9.12 232	10.53 267	52.00 1321	55.25 1403	7.00 178	2.18 55	2.50 64	2.68 68	2.69 68	3.44 87	.50-.75	1-1.25 2-2.50	1-1.25 1.5-2.0

♦ Conduit size.

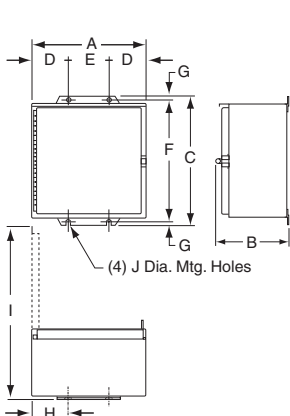


Figure 1: NEMA 12 (30-600 A)

Dual Dimensions: INCHES Millimeters

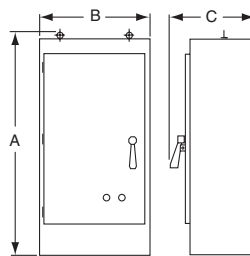


Figure 2: NEMA 12 (800 A)

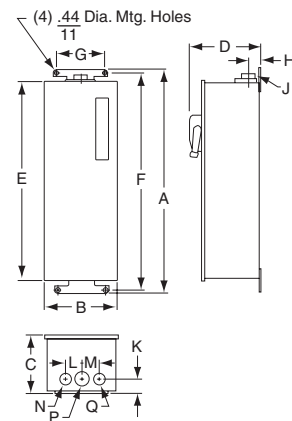
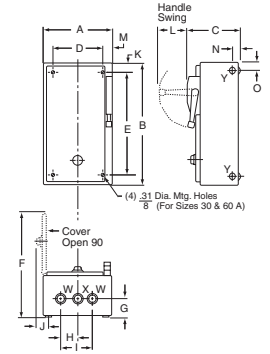


Figure 3: NIGHT-MASTER

**Approximate Dimensions**

**Table 16.210: Combination Lighting Contactors—NEMA 1 Enclosure**

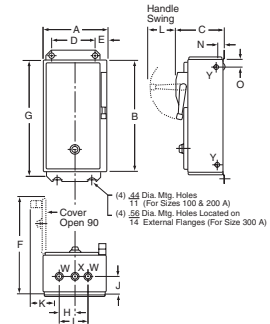
Ampere Rating	Type	Dimensions▲ (see Figure 1)														Top & Bot.			Sides
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	W	X	Y
30	SMG6- & 8-	9.50 241	22.50 572	8.37 213	6.38 162	20.50 521	14.68 373	1.81 46	1.69 43	3.37 86	3.38 86	1.06 27	3.25 83	2.18 55	1.25 32	.87 22	.50-.75	.50-.75	.50
	SMG7- & 9-	13.75 349	23.00 584	8.36 212	10.63 270	21.00 533	20.07 510	1.87 47	1.88 48	3.76 96	2.06 52	1.06 27	3.25 83	2.18 55	1.25 32	.87 22	.50-.75-1.0	.50-.75-1.0	.50
60	SPG6- & 8-	10.50 267	26.00 660	9.62 244	7.37 187	24.00 610	17.00 432	2.12 54	2.00 51	4.00 102	2.02 52	1.06 27	3.25 83	2.18 55	1.25 32	.87 22	1.0-1.25	.50-.75	.50
	SPG7- & 9-	15.00 381	28.75 730	9.62 244	11.62 295	26.25 667	21.50 546	2.18 55	2.00 51	4.00 102	2.56 65	1.31 33	3.25 83	2.18 55	1.25 32	.87 22	1.0-1.25	.50-.75	.50



**Figure 1**  
NEMA 1 Enclosure  
Combination Devices

**Table 16.211: NEMA 1 Enclosure**

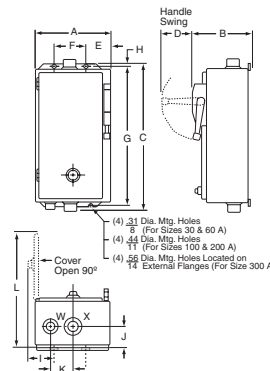
Ampere Rating	Type	Dimensions▲ (see Figure 2)														Top & Bot.			Sides		
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	W	X	Y		
100	SQG6- & 7- SQG81 & 91	15.25 387	39.50 1003	10.60 269	9.25 235	3.00 76	22.68 576	41.00 1041	2.69 68	5.38 137	2.83 72	3.74 95	5.00 127	—	1.21 31	.90 23	1.-1.25 2.-2.50	.50-.75	.50		
200	SVG6- & 7- SVG81 & 91	16.00 406	50.00 1270	10.68 269	10.00 254	3.00 76	23.68 601	51.50 1308	2.69 68	5.38 137	2.83 72	3.74 95	5.00 127	—	1.21 31	.90 23	2.50	.50-.75	.50		
200	SXG6- & 7- SXG81 & 91	20.00 508	75.00 1905	14.37 365	12.00 305	4.00 102	29.43 748	77.00 1956	3.19 81	—	3.52 89	7.00 178	9.25 235	—	—	—	.50-.75	3.00	—		
	SYG81 & 91	20.00 508	63.00 1600	14.37 365	12.00 305	4.00 102	27.43 697	65.00 1651	3.19 81	—	3.52 89	7.00 178	5.00 127	—	—	—	.50-.75	3.00	—		
400	SYG81 & 91	36.00 914	90.00 2286	17.00 432	Floor Mounting Enclosure														—	—	—
600	SZG81 & 91	36.00 914	90.00 2286	17.00 432	Floor Mounting Enclosure														—	—	—



**Figure 2**  
NEMA 1 Enclosure

**Table 16.212: NEMA 4 & 4X Enclosure**

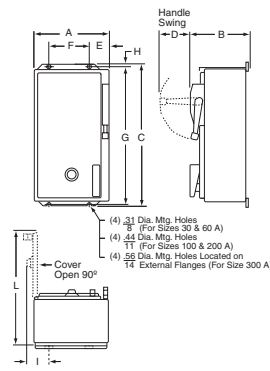
Ampere Rating	Type	Dimensions▲ (see Figure 3)											W	X			
		A	B	C	D	E	F	G	H	I	J	K	L	Hub	Hub		
30	SMW6- & 8-	9.50 241	8.36 212	24.76 629	3.25 83	2.50 64	4.50 114	23.50 597	.63 16	3.00 76	1.62 41	2.31 59	14.31 363	.75 Hub	1.0 Hub		
	SMW7- & 9-	13.75 349	8.36 212	25.26 642	3.25 83	4.75 121	4.25 108	24.00 610	.63 16	5.25 133	1.62 41	2.31 59	20.14 512	.75 Hub	1.0 Hub		
60	SPW6- & 8-	10.50 267	9.61 244	28.26 718	3.25 83	2.50 64	5.50 140	27.00 686	.63 16	3.00 76	2.00 51	2.63 67	16.56 421	.75 Hub	1.50 Hub		
	SPW7- & 9-	15.00 381	9.61 244	31.01 788	3.25 83	5.38 137	4.25 108	29.75 756	.63 16	5.88 149	2.00 51	2.63 67	21.06 535	.75 Hub	1.50 Hub		
100	SQW6- & 7- SQW81 & 91	15.25 387	10.60 269	41.76 1061	5.00 127	2.50 64	10.25 260	40.50 1029	.63 16	3.24 82	2.61 66	3.19 81	22.18 563	.75 Hub	2.50 Hub		
200	SVW6- & 7- SVW81 & 91	16.00 406	10.56 268	52.26 1327	5.00 127	2.50 64	11.00 279	51.00 1295	.63 16	3.24 82	2.61 66	3.19 81	23.00 584	.75 Hub	2.50 Hub		
300	SXW6- & 7- SXW81 & 91	20.00 508	14.21 361	78.12 1984	9.25 235	4.00 102	12.00 305	77.00 1956	.56 14	4.77 121	2.96 75	3.50 89	29.43 748	.75 Hub	3.50 Hub		
	SYW81 & 91	20.00 508	14.21 361	66.12 1679	5.00 127	4.00 102	12.00 305	65.00 1651	.56 14	4.77 121	2.96 75	3.50 89	27.43 697	.75 Hub	3.50 Hub		
400	SYW81 & 91	36.00 914	17.71 450	98.00 2489	Floor Mounting Enclosure											—	—
600	SZW81 & 91	36.00 914	17.71 450	98.00 2489	Floor Mounting Enclosure											—	—



**Figure 3**  
NEMA 4 & 4X Enclosure

**Table 16.213: NEMA 12/3R Enclosure**

Ampere Rating	Type	Dimensions▲ (see Figure 4)												
		A	B	C	D	E	F	G	H	I	J			
30	SMA6- & 8-	9.50 241	8.36 212	24.26 616	3.25 83	2.50 64	4.50 114	23.50 597	.38 10	3.25 83	14.31 363			
	SMA7- & 9-	13.75 349	10.10 257	24.76 629	3.25 83	4.75 121	4.25 108	24.00 610	.38 10	5.50 140	22.00 559			
60	SPA6- & 8-	10.50 267	9.61 244	27.76 705	3.25 83	2.50 64	5.50 140	27.00 686	.38 10	3.25 83	16.56 421			
	SPA7- & 9-	15.00 381	10.98 279	30.51 775	3.25 83	5.38 137	4.25 108	29.75 756	.38 10	6.13 156	23.43 595			
100	SQA6- & 7- SQA81 & 91	15.25 387	10.59 269	42.00 1067	5.00 127	2.50 64	3.00 76	9.25 235	41.00 1041	.50 13	3.75 95	22.31 567		
200	SVA6- & 7- SVA81 & 91	16.00 406	10.52 267	52.50 1334	5.00 127	2.50 64	3.00 76	10.00 254	51.50 1308	.50 13	3.75 95	23.00 584		
300	SXA6- & 7- SXA81 & 91	20.00 508	14.21 361	78.00 1981	9.25 235	4.00 102	12.00 305	77.00 1956	.50 13	7.75 197	29.43 748			
	SYA81 & 91	20.00 508	14.21 361	66.00 1676	5.00 127	4.00 102	12.00 305	65.00 1651	.50 13	7.75 197	27.43 697			
400	SYA81 & 91	36.00 914	17.71 450	90.00 2286	Floor Mounting Enclosure									
600	SZA81 & 91	36.00 914	17.71 450	90.00 2286	Floor Mounting Enclosure									



**Figure 4**  
NEMA 12/3R Enclosure

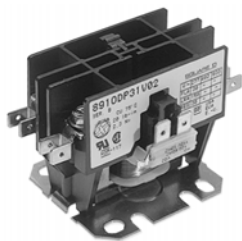
▲ Dimensions are the same for Form F4T (standard control transformer), Form F4T11 (100 VA extra capacity) and Form F4T12 (200 VA extra capacity).

Dual Dimensions: **INCHES**  
Millimeters

- Compact Design
- Industry Standard Mounting
- Double Break Contacts
- Low Coil VA
- Straight-Through Wiring
- Low Cost

Definite purpose contactors are ideal for heating, air conditioning, refrigeration, data processing, and food service equipment. New compact 1 and 2-Pole contactors are available along with standard size 2, 3, and 4-Pole devices.

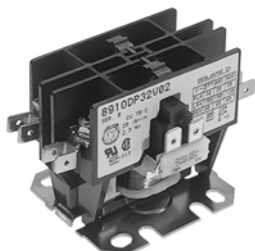
They feature quick connect terminals and binder head screws for easy wiring. Box lugs are standard on 40 ampere contactors and larger. An exclusive DIN track mounting option may reduce installation costs. Coils can be changed on the Type DPA contactors quickly without a tool. Auxiliary contact modules snap on either side of the Type DPA contactors.



Type DP31V02  
1-Pole

**Table 16.214: Compact 1-Pole Contactors—600 Vac Maximum**

Full Load Amperes	Locked Rotor Amperes			Resistive Load Amperes	Horsepower Ratings		N.O. Poles	Type	\$ Price
	277 V	460 V	575 V		115 V 1Ø	230 V 1Ø			
20	100	100	80	25	1	2	1	DP11★	32.80
25	125	125	100	30	2	3	1	DP21★	38.20
30	150	150	120	40	2	3	1	DP31★	45.90
40	240	200	160	50▲	2	5	1	DP41★	54.00



Type DP32V02  
2-Pole

**Table 16.215: Compact 2-Pole Contactors—600 Vac Maximum■**

Full Load Amperes	Locked Rotor Amperes			Resistive Load Amperes	Horsepower Ratings		N.O. Poles	Type	\$ Price
	277 V	460 V	575 V		115 V 1Ø	230 V 1Ø			
20	100	100	80	30	1	2	2	DP12★	38.20
25	125	125	100	35	2	3	2	DP22★	50.00
30	150	150	120	40	2	5	2	DP32★	55.00
40	240	200	160	50	2	5	2	DP42★	65.00

**Table 16.216: 2, 3, and 4-Pole Contactors—600 Vac Maximum◆**

Full Load Amperes	Locked Rotor Amperes			Resistive Load Amperes	Horsepower Ratings				N.O. Poles	Type	\$ Price
	230 V	460 V	575 V		115 V 1Ø	230 V 1Ø	230 V 3Ø	460/575 V 3Ø			
20	120	100	80	25	1	2	5	7-1/2	2 3 4	DPA12★ DPA13★ DPA14★	53.00 61.00 76.00
25	150	125	100	35	2	3	7-1/2	10	2 3 4	DPA22★ DPA23★ DPA24★	58.00 67.00 86.00
30	180	150	120	40	2	5	10	15	2 3 4	DPA32★ DPA33★ DPA34★	71.00 75.00 99.00
40	240	200	160	50	3	7-1/2	10	20	2 3 4	DPA42★ DPA43★ DPA44★	79.00 88.00 114.00
50	300	250	200	65	3	10	15	30	2 3	DPA52★ DPA53★	164.00 174.00
60	360	300	240	75	5	10	25	30	2 3	DPA62★ DPA63★	185.00 193.00
75	450	375	300	94	5	15	25	40	2 3	DPA72★ DPA73★	221.00 247.00
90	540	450	360	120	7-1/2	20	30	50	2 3	DPA92★ DPA93★	286.00 311.00
120	720	600	480	120	10	25	40	75	2 3	DPA122★ DPA123★	352.00 382.00
132	800	800	520	132	—	—	—	—	3	SYD138★	703.00
220	1500	1500	1200	220	—	—	—	—	3	SYD230★	1327.00
352	2200	2200	1800	352	—	—	—	—	3	SYD368★	2744.00

- ▲ 50 A Resistive, maximum 277 V. All others rated 40 A Resistive (above 277 V).
- Above 240 V, all lines must be switched.
- ◆ See page 16-116 for replacement contacts.
- ★ Voltage code must be specified to order this product. Refer to standard voltage codes listed below.

**Table 16.217: Coil Voltage Codes**

Voltage		Code Type DP, DPA	Code Type DPA122, DPA123, SYD
60 Hz	50 Hz		
24	24	V14	V12▼
24	—	—	V01△
120	110	V02	V02
208	—	—	V08
208-240	220	V09	—
230-240	220	—	V03
277	—	V04	V04
480	440	V06□	V06
600	550	V07◇	V07

- ▼ 24 V 50 Hz only.
- △ Available on Types DPA122, DPA123, and SYD138 only.
- Not available for Type DP11 through DP31 single-pole devices.
- ◇ Not available for Type DP one- and two-pole devices.

**Types DP, DPA, and SYD Application Data**

**Table 16.218: 2 Normally Open & 2 Normally Closed 4-Pole Contactors—600 Vac Maximum**

Full Load Amperes	Resistive Load Amperes	N.O. Poles	N.C. Poles	Class 8910		\$ Price
				Type	Form	
20	25	2	2	DPA14▲	Y392	148.00
25	35	2	2	DPA24▲	Y392	159.00
30	40	2	2	DPA34▲	Y392	171.00
40	50	2	2	DPA44▲	Y392	186.00

▲ Voltage code must be specified to order this product. Refer to standard voltage codes on page 16-88.  
■ Above 240 volts, all lines must be switched.  
Note: N.C. poles on outside. N.C. poles open before N.O. poles close.

**Table 16.219: Auxiliary Contacts, 5 A, 600 Vac Rated**

For Use With Class 8910 Type	Contact Arrangement	Class 9999 Type	\$ Price
DPA	1 N.O.	D10	16.40
	1 N.C.	D01	16.40
	1 N.O. & 1 N.C.	D11	29.50
	2 N.O.	D20	29.50
DPA122 DPA123 SYD	1 N.O.	SX6	57.00
	1 N.C.	SX7	57.00
	1 N.O. & 1 N.C.	SX8	77.00

**Table 16.220: NEMA 1 General Purpose Enclosures for Type DP, DPA and SYD Contactors**

Class 8910 Type	Full Load Amperes	Poles	Class 9991 Type	\$ Price ♦
DP	20-40	1 & 2	DPG1	78.00
DPA	20-40	2 & 3	DPG1	78.00
DPA	50-40	2 & 3	DPG2	99.00
		4		
DPA	60-75	2 & 3	DPG3	143.00
DPA	90-120	2 & 3	DPG4	287.00
SYD	132	2 & 3	DPG5	464.00
SYD	220	2 & 3	DPG6	464.00

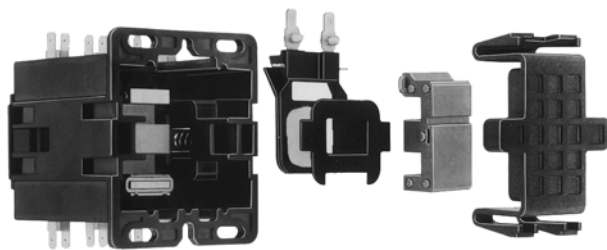
♦ CP1 discount schedule.

**Table 16.221: Application Data**

Mechanical Life: 500,000 operations  
Electrical Life:  
Type DP: 100,000 operations  
Type DPA, SYD: 200,000 operations  
Duty Cycle: Continuous  
Approvals:  
UL Component Recognized  
UL Listed (Form U1) File E78351, CCN NLDX2  
CSA Certified File E78351, CCN NLDX  
DPA is CE marked File LR25490, Class 321104

Note: See page 16-116 for replacement contacts.

**Coil Replacement**



No tools required

**Table 16.222: Class 8910 Type DPA Replacement Coils**

Full Load Amperes	Poles	Class 9998 Type	Volt-Amperes▼		\$ Price△
			Inrush	Sealed	
20-40 A	2 & 3	DA1★	56	6	68.00
20-40 A	4	DA2★	109	10	92.00
50-60 A	2 & 3	DA2★	109	10	92.00
75-90 A	2 & 3	DA3★	214	19	114.00

★ Replace diamond with suffix from DPA Coil Table 16.226. Example: Coil for Class 8910 DPA33V02 120 V 60 Hz would be a Class 9998 Type DA1V02.  
▼ For Types DP11 through DP32: Inrush 30 VA; Sealed 5 VA.  
△ CP10 Discount Schedule, not CP1.  
Note: See page 16-133 for DPA12\_ and SYD Replacement Coils.

**Table 16.223: Terminals**

Full Load Amperes	Power Terminals	
	Type of Lug	Wire Range□
20-30 A	Binder Head	#14-#8
40 A	Box Lug	#14-#6
50-60 A	Box Lug	#14-#2
75-90 A	Box Lug	#14-#1/O
120 A	Box Lug	#14-#1/O
132 A	Box Lug	#8-350 MCM
220 A	Box Lug	#8-350 MCM
352 A	Box Lug	#4-500 MCM

□ Solid or stranded copper wire only.

**Table 16.224: Miscellaneous Parts**

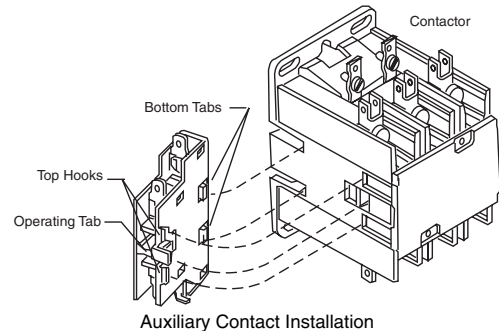
Description	Class 9999 Type	\$ Price
DIN mounting bracket attachment (Type DPA, 20 A to 60 A only)	DMB1	7.70
Type DP Series B Cover	DPC1	2.10

**Table 16.225: Factory Modifications**

Auxiliary contacts can be factory installed along with a DIN mounting bracket option. Special terminations are also available.

Modification	Type	Form	\$ Price
Factory installed auxiliary contacts	—	◇	◇
Pressure wire connectors (20-30 A)	DPA	Y122	1.70 per pole
Box lugs (20-30 A)	DP DPA	Y124	3.30 per pole
Cu/Al box lugs (20-40 A)	DPA	Y239	3.30 per pole
Cu/Al box lugs (20, 25 & 30 A)	DP	Y239	3.30 per pole
DIN mounting bracket attached (35 mm style)★	DP	Y135	3.30
	DPA	Y135	8.70
Contact cover for Type DP Series B	—	Y248	2.10
UL Listed label on device	DP	U1	No Charge

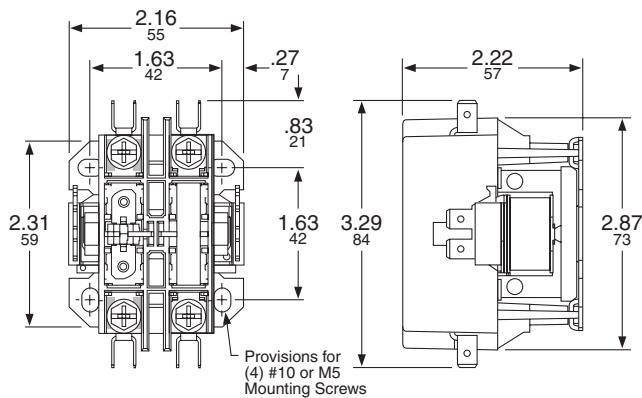
◇ Contact your nearest Square D/Schneider Electric sales office.  
★ Available for 20 through 60 A only.



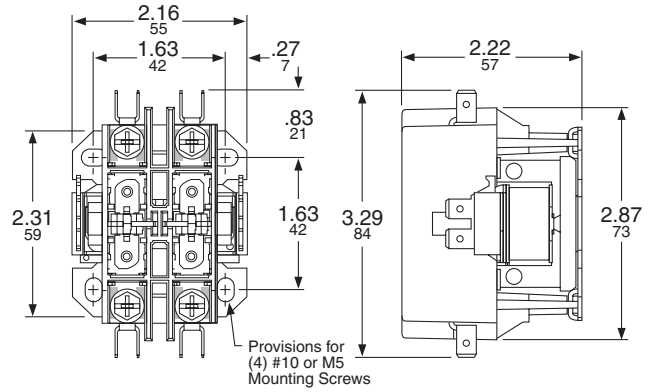
**Table 16.226: Type DPA Coil Voltage Codes**

Voltage, 60 Hz	Voltage, 50 Hz	Voltage Code
24	24	V14
120	110	V02
208-240	220	V09
277	—	V04
480	440	V06▽
600	550	V07▽

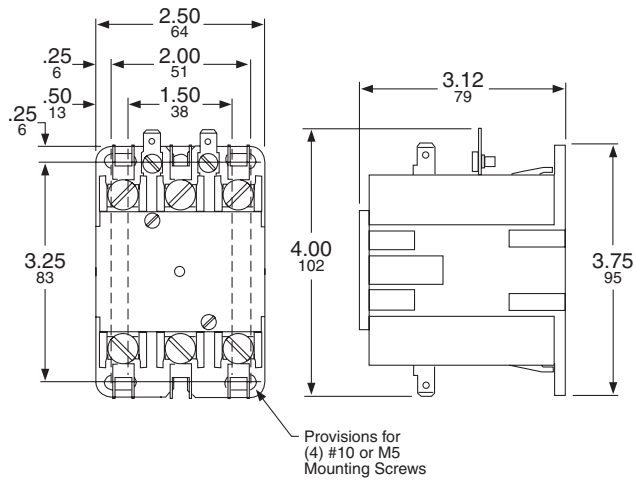
▽ Available for Type DPA contactors only.



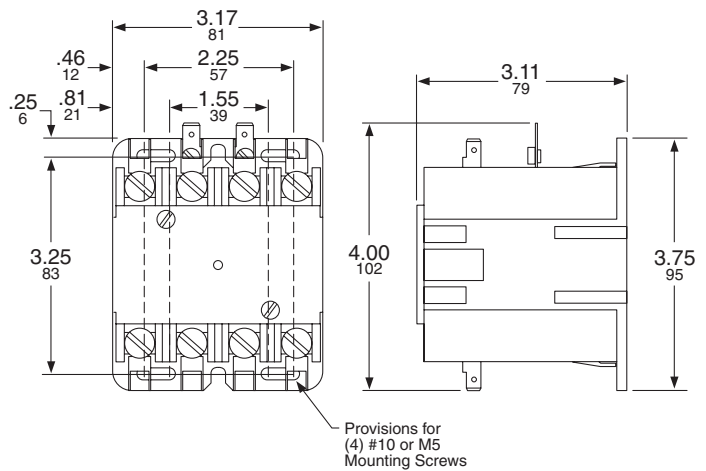
Type DP—1-Pole  
20 through 40 Full Load Amperes



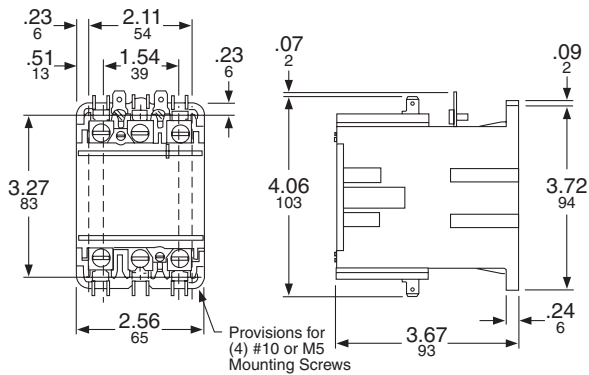
Type DP—2-Pole  
20 through 40 Full Load Amperes



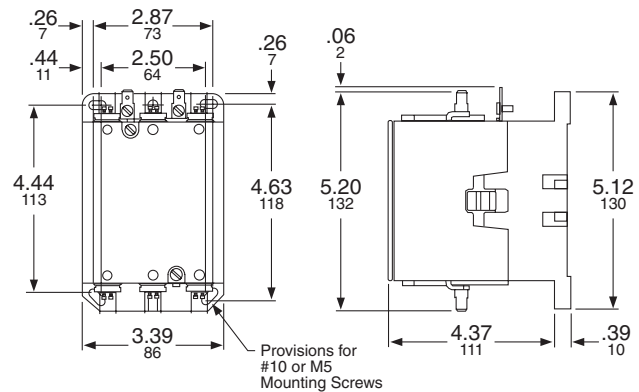
Type DPA—2 and 3-Pole  
20 through 40 Full Load Amperes



Type DPA—4-Pole  
20 through 40 Full Load Amperes

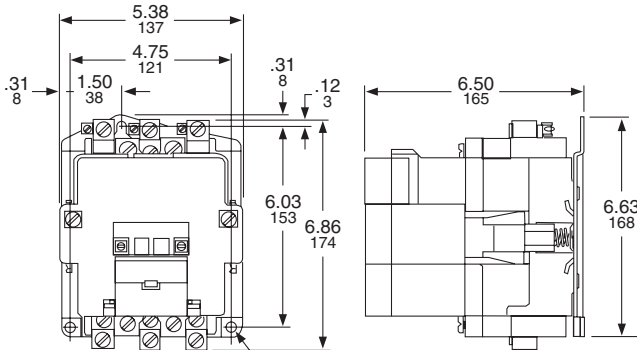


Type DPA—2 and 3-Pole  
50 and 60 Full Load Amperes

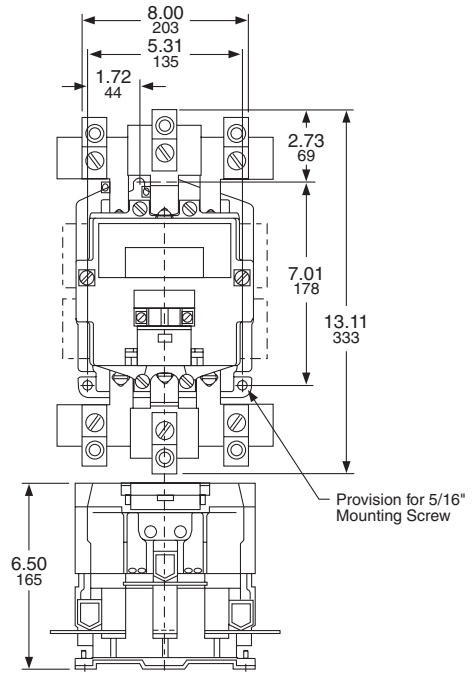


Type DPA—2 and 3-Pole  
75 and 90 Full Load Amperes

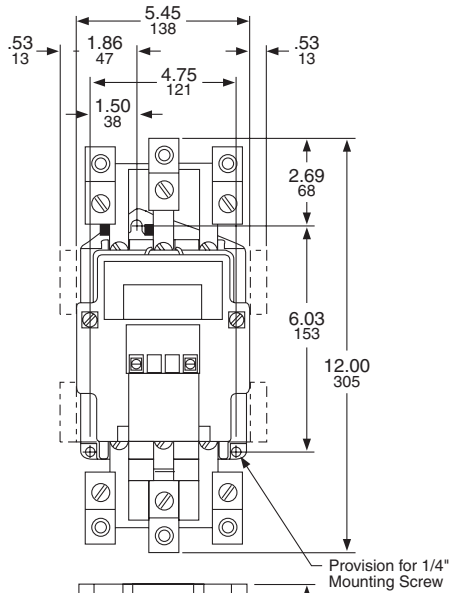
Dual Dimensions: INCHES  
Millimeters



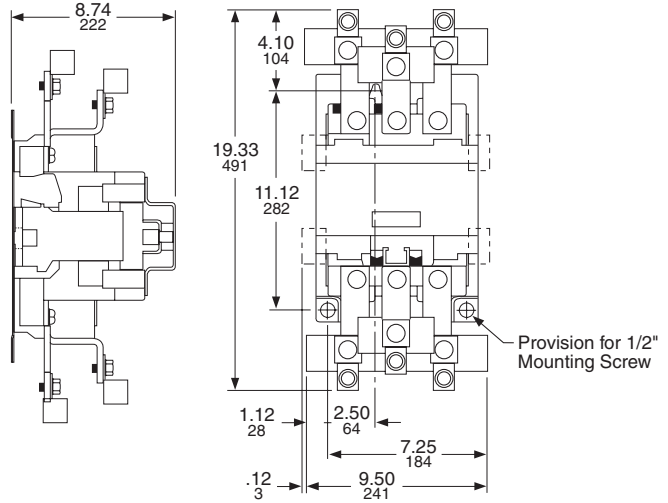
**Type DPA**  
120 Full Load Amperes



**Type SYD230**  
220 Full Load Amperes



**Type SYD138**  
132 Full Load Amperes



**Type SYD368**  
352 Full Load Amperes

Dual Dimensions: INCHES  
Millimeters



Class 8911 definite purpose starters are inexpensive starters for applications with relatively low duty cycles. Typical applications include air compressors, agricultural equipment, pumps, and HVAC equipment. Definite purpose starters offer:

- Low cost
- Small size
- Melting alloy overload block
- Trip-free reset mechanism
- Open type or enclosed
- 500,000 mechanical operations

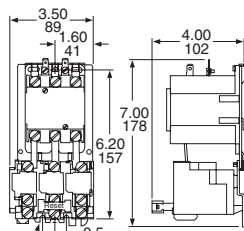


Type DPSO23V02



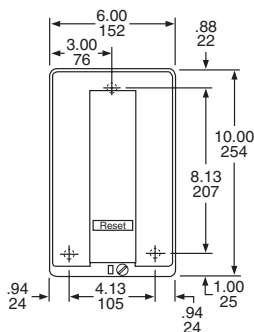
Type DPSG23V02

Approximate Dimensions



Provisions for (3) #10 or M5 Mounting Screws

Type DPSO—2 and 3-Pole and DSO 20–50 Full Load Amperes



Type DPSG—2 and 3-Pole 20–40 Full Load Amperes

Table 16.227: 2- and 3-Pole Starters—600 Vac Maximum

No. of Poles	Full Load Amperes	Horsepower Ratings				Locked Rotor Amperes			Open Type		NEMA 1 Enclosed		No. of Thermal Units▲
		115 V 1Ø	230 V 1Ø	230 V 3Ø	460/575 V 3Ø	230 V	460 V	575 V	Type■	\$ Price▲	Type■	\$ Price▲	
Compact 2-Pole Single Phase	20	1	2	—	—	120	100	80	DSO12◆	260.00	DSG12◆	318.00	1
	25	2	3	—	—	150	125	100	DSO22◆	284.00	DSG22◆	342.00	
	30	2	5	—	—	180	150	120	DSO32◆	320.00	DSG32◆	381.00	
2-Pole Single Phase	20	1	2	—	—	120	100	80	DPSO12◆	270.00	DPSG12◆	332.00	1
	25	2	3	—	—	150	125	100	DPSO22◆	296.00	DPSG22◆	354.00	
	30	2	5	—	—	180	150	120	DPSO32◆	333.00	DPSG32◆	392.00	
	40	3	7 1/2	—	—	240	200	160	DPSO42◆	365.00	DPSG42◆	426.00	
	50	3	10	—	—	300	250	200	DPSO52◆	482.00	DPSG52◆	539.00	
3-Pole Poly-Phase	20	1	2	3	5	120	100	80	DPSO13◆	297.00	DPSG13◆	356.00	3
	25	2	3	7 1/2	10	150	125	100	DPSO23◆	320.00	DPSG23◆	381.00	
	30	2	5	10	15	180	150	120	DPSO33◆	363.00	DPSG33◆	423.00	
	40	3	7 1/2	10	20	240	200	160	DPSO43◆	398.00	DPSG43◆	459.00	
	50	3	10	15	30	300	250	200	DPSO53◆	638.00	DPSG53◆	696.00	
	60	5	10	25	30	360	300	240	DPSO63◆	680.00	DPSG63◆	797.00	
	75	5	15	25	40	450	375	300	DPSO73◆	809.00	DPSG73◆	926.00	
	90	7 1/2	20	30	50	540	450	360	DPSO93◆	1092.00	DPSG93◆	1211.00	

- ▲ Prices do not include thermal units. Standard trip thermal units are priced at \$14.30 each. See page 16-125 for selection information.
- Holding circuit contacts are not provided as standard; refer to table below for kit.
- ◆ Voltage code must be specified to order this product. Refer to standard voltage codes listed below.

Table 16.228: Cross Reference Existing/Replacement Class 8911

Existing Device	Replacement Device
HO33	DPSO13
HG33	DPSG13
JO33	DPSO23
JG33	DPSG23
KO33	DPSO33
KG33	DPSG33
KO43	★
KG43	★
LO33	DPSO43
LG33	DPSG43
MO33	DPSO53
MG33	DPSG53
MO43	★
MG43	★

★ Type DPS 4-Pole starter not available. Suggest 3-Pole device with auxiliary contact.

Table 16.229: Miscellaneous Parts and Kits

Description	Class & Type	\$ Price
Start-Stop push button kit▼▲	8911DPB1	134.00
Hand-Off-Auto selector switch kit▼	8911DSS1	134.00
Standard N.C. overload relay contact	9998SO1	42.80
N.C. and N.O. isolated overload relay alarm contacts	9999SO4	116.00
Overload relay jumper strap	9998SO31	14.30

- ▼ Use for 20 to 40 A starters. For 50 A starters, use the 9999BLX bracket.
- ▲ Does not include holding circuit interlock—order auxiliary contact.

Table 16.233: Ratings—Overload Contacts and Auxiliary Contacts

Device	Volts AC	Pilot Duty – AC Only (35% Power Factor)		Continuous Current Rating
		Make	Carry & Break	
9998 SO1 9999 SO4	120 or Less	30 A	3 A	5 A
9999 R20 & R21 9999 D10, D01, D11 & D20	120–600	3600 VA	360 VA	5 A

Table 16.234: How to Order

To Order Specify:	Catalog Number			
• Class Number	Class	Type	Coil Voltage Code	Form(s)
• Type Number				
• Voltage Code	8911	DPSG33	V02	
• Form(s)				

Table 16.230: Class 8911 Type DPS Replacement Parts

Full Load Amperes	Poles	Class 9998 Type	Volt Amperes		\$ Price□
			Inrush	Sealed	
20–40 A	2 & 3	DA1◇	56	6	68.00
50 A	2 & 3	DA2◇	109	10	92.00
60–90 A	2 & 3	DA3◇	214	19	114.00

See page 16-116 for replacement contacts for DPS devices.

- CP10 Discount Schedule, not CP1.
- ◇ Replace with Voltage Code from the Coil Table shown below.

Table 16.231: Coil Voltage Codes

Voltage, 60 Hz	Voltage, 50 Hz	Voltage Code
24	24	V14
120	110	V02
208–240	220	V09
277	—	V04
480	440	V06
600	550	V07

Table 16.232: Auxiliary Contacts For Type DPS Starters★

Description	Class 9999 Type	\$ Price▽
1 N.O.	D10	16.40
1 N.C.	D01	16.40
1 N.O./1 N.C.	D11	29.50
2 N.O.	D20	29.50

- ★ Auxiliary contacts are available factory installed. Consult Square D/Schneider Electric C1C at 1-888-SquareD (1-888-778-2733).
- ▽ CP1B discount schedule.



**WELL-GUARD Control™**  
**Pump Panels**

**Full Voltage Type**

Class 8940 / Refer to Catalog 8940CT9701R7/08

Class 8940 panels in NEMA 3R enclosures are specifically designed for pumping applications. Featuring IEC Style contactors and overload relays.

Extra space is provided for field installation of auxiliary equipment.

- Approved for submersible pump applications
- Class 10 overload relay through 100 hp—480 V, 50 hp—240 V
- Adjustable trip current
- All prices include a START push button and a HAND-OFF-AUTO selector switch.

- Ambient temperature compensated overload
- Phase failure sensitive through 100 hp—480 V, 50 hp—240 V
- Sizes closely matched to common motor sizes
- All devices are UL Listed, and marked "SUITABLE ONLY FOR USE AS SERVICE EQUIPMENT"



Type NPF4030



Type NPG4050

**Table 16.235: 3-Pole Polyphase—480 Vac Maximum (50–60 Hz)**

Volts	Max. Hp Polyphase	Coil Voltage	Fuse Clip Amperes■	Type	\$ Price
240	3	240–60 220–50	30	NPD2003♦	1881.00
	5		30	NPE2005♦	1881.00
	7-1/2		30	NPE2007♦	1881.00
	10		60	NPF2010♦	2208.00
	15		60	NPF2015♦	2537.00
	20		100	NPG2020♦	3618.00
	25		100	NPG2025♦	4082.00
	30		100	NPJ2030♦	4082.00
	40		200	NPJ2040♦	6591.00
	50		200	NPJ2050♦	7520.00
480	3	480–60 440–50	30	NPD4003♦	1881.00
	5		30	NPD4005♦	1881.00
	7-1/2		30	NPD4007♦	1881.00
	10		30	NPE4010♦	1881.00
	15		30	NPE4015♦	2208.00
	20		60	NPF4020♦	2537.00
	25		60	NPF4025♦	2537.00
	30		60	NPF4030♦	3681.00
	40		100	NPG4040♦	4082.00
	50		100	NPG4050♦	4082.00
	60		100	NPJ4060♦	6651.00
	75		200	NPJ4075♦	6651.00
	100		200	NPJ4100♦	7520.00

- ▲ Circuit breaker disconnect supplied.
- Fuse clips are sized for use with dual-element time-delay fuses.
- ♦ Coil voltage code must be specified to order this product. Refer to standard voltage codes listed below.

**Table 16.236: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
240	220	V03	N/C
480	440	V06	N/C

- ★ 24 V coils are not available on Size 4 starters. On Size 1–3, 24 V coils are available. **Form S** must be used.
- ▼ **Form S** required for separate control.

**Table 16.237: AC Operated Devices with Control Power Transformers**

Voltage		Code
60 Hz (Primary-Secondary)		
240-120		V80
480-120		V81

**Table 16.238: Class 8940 Electrical Interlock**

Disconnect Switches		
	SPDT	DPDT
30 A	EIK1Δ	EIK2Δ
60 A	EIK1Δ	EIK2Δ
100 A	9999TC10	9999TC20
200 A	9999R39	9999R40
400 A	9999R35	9999R36
Circuit Breakers		
	N/A	N/A
GJL		
FAL	9999R26	9999R27
KAL	9999R26	9999R27
LAL	9999R26	9999R27
MAL	9999R26	9999R27

Δ No Class Number required.

For How to Order Information, see page 16-12.

**NOTE:** Motor Logic™ SSOLR are designed to protect 50/60 hertz three-phase AC motors from overload and phase loss conditions. Open Delta systems or grounded B-phase systems are difficult to balance and could cause the Motor Logic SSOLR to trip. For applications of this nature, it is recommended that bi-metallic overload relays (Form B12) be used.

Class 8940 Type NS, SS, and XS panels in NEMA 3R enclosures are specifically designed for pumping applications. Extra space is provided for field installation of auxiliary equipment.

- Type S Contactor provided as standard
- Approved for submersible pump applications
- Class 10 Motor Logic™ SSOLR through 200 hp—480 V, 100 hp—240 V, Type SS only (Includes rubber boot.)
- All prices include a START push button and a HAND-OFF-AUTO selector switch
- Adjustable trip current
- Phase failure sensitive through 200 hp—480 V, 100 hp—240 V, Type SS only
- Ambient temperature compensated overload
- All devices are UL Listed, and marked "SUITABLE ONLY FOR USE AS SERVICE EQUIPMENT"

**NOTE:** Class 10 Motor Logic SSOLR does not protect for phase imbalance.



Type SSD4030



Type SSE4050

**Table 16.239: 3-Pole Polyphase—480 Vac Maximum (50–60 Hz)—Fusible or Thermal Magnetic Breaker▲**

Volts	Maximum Hp Polyphase	Coil Voltage	Fuse Clip Amperes♦	Type	\$ Price
240	3, 5, 7-1/2	240–60	30	SSC2007★	2003.00
	10, 15		60	SSD2015★	2480.00
	20, 25, 30		100	SSE2030★	4194.00
	40, 50		200	SSF2050★	7718.00
	75		LAL36250▼	XSG2075■	19890.00
	100		400	SSG2100★	16286.00
	200		LAL36350▼	XSG2100■	19890.00
	250		MAL36700▼	MAL36700■	43133.00
	300		MAL36800▼	XJ2250■	58145.00
				MAL361000▼	XJ2300■
480	3, 5, 7-1/2, 10	480–60	30	SSC4010★	2003.00
	15, 20, 25		60	SSD4025★	2480.00
	30		60	SSD4030★	3338.00
	40, 50		100	SSE4050★	4194.00
	60, 75, 100		200	SSF4100★	7718.00
	150		LAL36250▼	XSG4150■	19890.00
	200		400	SSG4200★	16286.00
	200		LAL36350▼	XSG4200■	19890.00
	300		MAL36500▼	XSH4300■	43133.00
	350		MAL36600▼	XSH4350■	43133.00
	400		MAL36700▼	XSH4400■	43133.00
	500		MAL36800▼	XJ4500■	58145.00
	600		MAL361000▼	XJ4600■	58145.00

**Table 16.240: 3-Pole Polyphase—480 Vac Maximum (50–60 Hz)—Circuit Breaker (Mag-Gard®)**

Volts	Max. Hp Polyphase	Coil Voltage■	Circuit Breaker△	Type	\$ Price
240	25	240–60	FAL3610018M	XSE2025V03	4599.00
	30		KAL3625026M	XSE2030V03	4599.00
	40		KAL3625029M	XSE2040V03	7650.00
	50			XSF2050V03	8258.00
480	40	480–60	FAL3610018M	XSE4040V06	4599.00
	50			XSE4050V06	4599.00
	60		KAL3625025M	XSE4060V06	7334.00
	75			XSE4075V06	7650.00
	100		KAL3625029M	XSF4100V06	8258.00

- ▲ To substitute an IEC ambient compensated bimetallic overload relay (up to size 5) for the Motor Logic SSOLR, request Form B12 and state motor hp (no charge). This applies to the above (SSx) devices only.
- See page 16-81 for coil voltage codes and pricing.
- ♦ Fuse clips are sized for use with dual-element time-delay fuses.
- ★ Voltage code not required for 240 V or 480 V common control with 8940SS controllers.
- ▼ Circuit breaker disconnect supplied. (See page 7-32 for circuit breaker adjustment range.)
- △ See page 7-32 for circuit breaker adjustment range.

**Table 16.241: Class 8940—UL Listed Short Circuit Ratings**

Thermal Magnetic Circuit Breaker Type			
NEMA Size	Voltage	Enclosure	Available Amperes RMS Symmetrical
0-3	600	Standard	5,000
4 & 5	600	Standard	10,000
6	600	Standard	18,000
7	0-480	Standard	30,000
7	481-600	Standard	22,000

□ Standard enclosure includes non-oversize NEMAs 1, 4 & 4X Stainless, and 12.

**Table 16.243: Class 8940—UL Listed Short Circuit Ratings**

NEMA Size	NEMA Fuse Class	Enclosure	Available Amperes RMS Symmetrical
0-3	Class H or K	Standard	5,000
0-3	Class R	Standard	100,000
0-2	Class H or K	Standard	5,000
0-2	Class R	Standard	100,000
4-5	Class H or K	Standard	10,000
4-5	Class R	Standard	100,000
6	Class H or K	Standard	18,000
6	Class R	Standard	100,000

**Table 16.242: Class 10 Pump Panel Replacement Motor Logic SSOLR (with rubber boot)**

Description	Catalog Number	\$ Price
Pump Panel SSOLR 27A Special	3116154764 (Size 1)	\$192.00
Pump Panel SSOLR 45A Special	3116154883 (Size 2)	270.00
Pump Panel SSOLR 90A Special	3116155158 (Size 3)	329.00
Pump Panel SSOLR 135A Special	3116155368 (Size 4)	477.00
Pump Panel SSOLR 270A Special	3116118474 (Size 5)	221.00
Pump Panel SSOLR 540A Special	3116118476 (Size 6)	221.00
Pump Panel SSOLR 810A Special	3116118477 (Size 7)	221.00

For How to Order Information, see page 16-12.

**WELL-GUARD Control™  
Pump Panels**

**Full Voltage Type, Type "S2"**  
Class 8940 / Refer to Catalog 8940CT9701R7/08

Class 8940 "S2" Pumping Plant Panels in NEMA 3R enclosures are specifically designed for oil field applications. All panels are supplied with a Mag-Gard® circuit breaker or a visible blade, fused, disconnect switch. This line of pumping plant panels features:

- Rugged spring latches for easy access without a tool
- Side mounted control units for convenient operation
- Door retainer available for windy areas
- Price includes Hand-Off-Auto selector switch
- UL Listed for use as service equipment for motors
- Extra panel space for additional electrical controls
- All devices are UL Listed, and marked "SUITABLE ONLY FOR USE AS SERVICE EQUIPMENT"

Thermal units must be ordered separately at \$21.50 each. See page 16-125 for selection information.

**NOTE:** Overload relays are ambient temperature compensated.



Type WC3S2V06



Type XE3S2V02B12S

**Table 16.239: 3-Pole Polyphase—480 Vac Maximum (50–60 Hz)**

Volts	Max. Hp Polyphase	Coil Voltage	NEMA Size	Fusible Disconnect Type			Circuit Breaker Type		
				Fuse Clip Amperes	Type	\$ Price	Frame Size	Type	\$ Price
240	7-1/2	240–60 220–50	1	30	WC1S2V03	2109.00	GJL36030M04	XC1S2V03	2228.00
	10		2	60	WD1S2V03	2880.00	GJL36050M05	XD1S2V03	2997.00
	15		3	100	WE1S2V03	4649.00	FAL3610018M	XE1S2V03	4886.00
	30		4	200	WF1S2V03	8724.00	KAL3625026M	XF1S2V03	8963.00
	40						KAL3625029M	XF2S2V03	8963.00
	50								
480	7-1/2	480–60 440–50	1	30	WC3S2V06	2109.00	GJL36015M03	XC3S2V06	2262.00
	10						GJL36030M04	XC4S2V06	2262.00
	15		2	60	WD3S2V06	2919.00	GJL36030M04	XD3S2V06	3036.00
	25						GJL36050M05	XD4S2V06	3036.00
	50		3	100	WE3S2V06	4748.00	FAL3610018M	XE3S2V06	4986.00
	75						KAL3625025M	XF3S2V06	9036.00
	100		4	200	WF3S2V06	8801.00	KAL3625029M	XF4S2V06	9036.00

- ▲ Coil voltage code must be supplied to order this product. See Coil Voltage Codes table to the left for codes.
- Fuse clips are sized for use with dual-element time-delay fuses.

**Table 16.240: Factory Modifications (Forms)**

Description	Form Letter	\$ Price
Substitute Class 10 IEC overload relay – state motor hp (NEMA Sizes 0–4 only)	B12	No Charge
Control transformer with fused primary: Types: NPD, NPE, NPF, SSC, WC, XC (50 VA) NPG, SSD, XD, WD (100 VA) NPJ, SSE, XE, WE (150 VA) SSF, XF, WF (300 VA) SSG, NSG, XSG (50 VA and an interposing control relay)	F4T	386.00 539.00 797.00 968.00 1097.00
Factory installed door wind latch assembly in a standard 8940NPD, NPE, NPF, NPG, NPJ, SSC, SSD, SSE and SSF	G45	113.00
Elapsed time meter	G97	827.00
Substitute Class 10 MOTOR LOGIC® SSOLR▼	H10	64.00
ON Delay Timer	K25	1197.00
OFF Delay Timer	K26	1197.00
Program timer with day omission feature	K141	1197.00
Backspin timer (time delay upon energization)	K15	1112.00
Start Pushbutton (S2 panels only)	A28	No Charge
"Slim" panel (Types WC, WD, WE, XC, XD, XE only)	L8	No Charge
"Short" panel (Types SSE, SSF, XE-S2 and XF-S2 only)	L9	No Charge
Pilot light (specify lens color). Does not include auxiliary contact.	P♦	336.00
Separate control	S	No Charge
Auxiliary contacts (specify N.O. or N.C.)	X★	158.00
Special UL panel label for modified UL Listed devices on non-standard panels, requires approval by manufacturing plant	Y1	267.00
Lightning arrester	Y1532	570.00
Phase failure, phase reversal relay with time delay including under and over voltage protection	R44	1463.00
Substitute standard trip melting alloy overload relays – Not available on IEC style contactors	Y61	No Charge
Substitute quick-trip melting alloy overload relay (Sizes 1 and 2 only) – Not available on IEC style contactors	Y611	No Charge

- ♦ Indicate pilot light color as **Form P1** (red) or **Form P2** (green). See page 16-109, footnote Δ for more selections.
- ★ To determine the maximum number of auxiliary contacts which can be added to each Type S device and for the appropriate "X Form," refer to tables in the Class 8536 section.
- ▼ Motor Logic SSOLR are designed to protect 50/60 hertz three-phase AC motors from overload, phase unbalance and phase loss conditions. Open Delta systems or grounded B-phase systems are difficult to balance and could cause the Motor Logic SSOLR to trip. For applications of this nature, it is recommended that bi-metallic overload relays (Form B12) be used.

**Table 16.241: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24▲□	—	V01	N/C
120□	110□	V02	N/C
208□	—	V08	N/C
240	220	V03	N/C
—	380	V05	N/C
480	440	V06	N/C
600□	550□	V07	N/C
Specify	Specify	V99	35.60

- ▲ 24 V coils are not available on Size 4 starters. On Size 1–3, 24 V coils are available. **Form S** must be used.
- **Form S** required for separate control.

For How to Order Information, see page 16-12.

Approximate Dimensions

Table 16.242:

Type	Fig.	A		B		C		D		E		F		G		H		J		K		L		M		Knockouts			V		
		IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	Conduit	IN	mm	R	S	T	IN	mm		
NPD/E/F SSC SSD	1	39.05	992	13.73	349	6.67	169	9.70	246	33.05	839	37.93	963	7.00	178	2.41	61	3.00	76	3.00	76	2-1/2	2.41	61	1/2-3/4	1-1/4-1-1/2	1/2-3/4	1.41	36		
NPG/J SSE/F XSE/F	1	49.00	1245	19.15	486	8.81	224	10.37	263	44.07	1119	47.88	1216	7.00	178	2.17	55	2.69	68	3.44	87	2-1/2	2.57	65	1/2-3/4	1-1-1/4-1-2-1/2	1-1-1/4-1-1/2-2	1.41	36		
WC-S2 WD-S2 XC-S2 XD-S2	1	38.50	978	19.00	483	7.29	185	9.39	239	34.00	864	37.38	949	7.00	178	2.18	55	2.13	54	2.13	54	1-1/2	2.12	54	1/2-3/4	1-1-1/4-1-1/2	1/2-3/4	—	—		
WE-S2 WF-S2 XE-S2 XF-S2	1	56.50	1435	23.00	584	8.23	209	10.33	262	52.00	1321	55.38	1407	7.00	178	2.18	55	2.69	68	3.44	87	2	2.68	68	1/2-3/4	1-1-1/4-2-2-1/2	1-1-1/4-1-1/2-2	1.50	38		
SSG XSG	1	74.50	1892	22.00	559	13.80	351	17.55	446	73.00	1854	.50	13	14.00	356	N/A	N/A	.56	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.50	38
XSH	2	82.50	2096	36.00	914	20.00	508	23.25	591	80.00	2032	33.75	857	16.50	419	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
XSJ	2	92.50	2350	34.00	864	20.00	508	23.25	591	90.00	2286	31.75	806	16.50	419	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**NOTE:** Illustrations may not represent the actual enclosure; they are intended for dimensional information only.

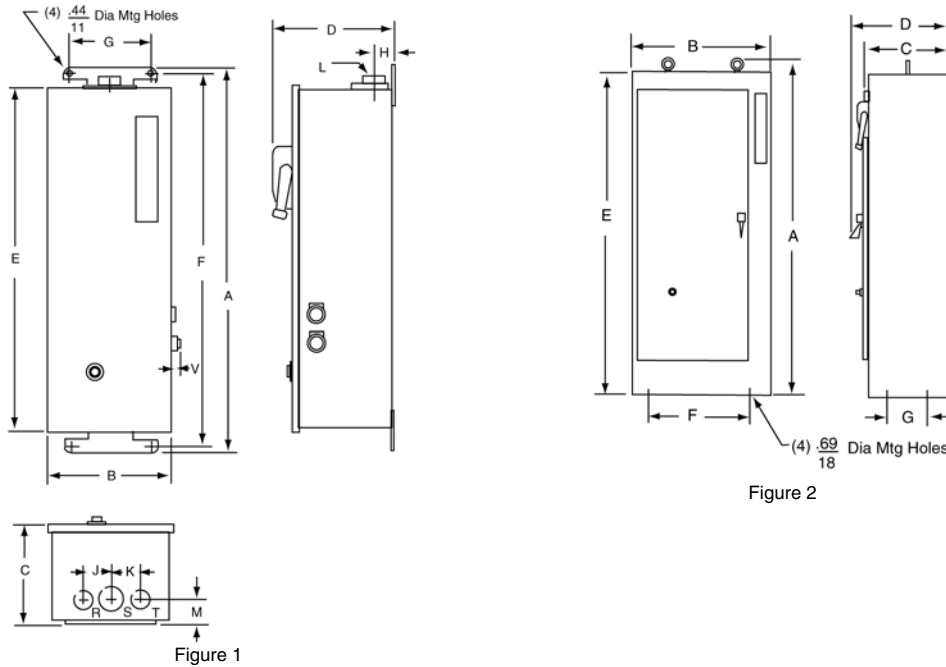


Figure 2

Dual Dimensions: **INCHES**  
Millimeters

## AC Duplex Motor Controllers

Class 8941



Duplex Motor Controllers are used to control two motors, and consist of two starters in a common enclosure. Two separate disconnect switches or circuit breakers with operators are included with all combination devices. Unless **Form Y68** is specified, an alternation circuit (a Class 8501 Type XO40 relay) is included, which alternately operates first one motor and then the other on each successive closing of a pilot device. Both motors will be energized should a second pilot device close. All devices incorporate a terminal block to simplify wiring of pilot devices A and B. Typical applications include pump motors where a second pump is required for peak demand periods yet alternation is desirable to equalize pump wear.

**Table 16.243: 3-Pole Polyphase—600 Vac Maximum (50–60 Hz)  
Non-Combination Type—Without Disconnect—With Electric Alternation**

Note that the prices shown do not include thermal units. Devices require 6 thermal units. Standard trip thermal units are **\$21.50** each. See page 16-125 for selection information.

NEMA Size	Maximum Rating Each Motor		NEMA 1 General Purpose Enclosure		NEMA 4/4X Watertight and Dusttight Enclosure Stainless Steel		NEMA 12 (NEMA 3 and 3R)▲ Dusttight and Driptight Industrial Use Enclosure		Open Type	
	Voltage	Hp Polyphase	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price
0	200–230 460–575	3 5	NBG10■	2322.00	NBW10■	3105.00	NBA10■	2564.00	NBO10■	2138.00
1	200–230 460–575	7-1/2 10	NCG20■	2478.00	NCW20■	3290.00	NCA20■	2721.00	NCO20■	2294.00
2	200 230 460–575	10 15 25	NDG30■	3731.00	NDW30■	5427.00	NDA30■	4359.00	NDO30■	3290.00
3	200 230 460–575	25 30 50	NEG40■	5112.00	NEW40■	8303.00	NEA40■	5925.00	NEO40■	4487.00
4	200 230 460–575	40 50 100	NFG50■	10440.00	NFW50■	15881.00	NFA50■	13131.00	NFO50■	9116.00

**Table 16.244: 3-Pole Polyphase—600 Vac Maximum (50–60 Hz)  
Combination Thermal Magnetic Circuit Breaker Type—With Electric Alternation**

Note that the prices shown do not include thermal units. Devices require 6 thermal units. Standard trip thermal units are **\$21.50** each. See page 16-125 for selection information.

Motor Starter Voltage	Max. Hp Poly-phase	Coil Voltage ■	NEMA Size	Circuit Breaker		NEMA 1 General Purpose Enclosure		NEMA 4/4X Watertight and Dusttight Stainless Steel Enclosure		NEMA 12 (NEMA 3 and 3R)▲ Dusttight and Driptight Industrial Use Enclosure	
				Frame Size	Ampere Rating	Type	\$ Price	Type	\$ Price	Type	\$ Price
200 (208)	2 3	208–60	0	FAL	15 20	CBG06■ CBG08■	3945.00	CBW06■ CBW08■	6951.00	CBA06■ CBA08■	4701.00
	5 7-1/2		1	FAL	35 50	CCG12■ CCG15■	4103.00	CCW12■ CCW15■	7109.00	CCA12■ CCA15■	4859.00
	10		2	FAL	60	CDG22■	5826.00	CDW22■	10470.00	CDA22■	6894.00
	15 20 25		3	FAL KAL	90 100 110	CEG32■ CEG36■ CEG38■	9401.00	CEW32■ CEW36■ CEW38■	17490.00	CEA32■ CEA36■ CEA38■	10782.00
	30 40		4	KAL	125 200	CFG41■ CFG44■	19584.00	CFW41■ CFW44■	29924.00	CFA41■ CFA44■	23400.00
	2 3		240–60 220–50	0	FAL	15 20	CBG06■ CBG08■	3945.00	CBW06■ CBW08■	6951.00	CBA06■ CBA08■
5 7-1/2	1	FAL		30 45	CCG14■ CCG16■	4103.00	CCW14■ CCW16■	7109.00	CCA14■ CCA16■	4859.00	
10 15	2	FAL		60 80	CDG22■ CDG24■	5826.00	CDW22■ CDW24■	10470.00	CDA22■ CDA24■	6894.00	
25 30	3	FAL KAL		100 110	CEG36■ CEG38■	9401.00	CEW36■ CEW38■	17490.00	CEA36■ CEA38■	10782.00	
40 50	4	KAL		150 200	CFG43■ CFG44■	19584.00	CFW43■ CFW44■	29924.00	CFA43■ CFA44■	23400.00	
5 7-1/2 10	480–60 440–50	0		FAL	15	CBG10■	4859.00	CBW10■	7862.00	CBA10■	5612.00
15 20 25		1	FAL	20 25	CCG18■ CCG20■	5013.00	CCW18■ CCW20■	8019.00	CCA18■ CCA20■	5769.00	
30 50		2	FAL	40 60 70	CDG26■ CDG28■ CDG30■	6737.00	CDW26■ CDW28■ CDW30■	12881.00	CDA26■ CDA28■ CDA30■	7806.00	
75 100		3	FAL	80 100	CEG39■ CEG40■	9401.00	CEW39■ CEW40■	17490.00	CEA39■ CEA40■	10782.00	
		4	KAL	125 200	CFG45■ CFG47■	19584.00	CFW45■ CFW47■	29924.00	CFA45■ CFA47■	23400.00	

▲ NEMA 12 enclosures may be field modified for outdoor applications. For details refer to Class 9991, page 16-104.  
■ Coil voltage code must be specified to order this product. Refer to standard voltage codes listed on page 16-87.  
Note: For voltage codes used with control transformers, see page 16-110.

For How to Order Information, see page 16-12.

**Table 16.245: 3-Pole Polyphase—600 Vac Maximum (50–60 Hz) Combination Disconnect Switch Type—With Electric Alternation**

Note that the prices shown do not include thermal units. Devices require 6 thermal units. Standard trip thermal units are \$21.50 each. See page 16-125 for selection information.

Motor Voltage (Starter Voltage)	Max. Hp Poly-phase	Coil Voltage	NEMA Size	Fuse Clip Size Amps	NEMA 1 General Purpose Enclosure		NEMA 4/4X Watertight and Dusttight Enclosure Stainless Steel		NEMA 12 (NEMA 3 and 3R)▲ Dusttight and Driptight Industrial Use Enclosure	
					Type	\$ Price	Type	\$ Price	Type	\$ Price
200 (208)	3	208-60	0	None 30	UBG10♦ DBG08♦	3731.00 3816.00	UBW10♦ DBW08♦	6737.00 6822.00	UBA10♦ DBA08♦	4487.00 4572.00
	7-1/2		1	None 60	UCG20♦ DCG18♦	3888.00 3974.00	UCW20♦ DCW18♦	6894.00 6980.00	UCA20♦ DCA18♦	4644.00 4730.00
	10		2	None 60	UDG30♦ DDG28♦	5642.00 5754.00	UDW30♦ DDW28♦	10283.00 10398.00	UDA30♦ DDA28♦	6708.00 6822.00
	25		3	None 200	UEG40♦ DEG38♦	8798.00 9072.00	UEW40♦ DEW38♦	16892.00 17163.00	UEA40♦ DEA38♦	10184.00 10454.00
230 (240)	3	240-60 220-50	0	None 30	UBG10♦ DBG08♦	3731.00 3816.00	UBW10♦ DBW08♦	6737.00 6822.00	UBA10♦ DBA08♦	4487.00 4572.00
	7-1/2		1	None 60	UCG20♦ DCG18♦	3888.00 3974.00	UCW20♦ DCW18♦	6894.00 6980.00	UCA20♦ DCA18♦	4644.00 4730.00
	15		2	None 60	UDG30♦ DDG28♦	5642.00 5754.00	UDW30♦ DDW28♦	10283.00 10398.00	UDA30♦ DDA28♦	6708.00 6822.00
	30		3	None 200	UEG40♦ DEG38♦	8802.00 9072.00	UEW40♦ DEW38♦	16892.00 17163.00	UEA40♦ DEA38♦	10184.00 10454.00
460 (480)	5	480-60 440-50 575 (600)	0	None 30	UBG10♦ DBG10♦	3731.00 3833.00	UBW10♦ DBW10♦	6737.00 6836.00	UBA10♦ DBA10♦	4487.00 4586.00
	10		1	None 30	UCG20♦ DCG20♦	3888.00 3987.00	UCW20♦ DCW20♦	6894.00 6993.00	UCA20♦ DCA20♦	4644.00 4743.00
	25		2	None 60	UDG30♦ DDG30♦	5642.00 5796.00	UDW30♦ DDW30♦	10283.00 10440.00	UDA30♦ DDA30♦	6708.00 6866.00
	50		3	None 100	UEG40♦ DEG40♦	8802.00 9230.00	UEW40♦ DEW40♦	16892.00 17319.00	UEA40♦ DEA40♦	10184.00 10611.00

▲ NEMA 12 enclosures may be field modified for outdoor applications. For details refer to Class 9991, page 16-104. ♦ Coil voltage code must be specified to order this product. Refer to standard voltage codes listed on page 16-87.  
■ Hp rating applies only when dual element time delay fuses are used. Note: For voltage codes used with control transformers, see page 16-110.

**Table 16.246: Factory Modifications (Forms)**

Description	Enclosure Type	Form	Price/NEMA Size			
			0-1	2	3	4
<b>PILOT DEVICES IN COVER★</b> "START-STOP" push buttons—one supplied for each motor. (Form C or Form Y68 required.)	1, 4, 12	A	671.00	671.00	671.00	671.00
"HAND-OFF-AUTO" selector switch—one supplied for each motor.	1, 4, 12	C	671.00	671.00	671.00	671.00
"NO. 1 LEAD—NO. 2 LEAD" selector switch for manual selection of lead pump. (Form Y68 required.) Red "ON" pilot light—one supplied for each motor.	Any 1, 4, 12	C13 P1	513.00 671.00	513.00 671.00	513.00 671.00	513.00 671.00
Push-to-test red "ON" pilot light—one supplied for each motor. Non-standard markings for pilot devices. "TEST" push button for each starter.	1, 4, 12 Any Any	P21 G12 Y29	869.00 28.70 671.00	869.00 28.70 671.00	869.00 28.70 671.00	869.00 28.70 671.00
<b>CONTROL CIRCUIT MODIFICATIONS</b> Fused control circuit without transformer One fuse Two fuses Fused control circuit transformer, two fuses in primary, with 600, 480, 240 or 208 V primary and 120 V secondary—one supplied for each starter.	Any Any Any	F F4 F4T	627.00 627.00 770.00	627.00 627.00 1083.00	627.00 627.00 1596.00	627.00 627.00 1938.00
Fused control circuit transformer, two fuses in primary, one fuse in secondary—one supplied for each starter. 100 VA additional capacity 200 VA additional capacity	Any Any Any	FF4T FF4T11 FF4T12	1395.00 1994.00 2478.00	1710.00 2393.00 2934.00	2222.00 2849.00 3392.00	2564.00 3135.00 □ 3675.00 □
Extra capacity control circuit transformer—two fuses in primary—one supplied for each starter (See Table 16.247) 100 VA additional capacity 200 VA additional capacity Elapsed time meter for each starter	Any Any Any	F4T11 F4T12 G97	1446.00 1853.00 1652.00	1767.00 2303.00 1652.00	2222.00 2763.00 1652.00	— △ — △ 1652.00
Pressure switch for each starter (Square D pressure switch 9012GAW25) Addition of 2 relays to modify controller for operation with single pole pilot devices. Addition of 3 relays to modify controller for operation with single pole mercury float switches.	Any Any Any	D R7 R8	755.00 1454.00 2178.00	755.00 1454.00 2178.00	755.00 1454.00 2178.00	755.00 1454.00 2178.00
Control circuit wired for separate 120 V source.	Any	S	No Charge	No Charge	No Charge	No Charge
Addition of 1 N.O. unwired interlock per starter for use by customer. (1 N.O. unwired interlock per starter is supplied as standard.) Addition of 1 N.C. unwired interlock per starter for customer use.	Any Any	X10 X01	315.00 315.00	315.00 315.00	315.00 315.00	315.00 315.00
Modified wiring for use with double pole mercury float switches. <b>Deduct</b> for omission of electrical alternating circuit. Additional Control circuit terminals—per wired terminal. (5 point terminal block is standard) Unwired	Any Any Any Any	Y24 Y68 G56▼ G50▼	314.00 869.00 116.00 57.00	314.00 869.00 116.00 57.00	314.00 869.00 116.00 57.00	314.00 869.00 116.00 57.00

★ Not available on open style devices. □ Single primary voltage must be specified.  
▼ Addition of terminal block 9080CA or 9080GR6 only. 5 point terminal block is provided as standard for custom connection. A wiring diagram must be supplied for factory wiring. ♦ These Forms are most commonly used. Other Forms may be available. Consult Square D/Schneider Electric CIC at 1-888-SquareD (1-888-778-2733) for additional information.  
△ Not available on this size. Use Form FF4T\_.

**Table 16.247:**

NEMA Size	Standard Capacity (Form F4T)	100 VA Additional Capacity (Form F4T11)	200 VA Additional Capacity (Form F4T12)
	Class 9070 Type	Class 9070 Type	Class 9070 Type
0 & 1	T100	T200	T300
2	T100	T200	T300
3	T150	T300	T500
4	T300	T500	T500

For How to Order Information, see page 16-12.

16 NEMA/DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS

**Approximate Dimensions**

**Table 16.248: NEMA 1 Enclosure—Non-Combination (Figure 1)**

Starter Size	A	B	C	D	E	F	G	H
0, 1, or 2	20-1/2	24-1/8	8-11/16	17-7/8	21-1/2	1-5/16	1-5/16	5/16 Dia.
3 or 4	22-1/8	34	9-3/4	16	35-1/2	3-1/16	3/4	7/16 Dia.

**Table 16.249: NEMA 1 Enclosure—Combination (Figure 2)**

Starter Size	A	B	C	D	E	F	G	H	J	K
0, 1, or 2 (For FAL Circuit Breaker and 30 A & 60 A Disconnect Switch)	20-3/8	35	9-5/8	17	32-1/2	3-5/16	1-1/4	1-1/4	1-1/4	7/16 Dia.
3 or 4 (For FAL & KAL Circuit Breaker and 100 A Disconnect Switch)	32	44	10-3/4	24	46	▲	1	2-1/2	2-1/2	9/16 Dia.

▲ For FAL & KAL Ckt. Bkr. Dimension F=3-5/16. For 100 A Disc. Sw. Dimension F=4-7/8

**Table 16.250: NEMA 4 Enclosure—Non-Combination (Figure 3)**

Starter Size	A	B	C	D	E	F	G	H	J
0, 1, or 2	20-1/2	24	8	25	15-3/8	26	2-9/16	1/2	5/16
3 or 4	22	34	9-1/8	35	17	36	2-1/2	1/2	9/16

**Table 16.251: NEMA 4 Enclosure—Combination (Figure 4)**

Starter Size	A	B	C	D	E	F	G	H	J	K
0, 1, or 2 (For FA Circuit Breaker and 30 A & 60 A Disconnect Switch)	20-1/2	35	9-9/16	36	15-3/8	37	2-9/16	1/2	5/16	3-5/16
3 or 4 (For FA and KA Circuit Breaker and 100 A Disconnect Switch)	32	44	10-11/16	46	26	47	3	1/2	9/16	■

■ For FA or KA Ckt. Bkr. K = 3-1/16. For 100 A Disc. Sw. K = 4-7/8

**Table 16.252: NEMA 12/3R Enclosure—Non-Combination (Figure 3)**

Starter Size	A	B	C	D	E	F	G	H	J
0, 1, or 2	20-1/2	24-1/4	8	25-1/2	14-3/8	26-1/2	3-1/16	1/2	7/16
3 or 4	22	34	9-1/8	35-1/2	16	36-1/2	3	1/2	7/16

**Table 16.253: NEMA 12/3R Enclosure—Combination (Figure 4)**

Starter Size	A	B	C	D	E	F	G	H	J	K
0, 1, or 2 (For FA Circuit Breaker and 30 A & 60 A Disconnect Switch)	20-1/2	35	9-9/16	36-1/2	14-3/8	37-1/2	3	1/2	7/16	3-5/16
3 or 4 (For FA and KA Circuit Breaker and 100 A Disconnect Switch)	32-1/4	44-1/4	10-11/16	46	24	47	4-1/8	1/2	9/16	◆

◆ For FA or KA Ckt. Bkr. K = 3-5/16. For 100 A Disc. Sw. K = 4-7/8

**Table 16.254: Coil Voltage Codes**

Voltage		Code	\$ Price Adder
60 Hz	50 Hz		
24 ▼★	—	V01	No Charge
120 ▼	110	V02	No Charge
208	—	V08	No Charge
240	220	V03	No Charge
—	380	V05	No Charge
480	440	V06	No Charge
600	550	V07	No Charge
Specify	Specify	V99	35.60

★ 24 V coil is not available on Size 4. On Sizes 00–3, where 24 V coils are available, **Form S** (separate control) must be specified.  
▼ These voltage codes must include **Form S** (No additional charge).

**NOTE:** Illustrations may not represent the actual enclosure; they are intended for dimensional information only. Dimensions are in inches.

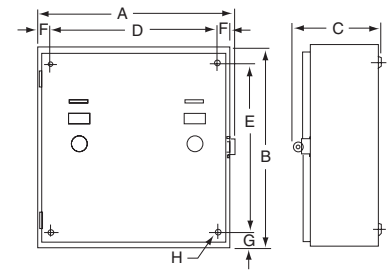


Figure 1

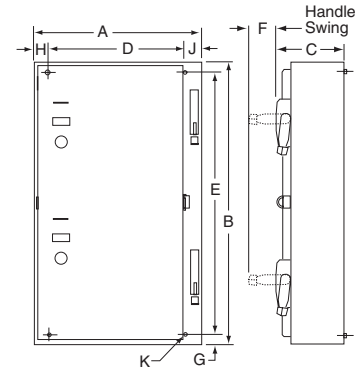


Figure 2

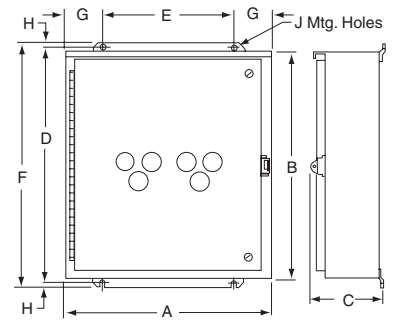


Figure 3

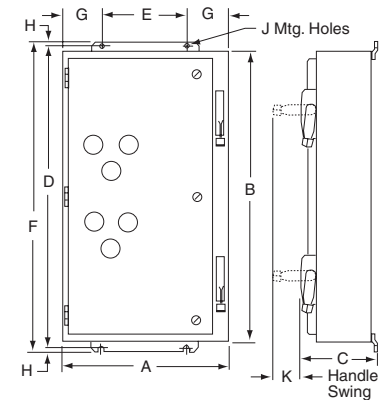


Figure 4

# Definite Purpose Contactors

# Reversing/Hoist, Type R



Class 8965 / Refer to Catalog 8910CT9301

by Schneider Electric  
www.schneider-electric.us



Type RO10V02

Class 8965 Reversing Hoist Contactors meet the small space requirements found in electrical hoists, light duty cranes, door operators, and related products. They are designed to perform in the short periods of jogging

experienced in hoist service. Note that these contactors must be mounted upright on the vertical plane; the contactors will not operate properly when mounted in any other position.

**Table 16.255: AC Reversing/Hoist Contactors—600 Vac Maximum**

No. of Poles	Horsepower Ratings				Power Terminals	With▲ Jumper Straps	Without▲ Jumper Straps	\$ Price
	115 V 1Ø	230 V 1Ø	230 V 3Ø	460/575 V 3Ø		Open Type	Open Type	
3-Pole Polyphase	1	1-1/2	3	3	Quick Connect	RO10◆	RO11◆	998.00
					Pressure Wire■	RO12◆	RO13◆	

▲ Jumper straps connect the line side power terminals of the same phase between the forward (up) and reverse (down) contactors in common; i.e. L1 to L1, L2 to L2 and L3 to L3.

■ Coils rated 120 Vac or less are supplied with quick connect terminals only.

◆ Voltage code must be specified to order this product. Refer to standard voltage codes shown in the coil table below.

**Table 16.256: Miscellaneous Hoist Contactor Kits For Use With Class 8965**

Type	Series	Description	Class	Type	Series	Description	Class	Type	\$ Price★
RO10 RO11 RO12 RO13	A & B	Armature Kit	9998	RP1▼	C	Armature Kit	9998	RP2▼	29.40
		Contact Carrier	Order as Part Number 3100206050			Contact Carrier	Order as Part Number 3100208150		39.40

★ CP10 discount schedule.

▼ One armature per kit.

Note: See page 16-116 for replacement contact kits.

**Table 16.257: Auxiliary Contacts Separate Module**

Description	Terminals	Class 9999 Type	\$ Price
1 N.O. Each Side	Quick Connect	R10	50.00
	Screw	R12	
1 N.C. Each Side	Quick Connect	R11	
	Screw	R13	

**Table 16.258: Coil Table**

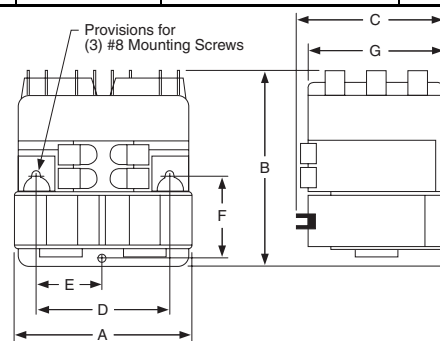
Voltage 60 Hz	Voltage 50 Hz	Voltage Code	Replacement Part Number	\$ Price△
24-	—	V01	3100240319□	119.00
120	110	V02	3100240340□	119.00
208/220	—	V21	3100240047◇	114.00
240	220	V03	3100240049◇	114.00
480	440	V06	3100240058◇☆	114.00
600	550	V07	3100240060◇	83.00

△ CP10 Discount Schedule.

□ Tape wound coils, 2 per package.

◇ Molded coil, 1 per package.

☆ Suitable for 440 V 50 Hz applications.



**Table 16.259: Approximate Dimensions (3 Poles per Contactor)**

Type	A	B	C	D	E	F	G
RO10, 11	3.31 84	3.31 84	3.03 77	2.69 68	1.34 34	1.56 40	2.66 68
RO12, 13	3.31 84	3.69 94	2.69 68	2.69 68	1.34 34	1.56 40	2.66 68

**Table 16.260: Cross Reference—Obsolete Devices**

Obsolete Device		Replacement Device		Auxiliary Contact Required		Obsolete Device		Replacement Device		Auxiliary Contact Required	
Class	Type	Class	Type	Class	Type	Class	Type	Class	Type	Class	Type
8702 or 8965	HO3	8965	RO12	—	—	8965	RO2	8965	RO10	9999	R10
	HO4		RO12	9999	R12		RO2S1		RO11	9999	R10
	HO5		RO12	9999	R13		RO2S2		RO10	9999	R10
	HO6		RO12	—	—		RO3		RO10	9999	R11
	HO7		RO12	9999	R12		RO3S1		RO11	9999	R11
HO8	RO12	9999	R13	RO3S2	RO10		9999		R11		
8965	RG2S1	8965	RO10	9999	R10		RO3S3		RO10	9999	R11
	RG5S1		RO12	9999	R12		RO4		RO12	—	—
	RG5S2		RO12	9999	R12		RO4S1		RO13	—	—
	RO1		RO10	—	—		RO5		RO12	9999	R12
	RO1S1		RO11	—	—		RO5S1		RO13	9999	R12
	RO1S2		RO10	—	—	RO5S2	RO12	9999	R12		
	RO1S3		RO11	—	—	RO6	RO12	9999	R13		
	RO1S4		RO10	—	—	RO6S1	RO13	9999	R13		
RO1S5	RO10	—	—	RO6S2	RO12	9999	R13				
RO1S6	RO10	—	—								

## Application Data

Coils Duty: Hoist Duty-H4 Intermittent  
Voltage Range: AC coils only +10%,-15% of nominal

Burden Inrush 76 VA, Sealed 27 VA

## Approvals

UL Component Recognized: File E78351, CCN NLDX2  
CSA Certified: File LR60905, Class 3211 04

**Table 16.261: How to Order**

To Order Specify:	Catalog Number		
• Class Number	Class	Type	Voltage/Frequency
• Type Number	8695	RO10	V02
• Voltage and Frequency			



## Definite Purpose Contactors

## Reversing Hoist, Type DPR Class 8965 / Refer to Catalog 8910CT9301



Type DPR23V02

Class 8965 Type DPR reversing/hoist contactors are designed for the control of motors in hoists, overhead doors, small elevators, commercial laundry equipment, and other related products which use reversing motors. They are rated to perform in the short periods of jogging experienced in hoist service.

The coils are designed to operate on line voltages of 85% to 110% of rated voltage, and are for applications at 50 or 60 Hz only. Coils are easily replaced with external base removed.

Auxiliary contacts may be easily field-added to any Class 8965 reversing contactor. Type DPR contactors accept one auxiliary contact module with up to two isolated circuits per side (two modules per device). When auxiliary contacts are ordered separately, two modules are normally used for each device; one for forward, one for reverse.

**Table 16.262: Reversing/Hoist Contactors—600 Vac Maximum\***

No. of Poles	Horsepower Ratings $\Delta$				Open Type		Replacement Coil $\blacksquare$	
	115 V 1 $\phi$	230 V 1 $\phi$	230 V 3 $\phi$	460/575 V 3 $\phi$	Type	\$ Price	Class 9998 Type	\$ Price $\blacklozenge$
3-Pole Poly-Phase	1	2	5	7-1/2	DPR13 $\blacktriangledown$	998.00	DA1 $\blacktriangledown$	68.00
	2	3	7-1/2	10	DPR23 $\blacktriangledown$	1139.00	DA1 $\blacktriangledown$	68.00
	2	5	10	15	DPR33 $\blacktriangledown$	1283.00	DA1 $\blacktriangledown$	68.00
	3	7-1/2	15	20	DPR43 $\blacktriangledown$	1425.00	DA1 $\blacktriangledown$	68.00
	3	10	15	30	DPR53 $\blacktriangledown$	1614.00	DA2 $\blacktriangledown$	92.00
4-Pole Poly-Phase	1	2	5	7-1/2	DPR14 $\blacktriangledown$	1070.00	DA2 $\blacktriangledown$	92.00
	2	3	7-1/2	10	DPR24 $\blacktriangledown$	1211.00	DA2 $\blacktriangledown$	92.00
	2	5	10	15	DPR34 $\blacktriangledown$	1353.00	DA2 $\blacktriangledown$	92.00
	2	7-1/2	10	20	DPR44 $\blacktriangledown$	1497.00	DA2 $\blacktriangledown$	92.00
	3	10	15	20	DPR63 $\blacktriangledown$	1758.00	DA2 $\blacktriangledown$	92.00

- $\Delta$  For rapid operation (jogging duty), use the next larger size contactor.
- $\blacksquare$  Order two replacement coils for reversing contactors.
- $\blacklozenge$  CP10 Discount Schedule, not CP1.
- $\star$  See page 16-116 for replacement contacts.
- $\blacktriangledown$  Voltage code must be specified to order this product. Refer to standard voltage codes listed below.

**Table 16.263: Auxiliary Contacts Separate Module $\Delta$**

Description	Class 9999 Type	\$ Price
1 N.O.	D10	35.60
1 N.C.	D01	24.60
1 N.O.—1 N.C.	D11	64.00
2 N.O.	D20	44.30

$\Delta$  Order two modules for Type DPR, one for each side.

**Table 16.264: Factory Installed**

Description	Form	\$ Price
1 N.O. Each Side	X1010	95.00
1 N.C. Each Side	X0101	95.00
1 N.O.—1 N.C. Each Side	X1111	153.00
2 N.O. Each Side	X2020	153.00

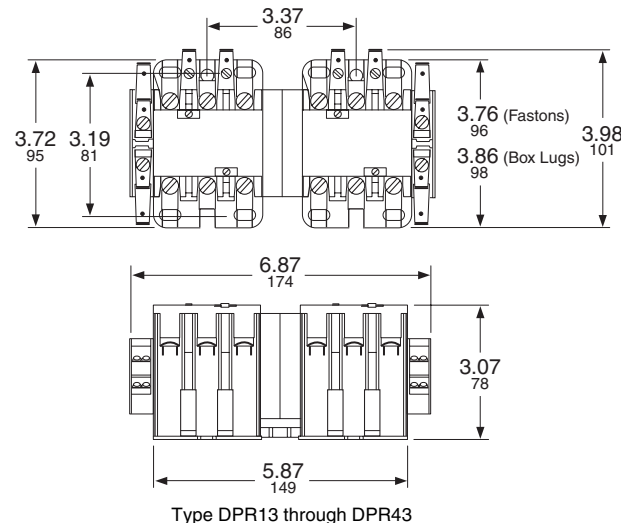
**Table 16.265: Coil Voltage Codes**

Volts, 60 Hz	Volts, 50 Hz	Voltage Code
24	24	V14
120	110	V02
208–240	220	V09
277	—	V04
480	440	V06
600	550	V07

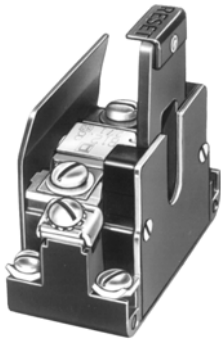
### Approvals

UL Component Recognized—File E42240, CCN NLDX  
CSA Certified—File LR25490, Class 3211 04

### Approximate Dimensions



Type DPR13 through DPR43



Type CO1R

NEMA-rated Thermal Overload Relays feature:

- Exclusive One-Piece Thermal Unit
- Inverse Time Delay Trip
- Trip Free Reset Mechanism on Types G & S
- Replaceable Contact Units on Types G & S

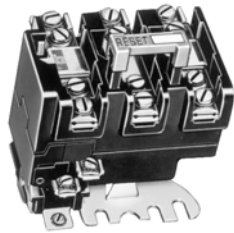
Note that the prices shown on this page do not include thermal units. Standard trip thermal units are \$21.50 each. Slow trip (Class 30) and quick trip (Class 10) melting alloy thermal units are available for all Size 1, 2, 5 and 6, and some Size 3 and 4 applications.

**Table 16.266: For Separate Mounting—Melting Alloy—600 Volts Maximum, AC or DC▲**

NEMA Size	Maximum Full Load Current (A)	Open Type for Separate Panel Mounting			For Terminal Block Channel Mounting Order Open Type Relay and Bracket Kit Below		
		Left Hand Type	Right Hand Type	\$ Price	Type	\$ Price	
<b>Single Pole Construction (One N.C. Contact)—1 Thermal Unit Required</b>							
1	25	CO1■	CO1R■	64.00	—	—	
2	45	TO1■	TO1■	72.00	—	—	
3	86	UO1■	UO1■	122.00	—	—	
4	133	FO1L■	FO1R■	192.00	—	—	
5	266	GO11L■	GO11R■	777.00	—	—	
<b>Three Pole Construction (One Common N.C. Contact on Type S Only)—3 Thermal Units Required</b>							
1	25	SEO5		129.00	SM2	35.60	
2	45	SEO8		185.00	SM2	35.60	
3	86	SEO12		243.00	—	—	
4	133	SEO15		386.00	—	—	
5	266	Use 3 Type GO11R Relays Listed Above			—	—	—

- ▲ Maximum power circuit rating for separate mounting overload relays, Types C, F, G, T and U, is 600 Vac or Vdc; Type S is 600 Vac only. Maximum control circuit contact rating for Types C, F, G, T, U and SDO18 is 600 Vac and 250 Vdc; the remaining Type S versions are 600 Vac only
- Not UL listed.

**Table 16.267: Replacement Melting Alloy Overload Relays for Square D Class 8536 Starters**



Type SE05

Locate Class 8536 Starter in this Column				Order Class 9065 Overload Relay from this Column		
NEMA Size	Type	Series	Number of Poles	Type	\$ Price	Number of Thermal Units Required
00	SA	A & B	2 3	SDO4	86.00	1
				SDO5	149.00	3
0	SB	A	2 3-5	SDO4	86.00	1
				SDO5	149.00	3♦
1	SC	A	2 3-5	SDO4	86.00	1
				SDO5	149.00	3♦
1P	SC	A	2	SDO10	116.00	1
2	SD	A	2 3-5	SDO7	116.00	1
				SDO8	207.00	3♦
3	SE	A	2 3 4 5	SDO11	143.00	1
				SDO12	264.00	3
				SDO13	264.00	2
				SDO14	264.00	3
4	SF	A	3 4 5	SDO15	414.00	3
				SDO16	414.00	2
				SDO17	414.00	3
5	SG	A	3	SDO18 Series A	777.00	1
				Form Y500 and Series B use SE05	129.00	3
6	SH	A & B	3	SE05	129.00	3

- ♦ For 4-pole starters used on two phase systems order two thermal units plus one Class 9998 Type SO31 jumper strap kit for every two starters. Each kit includes two jumper straps.

**Table 16.268: Special Features for Melting Alloy Types**

	Form	\$ Price
Substitute 1-N.O. isolated alarm contact and 1-N.C. contact per relay. (Type S starters only)▼	Y342▼	179.00
Substitute 2-N.C. contacts for standard N.C. contact per relay. (Type S starters only)	Y344▼	179.00
Modify Type U relay to accept Type FB quick trip or SB slow trip thermal units. (Accepts Type C standard trip)	Y21★	No Charge
Modify Type SDO12 relays to accept Type FB quick trip or SB slow trip thermal units, and Type F and Type SDO15 relays to accept Type FB quick trip thermal units. (Rejects Type CC standard trip units)	Y81★	No Charge

- ★ This form cannot be field modified.
- ▼ Field modification possible. Order 9999S04 (for Form Y342) or 9999S05 (for Form Y344).

**Thermal Overload Relays—NEMA Rated**

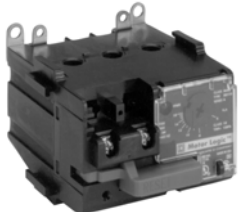
**Solid State Overload Relay, Motor Logic® and Motor Logic Plus**

Class 9065 / Refer to Catalog 9065CT9701

**Motor Logic**

**Base Unit relays** feature: 3 to 1 adjustment for trip current; phase loss and unbalance protection; direct replacement for Type S melting alloy. They are ambient insensitive and self-powered. Electrical remote reset is also available.

**NOTE:** Motor Logic SSOLR are designed to protect 50/60 hertz three-phase AC motors from overload, phase unbalance and phase loss conditions. Open Delta systems or grounded B-phase systems are difficult to balance and could cause the Motor Logic SSOLR to trip. For applications of this nature, it is recommended that bi-metallic overload relays (Form B12) be used.



Motor Logic

**Table 16.269: Base Unit: For Separate Mounting Solid State Overload Relay 600 Vac Maximum**

NEMA Size□ (3-Pole)	Full Load Current Range (Amperes)	Open Type		\$ Price
		Trip Class 10	Trip Class 20	
00C▲	3-9	SSC10	SSC20	192.00
0▲	6-18	SS010	SS020	192.00
1▲	9-27	SS110	SS120	192.00
2	15-45	SS210	SS220	270.00
3	30-90	SS310	SS320	329.00
4	45-135	SS410	SS420	477.00

▲ Size 00C, 0, and 1 are supplied without lugs. Lower amperage loads can be protected by looping of power wires. Lugs are available, see page 16-120.

**Table 16.270: Base Unit: Replacement SSOLR for Retrofit of Square D Type S Starter Solid State Overload Relay 600 Vac Maximum**

NEMA Size□	Full Load Current Range (Amperes)	Open Type		\$ Price
		Trip Class 10	Trip Class 20	
00C■	3-9	SSC10	SSC20	192.00
0■	6-18	SS010	SS020	192.00
1■	9-27	SS110	SS120	192.00
2	15-45	SR210	SR220	251.00
3▼	30-90	SR310	SR320	306.00
4▼	45-135	SR410	SR420	449.00
5♦	90-270	SR510	SR520	192.00
5★	90-270	SS510	SS520	1044.00

- Lug - Bar Kits are available for Size 00C, 0 and 1. Lower amperage loads can be protected by looping of power wires. See page 16-120.
- ♦ Size 5 Replacement Overload is only for existing NEMA S starters with MOTOR LOGIC overload relay. External CTs and additional components are not included.
- ★ Size 5 is a complete drop-in replacement for Square D NEMA S melting alloy, bimetallic, and Y500 overload relays only.
- ▼ Need 9999ER4 for reset bar.

**Feature Unit relays** include all of the features found on the Base Unit relays plus: switch selectable trip class; Class II ground fault detection; and direct replacement for Type S melting alloy. Electrical remote reset is also available.

**Table 16.271: Feature Unit: For Separate Mounting Solid State Overload Relay 600 Vac Maximum**

NEMA Size□ (3-Pole)	Full Load Current Range (Amperes)	Open Type	\$ Price
		Trip Class 10/20	
00B	1.5-4.5Δ	SFB20	221.00
00C	3-9Δ	SFC20	221.00
0	6-18Δ	SF020	221.00
1	9-27Δ	SF120	221.00
2	15-45	SF220	309.00
3	30-90	SF320	378.00
4	45-135	SF420	545.00

- Δ Size 00B, 00C, 0, and 1 are supplied without lugs. Lower amperage loads can be protected by looping of power wires. Lugs are available. See page 16-120.
- NEMA Size 00B and 00C are not actual NEMA sizes. These designations are used to differentiate the lower FLA of these devices from the NEMA Size 00 Motor Logic Solid State Overload Relay.

**Table 16.272: Feature Unit: Replacement SSOLR for Retrofit of Square D Type S Starter Solid State Overload Relay 600 Vac Maximum**

Locate 8536 Starter in this column		Order Class 9065 Overload Relay from this column		\$ Price
NEMA Size□	Full Load Current Range (Amperes)	Open Type		
		Trip Class 10/20		
00B◇	1.5-4.5	SFB20		221.00
00C◇	3-9	SFC20		221.00
0◇	6-18	SF020		221.00
1◇	9-27	SF120		221.00
2	15-45	ST220		288.00
3	30-90	ST320		351.00
4	45-135	ST420		516.00
5★	90-270	ST520		221.00
5▽	90-270	SF520		1074.00
6★	180-540	ST620		221.00
7★	270-810	ST720		221.00

- ◇ Size 00B, 00C, 0, and 1 are supplied without lugs. Lower amperage loads can be protected by looping of power wires.
- ★ Size 5, 6 and 7 Replacement Overloads are only for existing NEMA S starters with MOTOR LOGIC overload relay. External CTs and additional components are not included.
- ▽ Size 5 is a complete drop-in replacement for Square D NEMA S melting alloy, bimetallic, and Y500 overload relays only.
- NEMA Size 00B and 00C are not actual NEMA sizes. These designations are used to differentiate the lower FLA of these devices from the NEMA Size 00 Motor Logic Solid State Overload Relay.

**Motor Logic Plus**

(Plan Obsolescence Phase)



Motor Logic Plus

Motor Logic Plus solid state overload relay is separately powered and fully programmable. It is designed to protect 200-480 Vac or 600 Vac, 3-phase AC motor applications. The SSOLR has one Form C relay output rated for 300 Vac maximum.

**Table 16.273:**

Class 9065 SP Solid State Overload Relay			\$ Price
200 to 480 V	600 V	Product Description Current Range	
SPB4	SPB6	0.5-2.3 A	957.00
SPC4	SPC6	2.0-9.0 A	
SP14	SP16	6.0-27.0 A	
SP24	SP26	10.0-45.0 A	
SP34	SP36	20.0-90.0 A	
SP44*	SP46*	60.0-135.0 A	
SP54♦	SP56♦	120.0-270.0 A	
SP64◦	SP66◦	240.0-540.0 A	

- \* With 150:5 external current transformers.
- ♦ With 300:5 external current transformers.
- With 600:5 external current transformers

**Table 16.274: Forms for factory addition to 8536 Open Style only**

Alpha Character	MOTOR LOGIC Plus Overload Relay
First Digit	Current Ranges
2	0.5-2.3 A
3	2.0-9.0 A
4	6.0-27.0 A
5	10.0-45.0 A
6	20.0-90.0 A
7	60.0-135.0 A
8	120.0-270.0 A
9	240.0-540.0 A
Second Digit	Modifications
0	No Modification for 200-480 V
2	Add Communication Module for 200-480 V
4	No Modification for 600 V
6	Add Communication Module for 600 V

**Example**

Form B 4 2

Motor Logic Plus overload relay with a current range of 6-27 A and modifications to add communication module for an open style starter package.

See pages 16-105-16-106 or dimensions.

Accessories located on page 16-120.

16 NEMA/DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS



TeSys T is a motor management system that provides full motor monitoring, control, and protection when used with short circuit protection and a contactor. TeSys T manages most critical processes while reducing downtime and increasing productivity.

TeSys T is a flexible system that integrates seamlessly into your automation system through five major communication protocols. TeSys T predicts what will happen in the process, as it accurately monitors current, voltage, and power over a wide range.

TeSys T is a green motor management system with unique power monitoring capabilities for better energy management.

TeSys T carries all appropriate and necessary third party certifications. See page 16-93.

**Selection of TeSys T Products**

**LTMR Controller**

The LTMR controller provides a wide range of current monitoring and five different communication protocols.

**Table 16.275:** *New!*

Type of Fieldbus		Modbus		Profibus DP		
Supply Voltage		24 Vdc	100–240 Vac	24 Vdc	100–240 Vac	
Catalog Number	Current Range	0.4–8 A	LTMR08MBD	LTMR08MFM	LTMR08PBD	LTMR08PFM
		1.35–27 A	LTMR27MBD	LTMR27MFM	LTMR27PBD	LTMR27PFM
		5–100 A	LTMR100MBD	LTMR100MFM	LTMR100PBD	LTMR100PFM

For Pricing Information..... page 16-94

**Table 16.276:** *New!*

Type of Fieldbus		Ethernet ModbusTCP		CANopen		DeviceNet		
Supply Voltage		24 Vdc	100–240 Vac	24 Vdc	100–240 Vac	24 Vdc	100–240 Vac	
Catalog Number	Current Range	0.4–8 A	LTMR08EBD	LTMR08EFM	LTMR08CBD	LTMR08CFM	LTMR08DBD	LTMR08DFM
		1.35–27 A	LTMR27EBD	LTMR27EFM	LTMR27CBD	LTMR27CFM	LTMR27DBD	LTMR27DFM
		5–100 A	LTMR100EBD	LTMR100EFM	LTMR100CBD	LTMR100CFM	LTMR100DBD	LTMR100DFM

For Pricing Information..... page 16-94

Use the external current transformer for the 100 A to 1000 A range. See page 16-94 for details. For more information about the LTMR controller, see page 16-94.

**LTME Expansion Module**

The LTME expansion module, when added to the LTMR controller, provides power monitoring, energy management and voltage. The TeSys T expansion module makes the most of your energy.

**Table 16.277:** *New!*

Input Voltage	24 Vdc	100–240 Vac
Catalog Number	LTMEV40BD	LTMEV40FM

For Pricing Information..... page 16-94

The LTME expansion module and the LTMR controller are connected side-by-side or remotely by cable. See page 16-94 for details. For more information about the LMTE expansion module, see page 16-94.

**LTMCU Compact Display**

The LTMCU compact display is an easy and intuitive way to connect to the TeSys T controller and allows full set-up through menus, full monitoring, full control and full commissioning. The LTMCU display allows you to make minor changes “on the fly.”

For more flexibility, the LTMCU display is powered by the base unit and can be set up in multiple languages.

**Table 16.278:** *New!*

Catalog Number	LTMCU

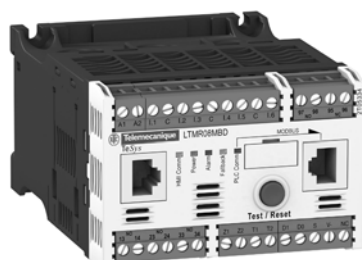
For Pricing Information..... page 16-94

The LTMCU compact display connects to the LTMR controller or the LTME expansion module with a cable, LU9R. See page 16-94 for details. For more information about LTMCU compact display, see page 16-94.

For more information about TeSys T functionalities and communication capabilities, see page 16-93.

**Table 16.279: Configuration Tools and Accessories**

Module	Quick Description	Find out more and Select it...
Current transformers	Allows use of TeSys T up to 1000 A	Page 16-95
Ground sensor	Measures ground currents	Page 16-95
Thermistor probe	Measure temperatures of motor windings	Page 16-95
Connecting cable	Wire together the different modules	Page 16-96
Magelis® compact display	Use only one HMI for up to 8 TeSys T controllers	Page 16-94
PowerSuite V2.5 or greater	Configuration software for TeSys U and TeSys T	Page 16-95
PowerLogic SMS 4.0	Use with TeSys T power/energy management features	Page 16-96



LTMR08MBD



LTMEV40BD



LTMCU

**TeSys T detailed functionalities and possible configuration:**

**Communication:**

TeSys T is a flexible motor management system that supports five major communication protocols: Modbus, CANOpen, DeviceNet, Profibus, and Ethernet Modbus TCP.

These communication protocols allow the TeSys T controller to integrate seamlessly into your automation systems.

Ethernet Modbus TCP provides Faulty Device Replacement to reduce maintenance time to a minimum.

**Protection functions:**

- thermal overload
- phase imbalance and phase failure
- thermal motor protection via PTC probes
- phase reversal
- ground fault detection
- long starting times and motor stalling
- automatic load shedding and restarting
- load fluctuations (current, voltage, power)
- variations of Cos φ (power factor)

**Metering functions:**

- Measurements (rms values):
  - current on the 3 phases
  - voltage on the 3 phases (shedding)
  - motor temperature
  - ground fault sensing
- Values calculated:
  - average current
  - frequency
  - Power factor, power, power consumption

**Motor control functions:**

A motor managed by a TeSys T controller can be controlled:

- locally, using the logic inputs present on the product, or via the human machine interface (HMI)
- remotely, via the network

**Motor control modes:**

10 predefined motor control modes are incorporated in the controller:

- overload mode: monitoring of motors whose control is not managed by the controller (2 or 3 wire)
- independent mode: starting of full voltage non-reversing motors
- reverser mode: starting of full voltage reversing motors
- 2-step mode: 2-step starting of motors (star-delta, by autotransformer and by resistor) 2 or 3 wire
- 2-speed mode: 2-speed starting of motors (Dahlander, pole changer) 2 or 3 wire

A custom mode is available to allow the user to create a specific motor control mode that is not predefined in the controller.

Custom Logic has the basic functions of a small programmable logic controller (PLC). Programming can be done in Structured Text mode or in Block Diagrams through PowerSuite V2.5 software. To ensure consistency, the same software used to commission the TeSys T controller is used for Custom Logic programming.

**Statistical and diagnostic functions:**

- history of the last five detected faults
- motor statistics
- controller operations
- warning of pending faults

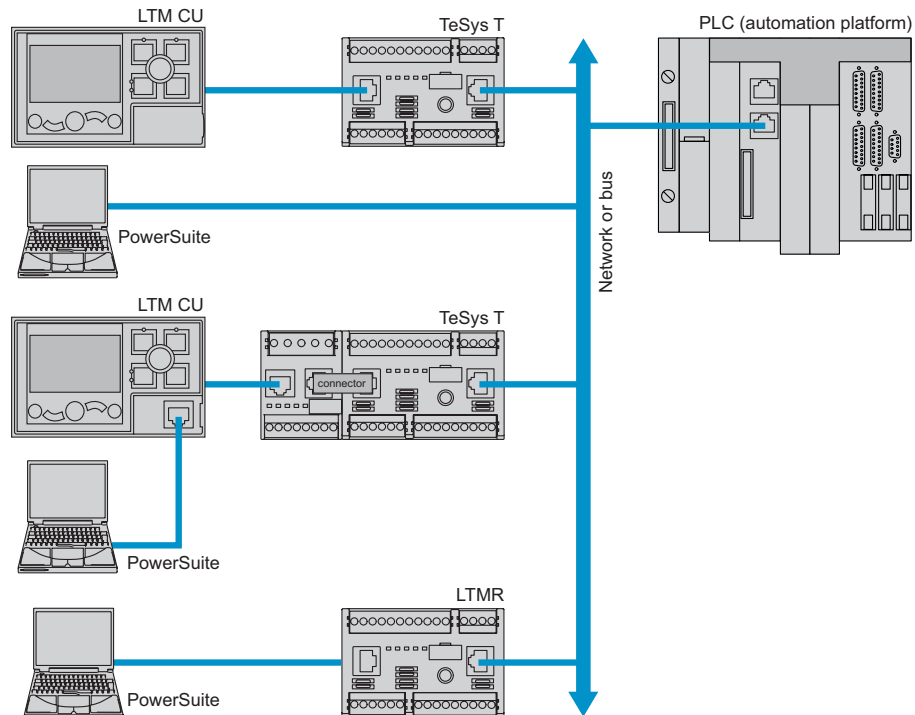


**Standards and Certifications**

Product Type	LTMR Controllers	LTMEV40 Expansion Modules
Conforming to standards	IEC/EN 60947-4-1, UL 508, CSA 22-2 n°14, IACS E10	
Product certifications	UL, CSA, BV, LROS, DNV, GL, RINA, ABS, RMRos, NOM, CCC, C-TIC'K, ATEX, GOST, KERI	

**Possible Configurations:**

TeSys T controller is a flexible motor management system using PowerSuite V2.5 commissioning tools. PowerSuite is the configuration software for the TeSys T controllers. See page 16-95 for details.



**LTMR Controller:**

The controller is the central component in the motor management system. It manages the basic functions such as:

- measurement of 3-phase current via integral current transformers from 0.4 to 100 A (up to 1000 A by external current transformers)
- measurement of ground current internally or external ground sensors
- measurement of motor temperature
- inputs and outputs for the various motor control modes, detected fault management, and other functions



LTMR08MBD

**Characteristics**

As standard, the controller manages the following:

**Control Modes**

- overload mode
- independent mode
- reverser mode
- 2-speed mode
- 2-step mode
- Custom mode

**Inputs/Outputs**

- 6 discrete logic inputs
- 3 relay logic outputs (1 N.O.)
- 1 relay output for detected fault signalling (1 N.O. + 1 N.C.) overload relay

**Measurements**

- connection for a thermistor probe
- connections for a ground sensor

**Table 16.1: Controllers**

Setting Range (A)	Control Voltage (V)	Current Range (A)	Catalog Number	\$ Price
<b>For Modbus®</b>				
8	24 Vdc	0.4–8	LTMR08MBD	675.00
	100–240 Vac	0.4–8	LTMR08MFM	675.00
27	24 Vdc	1.35–27	LTMR27MBD	675.00
	100–240 Vac	1.35–27	LTMR27MFM	675.00
100	24 Vdc	5–100	LTMR100MBD	765.00
	100–240 Vac	5–100	LTMR100MFM	765.00
<b>For EtherNet Modbus TCP</b>				
8	24 Vdc	0.4–8	LTMR08EBD	825.00
	100–240 Vac	0.4–8	LTMR08EFM	825.00
27	24 Vdc	1.35–27	LTMR27EBD	825.00
	100–240 Vac	1.35–27	LTMR27EFM	825.00
100	24 Vdc	5–100	LTMR100EBD	935.00
	100–240 Vac	5–100	LTMR100EFM	935.00
<b>For CANopen</b>				
8	24 Vdc	0.4–8	LTMR08CBD	750.00
	100–240 Vac	0.4–8	LTMR08CFM	750.00
27	24 Vdc	1.35–27	LTMR27CBD	750.00
	100–240 Vac	1.35–27	LTMR27CFM	750.00
100	24 Vdc	5–100	LTMR100CBD	850.00
	100–240 Vac	5–100	LTMR100CFM	850.00
<b>For DeviceNet</b>				
8	24 Vdc	0.4–8	LTMR08DBD	750.00
	100–240 Vac	0.4–8	LTMR08DFM	750.00
27	24 Vdc	1.35–27	LTMR27DBD	750.00
	100–240 Vac	1.35–27	LTMR27DFM	750.00
100	24 Vdc	5–100	LTMR100DBD	850.00
	100–240 Vac	5–100	LTMR100DFM	850.00
<b>For Profibus DP</b>				
8	24 Vdc	0.4–8	LTMR08PBD	750.00
	100–240 Vac	0.4–8	LTMR08PFM	750.00
27	24 Vdc	1.35–27	LTMR27PBD	750.00
	100–240 Vac	1.35–27	LTMR27PFM	750.00
100	24 Vdc	5–100	LTMR100PBD	850.00
	100–240 Vac	5–100	LTMR100PFM	850.00

16 NEARDEFINITE PURPOSE TYPE CONTACTORS AND STARTERS

**LTME Expansion Module:**

The expansion module adds the following functionalities to the TeSys T controller:

- voltage measurement between phases up to 690 V nominal
- 4 additional inputs

**Inputs**

- 4 discrete logic inputs (isolated)
- 2 types of power for the inputs: 24 Vdc and 100 to 240 Vac
  - A 24 Vdc LTMR controller can be assembled with a 240 Vac expansion module and vice versa



LTMEV40BD

The LTMEV must be connected to the LTMR controller by a connecting cable.

**Table 16.2: Expansion Module *New!***

Input Control Voltage	Number of Inputs	Supply to the Electronics	Catalog Number	\$ Price
24 Vdc	4	via the LTMR controller	LTMEV40BD	300.00
100–240 Vac	4		LTMEV40FM	300.00

**HMI — Human Machine Interface:**

Depending on the application, two types of HMI can be used with the motor management system.

- The LTMCU operator control unit:
  - Control/monitoring of a 1 to 1 LTMR controller
- A Magelis XBTN410 terminal
  - Control/monitoring of 1 to 8 LTMR controllers

**LTMCU Compact Display:**

- Configure the parameters
- Display information
- Monitor the alarms and detected faults
- Local control of the motor via the local control interface (keys can be customized)
- Three different languages can be loaded into the LTMCU controller at the same time: English, French, Spanish are the defaults.



LTMCU

A language download utility (LangTool), together with all the other languages, are available on the website www.schneider-electric.com.

This tool allows the languages present in the LTMCU control until to be adapted.

The LTMCU HMI control unit has an additional front panel RJ45 port, protected by a flexible cover.

**Magelis Display:**



Two applications have been predefined for the TeSys T controller. Depending on the application loaded, the HMI terminal makes it possible to:

- Configure and monitor a motor starter (LTM\_1T1\_V1.dop)
- Monitor and modify certain parameters up to 8 motor starters (LTM\_1T8\_X\_V1.dop)



XBTL1000 programming software is needed for loading applications into the XBT HMI terminal.

**Table 16.3: HMI Modules and Software *New!***

Description	Supply Voltage	Catalog Number	\$ Price
Operator Control unit	via the LTMR controller	LTMCU	265.00
Magelis compact display	24 Vdc	XBTN410	300.00
Configuration software Windows 99, 2000, XP		VJD SND TMS V11M	161.00



LT6CT4001



DA1TT●●●

**Table 16.1: Current Transformers** *New!*

Current Transformer Ratio ▲	Catalog Number	\$ Price
100:1	LT6CT1001	300.00
200:1	LT6CT2001	300.00
400:1	LT6CT4001	700.00
800:1	LT6CT8001	1000.00

▲ For use with LTMR08●●● controllers.

**Table 16.2: Ground Fault Sensors** *New!*

Rated Operational Current Ie (A)	Internal Toroid Ø (mm)	Catalog Number	\$ Price
<b>Closed Toroids, Type A</b>			
65	30	50437	250.00
85	50	50438	325.00
160	80	50439	410.00
250	120	50440	555.00
400	200	50441	835.00
630	300	50442	1530.00
<b>Split Toroids, Type OA1530.00</b>			
85	46	50485	1145.00
250	110	50486	2010.00

Note: Dimensional drawings are in catalog DIA1ED2061002EN-US.

**Table 16.3: PTC Thermistor Probes** *New!*

Description	Nominal Operating Temperature (NOT) °C	Color	Catalog Number ♦	\$ Price Each
Triple Probes	90	Green/green	DA1TT090	3.30
	110	Brown/brown	DA1TT110	3.30
	120	Grey/grey	DA1TT120	3.30
	130	Blue/blue	DA1TT130	3.30
	140	White/blue	DA1TT140	3.30
	150	Black/black	DA1TT150	3.30
	160	Blue/red	DA1TT160	3.30
	170	White/green	DA1TT170	3.30

■ PTC: Positive Temperature Coefficient.  
♦ Sold in lots of 10.



**Configuration with PowerSuite**

The TeSys T configurator is incorporated in the PowerSuite software application, versions 2.5 and higher.

PowerSuite software allows configuration, commissioning and maintenance of motor starters protected by a TeSys T controller.

A library containing predefined motor control mode functions is available in order to:

- allow standardization
- avoid errors
- reduce motor starter setup times

By using logic functions, a custom mode makes it possible to:

- easily adapt these predefined motor control mode functions to the specific needs of your applications
- create new functions

The functions thus defined can be saved and used to build your function library for future applications.

To create special functions, a logic editor is incorporated in the configurator and allows a choice of 2 programming languages:

- function block
- structured text

**Table 16.4: Configuration Tools** *New!*

Description	Composition	Catalog Number	\$ Price
Connection kit for PC serial port for Modbus® PLC multidrop connection	1 x 3 m length cable with two RJ45 connectors	VW3A8106	75.00
	1 RS232/RS485 converter with one 9-pin female SUB-D connector and one RJ45 connector.		
Interface for USB port (for use with cable VW3A8106) Length: 1.8 m	1 USB cable, SUB-D 9-pin Drivers supplied on CD-Rom	SR2CBL06	156.00
USB serial port cable for connecting a TeSys T controller to your PC	1 USB/Serial Port Cable	TXSCUSB485	250.00

16 NEMA DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS



**TeSys T and SMS PowerLogic:**

TeSys T is integrated in PowerLogic SMS Version 4.0. and will address energy management needs by fully utilizing the TeSys T power/energy management features. For more information on PowerLogic products, see Power Monitor Control Section 4.

**Table 16.1: Connecting Cables** *New!*

Description	Number and type of connectors	Length m (ft)	Catalog Number	\$ Price
LTMCU control unit	2 x RJ45	1 (3)	VW3A1104R10	35.00
		3 (10)	VW3A1104R30	35.00
		5 (16)	VW3A1104R50	35.00
XBTN410	SUB-D 25-pin female to RJ45	2.5 (8)	XBTZ938	30.00
LTME expansion module	2 x RJ45	0.04 (0.13)	LTMCC004	125.00
		0.3 (1)	LUR03	20.00
		1 (3)	LU3R10	25.00
180 degree Ethernet external connector	1 x RJ45	-	LTM9CE180T	20.00

**Table 16.2: Connection Accessories** *New!*

Description	Length m (ft)	Catalog Number	\$ Price	
<b>For EtherNet (Modbus TCP) connection</b>				
Shielded twisted pair cables to standard EIA/TIA568				
Cables fitted with 2 x RJ45 connectors for connection to terminal equipment	2 (7)	490NTW00002	48.60	
	5 (16)	490NTW00005	58.00	
	12 (39)	490NTW00012	77.00	
	40 (131)	490NTW00040	150.00	
	80 (263)	490NTW00080	266.00	
Shielded twisted pair cables, UL and CA 22.1 approved				
Cables fitted with 2 x RJ45 connectors for connection to terminal equipment	2 (7)	490NTW00002U	48.00	
	5 (16)	490NTW00005U	57.00	
	12 (39)	490NTW00012U	75.00	
	40 (131)	490NTW00040U	159.00	
	80 (263)	490NTW00080U	258.00	
<b>For Modbus® PLC connection</b>				
Cables fitted with 2 x RJ45 connectors	0.3 (1)	VW3A8306R03	20.00	
	1 (3)	VW3A8306R10	25.00	
	3 (10)	VW3A8306R30	30.00	
T-junctions	0.3 (1)	VW3A8306TF03	75.00	
	1 (3)	VW3A8306TF10	85.00	
RS485 line terminator	-	VW3A8306R	N/A	
<b>For CANopen connection</b>				
Cables	50 (164)	TSXCANCA50	112.00	
	100 (328)	TSXCANCA100	467.00	
	300 (984)	TSXCANCA300	1323.00	
IP20 connectors SUB-D 9-pin female Line end adapter switch	Elbowed (90°)	-	TSXCANKCDF90T	52.00
	Straight	-	TSXCANKCDF180T	52.00
	Elbowed (90°) SUB-D 9-pin connector for connection to PC or diagnostic tool	-	TSXCANKCDF90TP	78.00
<b>For DeviceNet connection</b>				
Cables	50 (164)	TSXCANCA50	112.00	
	100 (328)	TSXCANCA100	467.00	
	300 (984)	TSXCANCA300	1323.00	
<b>For Profibus DP connection</b>				
Cables	100 (328)	TSXPBSCA100	826.00	
	400 (1313)	TSXPBSCA400	2990.00	
Connectors	With line terminator	-	490NAD01103	73.00
	Without line terminator	-	490NAD01104	62.00
	With line terminator and terminal port	-	490NAD01105	101.00

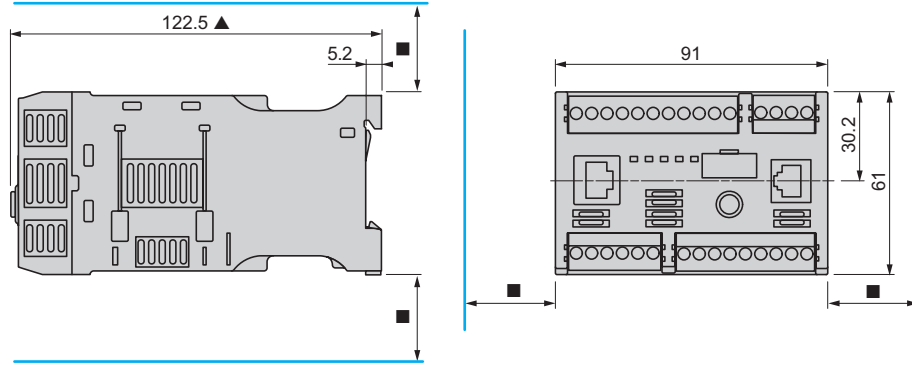
**Table 16.3: Marking Accessories** *New!*

Description	Composition	Sold in lots of	Catalog Number	\$ Price Each
Clip-in markers (maximum of 5 per unit)	Strips of 10 identical numbers (0 to 9)	25	AB1R●▲	0.52
	Strips of 10 identical capital letters (A to Z)	25	AB1G●▲	0.52

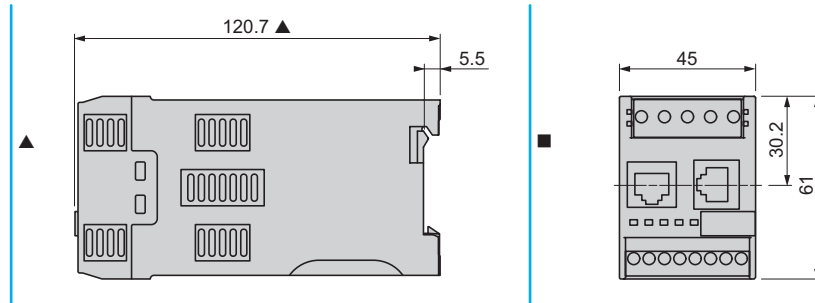
▲ When ordering replace the ● in the catalog number with the number or letter required.



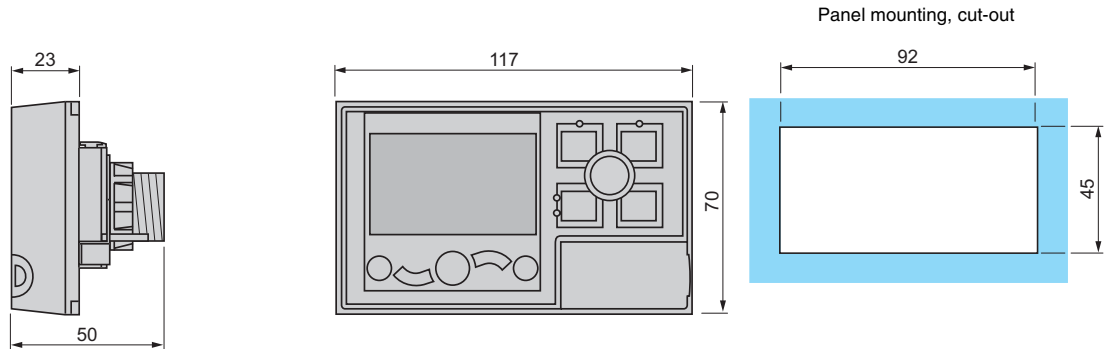
**LTMR●● controllers**



**LTMEV40●● expansion modules**

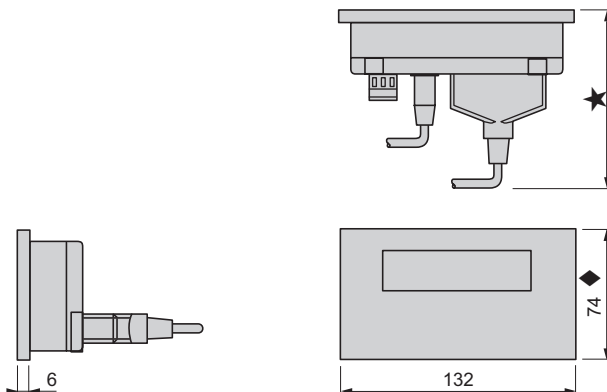
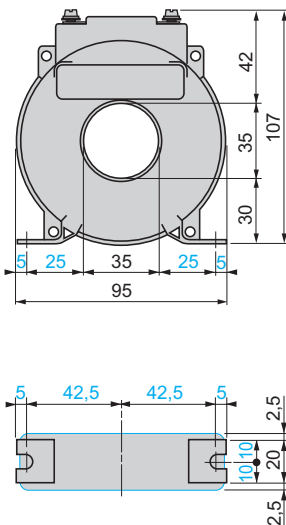


**LTMCU operator control unit**



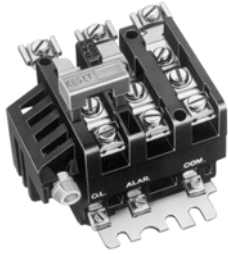
- ▲ 140 mm with RJ45 connector for connection to expansion module and to network, 166 mm with Profibus DP/CANopen connector.
- Leave a gap around the device of: 9 mm at 45 °C, 9 to 40 mm from 45 to 50 °C, 40 mm at 60 °C.

Current Transformers	HMI Terminal
LT6CT	XBTN410



- ◆ 104 mm with mounting clips (supplied with the product).
- ★ 58 mm with SUB-D 25-pin elbowed cable **XBTZ9680** for Twido®, TSX Micro™ and Premium™ PLCs or **XBTZ998** for Advantys™ STB distributed I/O system.  
104 mm with SUB-D 25-pin cable **XBTZ68/Z9681** for Twido®, TSX Micro™ and Premium™ PLCs

Bimetallic thermal overload relays feature Class 20 protection with automatic reset or hand reset and a trip-free mechanism. There are ambient temperature-compensated versions. Note that thermal units are not included in the shown prices. Standard trip thermal units are \$21.50 each.



Class 9065  
Type SEO6B2  
Three Pole Construction  
Non-Compensated

**Table 16.287: For Separate Mounting—Bimetallic—600 V Maximum AC or DC▲**

Description	Size	Maximum Full Load Current (Amperes)	Open Type	\$ Price	Bracket Kit for Terminal Block Channel Mounting		Number of Thermal Units Required
					Type	Price	
<b>Single Pole Construction (One N.C. Contact)</b>							
Compensated	00, 0, 1	25	DA2	107.00	—	—	1
	2	60	GA2	149.00	—	—	
	3	100	HA2	261.00	—	—	
	4	180	JA2	306.00	—	—	
<b>Three Pole Construction (One Common SPDT Contact on Type S)</b>							
Non-Compensated	1	26	SEO6B2	392.00	SM2	35.60	3
	2	45	SEO9B2	441.00	SM2	35.60	
Ambient Temperature-Compensated	1	26	SEO6B	441.00	SM2	35.60	3
	2	45	SEO9B	441.00	SM2	35.60	

For additional selections see International Control Products.

▲ Maximum power contact rating for separate mounting overload relays. Maximum control circuit contact rating for Type S versions is 600 Vac only.

**Table 16.288: Replacement Overload Relay for Square D Class 8536 Bimetallic Overload Relay on an Existing Starter**

Locate Class 8536 Starter in this Column					Order Class 9065 Overload Relay from this Column		
NEMA Size	Type	Series	Number of Poles	Form	Type	\$ Price	Number of Thermal Units Required
0	SB	A & B	Any	B■	SDO6B	441.00	3
				B1■	SDO5B1	392.00	2
				B2■	SDO6B2	392.00	3
1	SC	A & B	Any	B■	SDO6B	441.00	3
				B1■	SDO5B1	392.00	2
				B2■	SDO6B2	392.00	3
2	SD	A	Any	B■	SDO9B	512.00	3
				B1■	SDO8B1	464.00	2
				B2■	SDO9B2	464.00	3
3 ▼	SE	A	3	Y59◆	26005-11000	243.00	1
		B	3		SHA01Y59	1089.00	3
		B	3				
4 ▼	SF	A	3	Y59◆	26005-11500	306.00	1
		B	3		SJA01Y59	1431.00	3
		B	3				
5	SG	A & B	3	B2★	SEO6B2	392.00	3
				B★	SEO6B	441.00	3
6	SH	A & B	3	B	SEO6B	441.00	3
				B2	SEO6B2	392.00	3

- B indicates ambient temperature-compensated bimetallic overload relay.
- B1 indicates single phase non-ambient temperature compensated bimetallic overload relay.
- B2 indicates polyphase non-ambient temperature compensated bimetallic overload relay.
- ◆ Y59 indicates single phase ambient temperature compensated bimetallic overload relay.
- ★ B2Y500 indicates bimetallic overload relay with current transformer sensing. BY500 indicates ambient temperature compensated bimetallic overload relay with current transformer sensing. This part number does not include the current transformer assembly.
- ▼ Non-compensated Size 3 & 4 OLRs are no longer available. Select an ambient compensated OLR from appropriate table above.

**Table 16.289: Replacement Overload Relay for Square D Class 8940 Pump Panel with IEC Style Bi-metallic Overload Relays Mounted on Current Transformers**

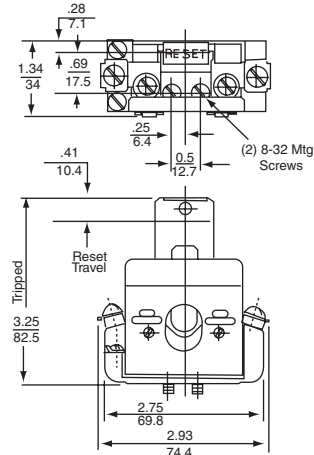
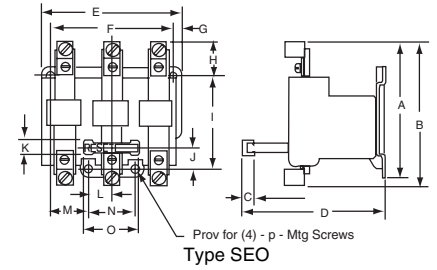
AMP Range	Number of Poles	Form	Series	Type△	\$ Price
40A-63A	3	B12	B	TJF40	428.00
63A-100A	3	B12	B	TJF63	428.00
100A-160A	3	B12	B	TJF100	468.00
160A-250A	3	B12	B	TJF160	468.00

△ A retro-fit reset kit is required for pre-series B pump panels. See page 16-101 for selection.

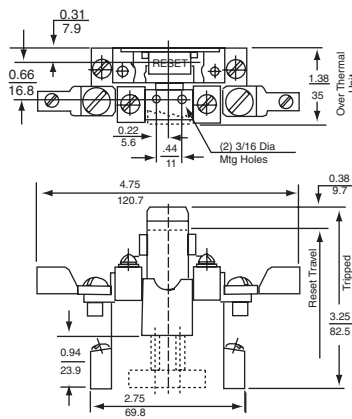
**Approximate Dimensions**

**Table 16.290: Melting Alloy Type NEMA Style**

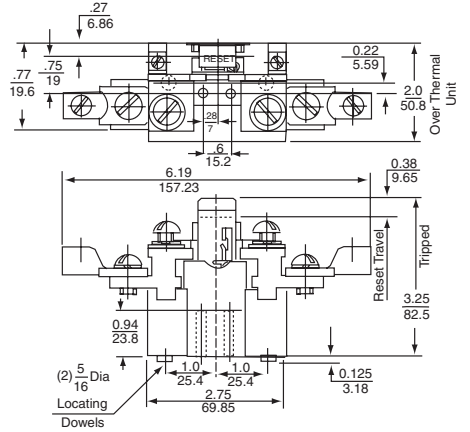
Type	Dimensions (IN)																Shipping Weight (lbs.)
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
SEO5	3-5/16	—	15/32	3-31/32	3-17/32	2-13/16	7/32	11/16	2-5/16	1/2	1/2	1/2	27/32	1	1-3/8	#10	1
SEO8	3-5/16	—	15/32	3-31/32	3-1/2	2-13/16	3/16	11/16	2-5/16	1/2	1/2	1/8	27/32	1	1-3/8	#10	1-1/4
SEO12	—	5-19/32	9/16	5-3/4	5-5/16	4-3/4	9/32	1-7/16	3-9/16	3/4	9/16	7/8	1-1/2	1-3/4	2	#1/4	3
SEO15	—	6-31/32	9/16	5-3/4	5-5/16	4-3/4	9/32	2-1/8	3-9/16	3/4	9/16	7/8	1-1/2	1-3/4	2	#1/4	4



**Type CO1**  
Weight—1/2 Lb.

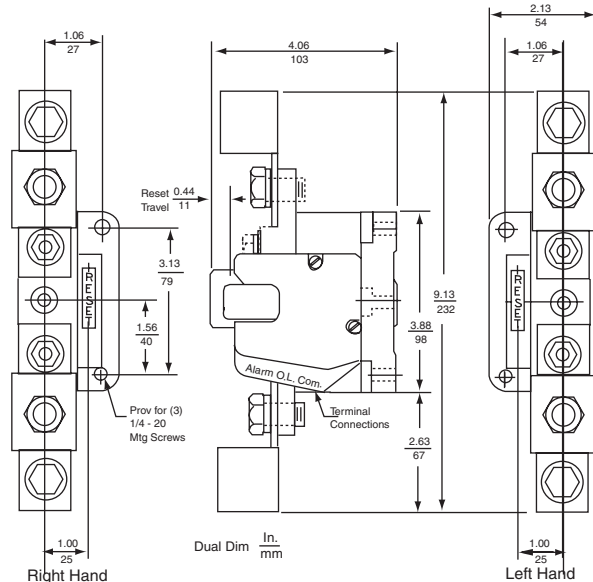


**Type TO1▲**  
Weight—1/2 Lb.

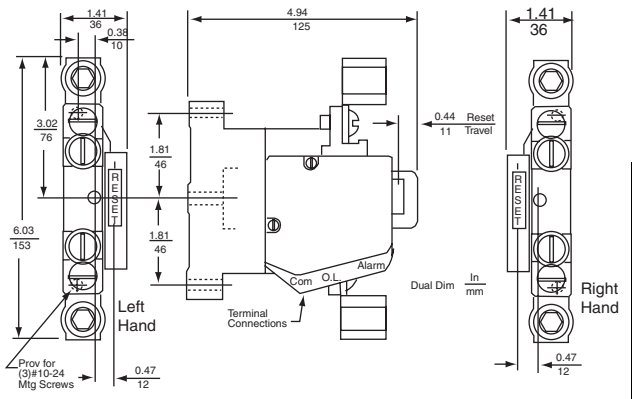


**Type UO1▲**  
Weight—1 1/2 Lb.

▲ Dimensions shown for Types TO1 and UO1 do not apply when Form Y342 or Y34 is supplied.



**Types GO11L and GO11R**  
Weight—5 lbs.

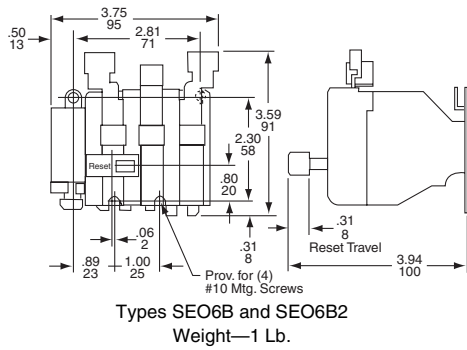


**Types FO1L and FO1R**  
Weight—2 lbs.

Dual Dimensions: **INCHES**  
**Millimeters**

Approximate Dimensions

Bimetallic Overload Relays



Dual Dimensions: **INCHES**  
**Millimeters**

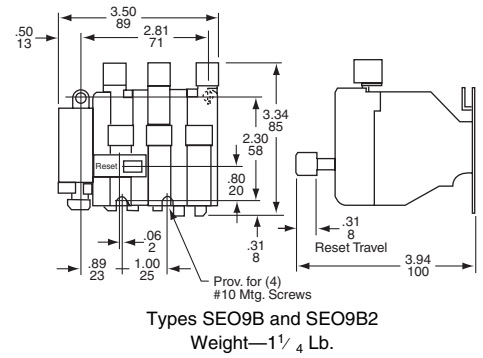
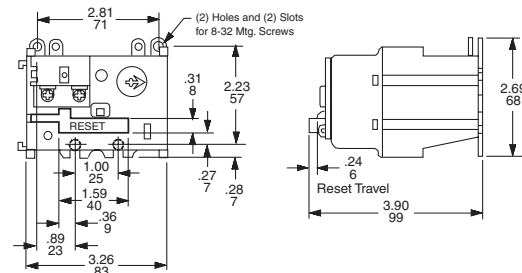


Table 16.291:

Class 9065	Ampere Rating	Outline Dimensions			Mtg. Dimensions		Reset Dimensions		Mtg. Screw	Max. Wire Size	Approx. Shipping Weight (lbs)
		A	B	C	D	E	K	L			
DA	25	3-1/2	7/8	3-3/16	3	1/2	3/8	1/8	10	8	2
GA	60	4-7/8	7/8	3-3/16	3	1/2	3/8	1/8	10	1	2
HA	100	4-7/8	1-1/4	3-3/16	3-1/2	1/16	1/2	1/8	10	00	3
JA	180	5-15/16	1-1/4	3-3/16	3-1/2	1/2	3/16	1/8	10	250 MCM	4

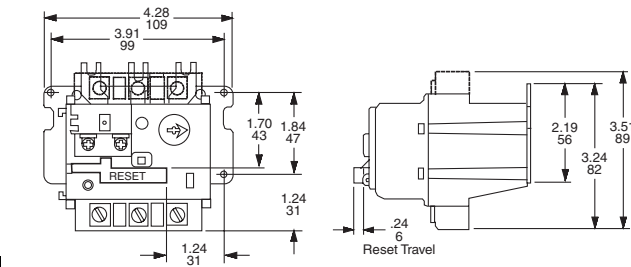
Note: Dimensions shown in inches.

Motor Logic® Solid State Overload Relay

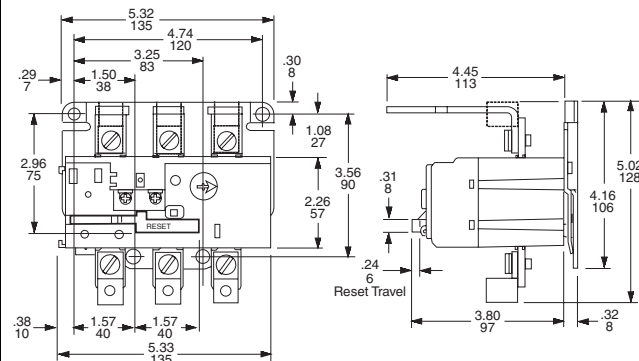


NEMA Size 00B, 00C, 0, and 1 Devices

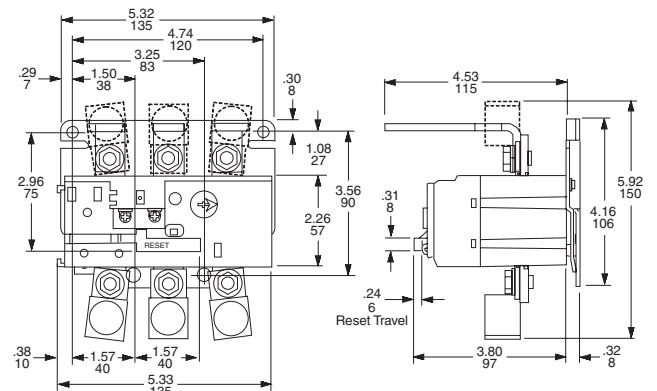
Note: NEMA Size 00B and 00C are not actual NEMA sizes. These designations are used to differentiate the lower FLA of these devices from the NEMA size 00 Motor Logic Solid State Overload Relay.



Size 2 Devices



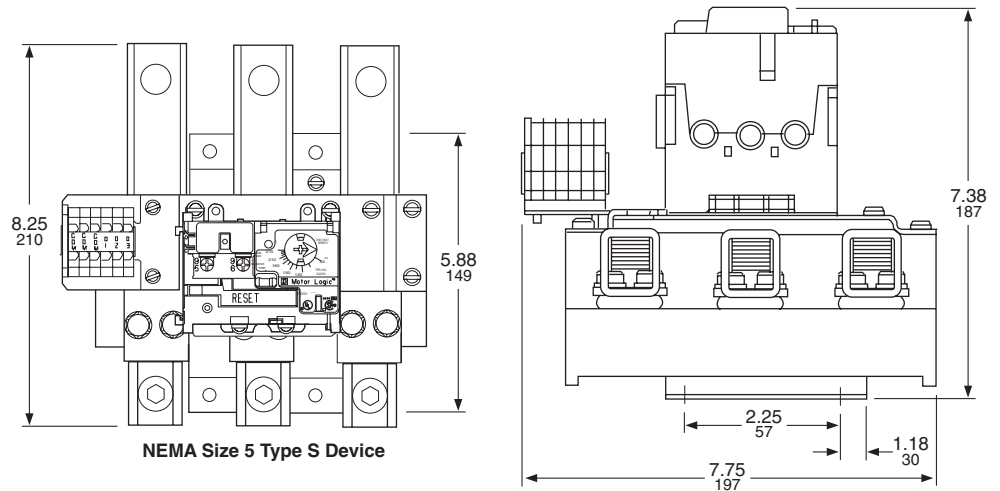
Size 3 Devices



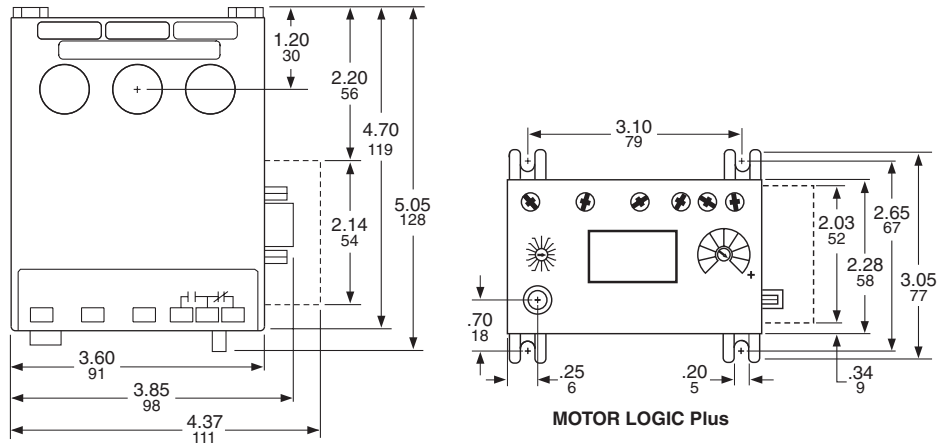
Size 4 Devices

16 NEMA DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS

Note: The dimensions are for reference only.



**Motor Logic® Plus—Solid State Overload Relay**



**External Reset Mechanisms**

**Class 9066**

**Type RA** kits provide a convenient external means for resetting overload relays mounted in control enclosures of almost any depth. Designed for use on NEMA 1, 4 or 12 enclosures, they can be used with any Square D open type magnetic starter or Class 9065 overload relay. All kits are individually packaged for easy stocking and include complete installation instructions.

Only a single mounting hole is required in the enclosure door. Each kit contains one or more threaded reset rods, grooved at intervals of 3/4" so they can be cut to the approximate length required without thread damage. Final adjustment is easily made after installation by rotating a plunger and tightening the lock nut. Mechanisms with more than one reset rod include a steel cross bar with mounting holes located at 1/2" intervals, providing a choice of rod locations to suit any application. All steel parts are electrically isolated from the enclosure and the operator.

**Type RB** kits make it possible to field install external reset mechanisms to Type S combination starters in NEMA 12 enclosures. They may also be used to replace external reset mechanisms on Type S combination starters in NEMA 1, 4 and 12 enclosures.

Table 16.292:

Where Used	Type of Enclosure	Reset Mechanism Kit		
		Description	Type	\$ Price
OEM Kit for commercial enclosures	NEMA 1, 12	With 1 Rod	RA1	57.00
		With 2 Rods	RA2	71.00
		With 3 Rods	RA3	86.00
Replacement on 8538, 8539 starters	NEMA 1, 12	Size 0 and 1	RB1	42.80
		Size 2	RB2	42.80
On commercial enclosures or Type S combination starters	NEMA 4	W1 is a boot only and must be used with RA or RB Kit listed above	W1	28.70
Replacement on Class 8536 Type S starters	NEMA 1 with slip-on covers	Size 00, 0 and 1	SC1	7.20
		Size 2	SD1	12.00
		Size 3	SE1	14.30
Retro-fit kit Class 8940 Pump Panel	NEMA 3R	Reset for use with 9065TJF Series B OLR	RTJF	42.80



Type RB1



Type W1



Type RA2 Series B



Type SC1

Separate enclosures can be used with open style devices for field assembly of enclosed controls. These enclosures, plus the open style components, are equivalent to a factory-assembled device. Separate enclosures are to be used only with the equipment listed below:

- **NEMA 4 and 12** Class 9991 separate enclosures for Type S devices are supplied as standard with closing plates. See selection chart below for specific number of closing plates on Various enclosures. For applications requiring enclosures without closing plates, contact your nearest Square D/Schneider Electric sales office.
- **NEMA 3R** enclosures for field assembly of equipment for outdoor applications are provided with three closing plates, a reset mechanism and predrilled panel as standard. For conduit connection to the top of these enclosures, select watertight hubs from listing on Digest page 3-9 in accordance with applicable code requirements. Square D's NEMA 12 enclosures can also be modified for outdoor use. For details, refer to NEMA 12 enclosure modification information on page 16-104. **NOTE: Not for use in high-corrosive outdoor locations or sea coast environments.**
- **NEMA 4X** enclosures for Type S devices, Sizes 0–2 and 30–60 Ampere, are provided as standard without closing plates. Cover mounted control units for NEMA 4X separate enclosures are available as a factory modification only.

When closing plates are removed from NEMAs 4, 12 & 3R enclosure covers, the openings can be used for easy installation of Class 9001 Type K or Type SK cover mounted control units. Convenient Class 9999 modification kits containing Class 9001 Type K control kits can be found on page 16-118.



Type SCW21  
NEMA 4X  
Enclosure



Type SCA11  
NEMA 12  
Enclosure



Type SCW11  
NEMA 4  
Enclosure



Type SCH2  
NEMA 3R  
Enclosure

**Table 16.293:**

For Use With		Enclosure Classification										
		NEMA Size or Ampere Rating	NEMA 4X Watertight, Dusttight and Corrosion-Resistant Glass-Polyester		NEMA 4★ Watertight and Dusttight Stainless Steel			NEMA 12/3R Δ Dusttight and Driptight			NEMA 3R Rainproof, Sleet Resistant, Outdoor Use	
Class	Types (All Pole Arrangements)		Type	\$ Price	Type	\$ Price	Number of Closing Plates	Type	\$ Price	Number of Closing Plates	Type	\$ Price
<b>Manual Starters</b>												
2510	MBO, MCO	MO M1 M1P	MW1▼	485.00	MW11	485.00	—	MA1	129.00	—	—	—
<b>Magnetic Contactors</b>												
8502▲	SAO, SBO, SCO	00, 0, 1	SCW20	684.00	SCW11	714.00	2	SCA11	372.00	2	SCH2	372.00
	SDO	2	SDW20	1169.00	SDW11	1197.00	2	SDA11	485.00	2	SDH1	485.00
	SEO	3	—	—	SEW11	1767.00	3	SEA11	684.00	3	SEH1	684.00
	SFO	4	—	—	SFW11	3119.00	3	SFA11	1853.00	3	SFH1	1853.00
<b>Magnetic Starters</b>												
8536	SAO, SBO, SCO	00, 0, 1	SCW21	684.00	SCW11	714.00	2	SCA11	372.00	2	SCH2	372.00
	SDO	2	SDW21	1169.00	SDW11	1197.00	2	SDA11	485.00	2	SDH1	485.00
	SEO	3	—	—	SEW11♦	1767.00	3	SEA11♦	684.00	3	SEH1	684.00
	SFO	4	—	—	SFW11♦	3119.00	3	SFA11♦	1853.00	3	SFH1	1853.00
<b>Lighting Contactors, Non-Combination, Electrically and Mechanically Held</b>												
8903▲	LO, LXO	20 Amp	SDW20	1107.00	SDW11	1197.00	2	SDA11	485.00	2	SDH1	485.00
	SMO	30 Amp	SCW20■	684.00	SCW11	714.00	2	SCA11	372.00	2	SCH2	372.00
	SPO	60 Amp	SCW20■	1169.00	SDW11	1197.00	2	SDA11	485.00	2	SDH1	485.00
	SQO	100 Amp	—	—	SEW11♦	1767.00	3	SEA11♦	684.00	3	SEH1	684.00
	SVO	200 Amp	—	—	—	—	—	—	—	—	—	1853.00
<b>Reversing and Two Speed Horizontally Arranged Contactors and Starters</b>												
8702▲	SBO, SCO	0, 1	—	—	SCW12	1182.00	3	SCA12	527.00	3	—	—
8736	SDO	2	—	—	SDW12	1754.00	—	SDA12	728.00	—	—	—
8810	SBO & SCO	0, 1	—	—	SCW13	1610.00	3	SCA13	714.00	3	—	—

- ▲ For contactors, replace reset assembly with proper closing plate; for NEMA 4 use Class 9001 Type K52, for NEMAs 3R and 12 use Class 9001 Type K51. Class 9991 Types SCW20 and SDW20 are designed for contactors only, reset closing plates not required.
- For electrically held devices only.
- ♦ Enclosure suitable for starter with melting alloy and solid state overload relays **only**.
- ★ The standard cabinet has a brushed finish.
- ▼ Type MBO, Size MO only.
- Δ NEMA 12 enclosures may be field modified for outdoor non-corrosive and non-service-entrance-rated applications; see page 16-104 for more information.

**Table 16.294: How to Order**

To Order Specify:		Catalog Number	
• Class Number		Class	Type
• Type Number		9991	SCW11

**NEMA Type 1 and Flush Mounting**

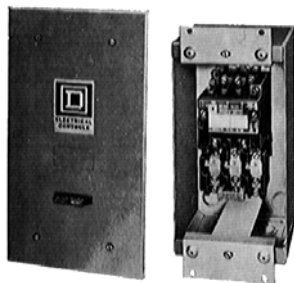
**Flush Mounting Selection Table**

**Flush Mounting General Purpose** separate enclosures for Type S Sizes 0-2, 30-60 ampere are provided with knock-outs in the cover for field assembly of one Class 9999 push button or selector switch kit and one Class 9999 pilot light kit. (Refer to Class 9999 for selection.) For Type S Size 3, 100 ampere, three closing plates are provided for installation of Class 9001 Type K oiltight control units. For enclosure dimensions, refer to page 16-105.

**Table 16.295:**

For Use With		NEMA Size or Amp Rating	Flush Mounting General Purpose (Components)							
Class	Types (All Pole Arrangements)		Flush Plates		Mounting Strap		Pull Box			
			Type	\$ Price	Type	\$ Price	Type	\$ Price		
2510	MBO & MCO	MO M1 M1P	MF1	215.00	(with pullbox and plaster adjustment)					
			MF2	129.00	(without pullbox but with mounting strap)					
<b>Magnetic Contactors</b>										
8502	SBO & SCO	0, 1	SCF11	57.00	SCF12	201.00	SCF2	71.00	SCF1	86.00
	SDO	2	SDF11	171.00	SDF12	386.00	SDF2	99.00	SDF1	116.00
	SEO	3	SEF11	882.00	(Enclosure Complete)					
<b>Magnetic Starters</b>										
8536	SBO & SCO	0, 1	SCF11	57.00	SCF12	201.00	SCF2	71.00	SCF1	86.00
	SDO	2	SDF11	171.00	SDF12	386.00	SDF2	99.00	SDF1	86.00
<b>Lighting Contactors Non-Combination Electrically and Mechanically Held</b>										
8903	LO, LXO	20 Amp	SDF13	171.00	—	—	SDF2	99.00	SDF1	86.00
	SMO 1-4	30 Amp	SCF11	57.00	—	—	SCF2	71.00	SCF1	86.00
	SMO 10-13	30 Amp	SCF13	201.00	—	—	SCF2	71.00	SCF1	86.00
	SPO 1-4	60 Amp	SDF11	171.00	—	—	SDF2	99.00	SDF1	86.00
	SPO 10-13	60 Amp	SDF13	171.00	—	—	SDF2	99.00	SDF1	86.00
	SQO 1-13	100 Amp	SEF11	882.00	(Enclosure Complete)					

▲ For contactors, replace reset assembly with proper closing plate. For Flush Mounting use Class 9999 Type SG2 except for Class 9991 Type SDF11 which requires a Class 9001 Type K51 or K11 closing plate. Class 9991 Types SEF11 and LF1 are designed for contactors only, reset closing plates not required.  
■ The standard cabinet has a brushed finish.



Flush Mounting Starter With Pull Box and Mounting Strap Having Plaster Adjustment Feature



Type SCG8 NEMA 1 Enclosure

**NEMA 1 Selection Table**

The **NEMA 1 General Purpose** separate enclosures listed below, when used with open style components, are equivalent to a standard factory assembled control device.

**Table 16.296:**

For Use With			General Purpose NEMA 1 Enclosure Class 9991	
Class	Type	No. of Poles	Type	\$ Price
2510	F and K	All	EN1	29.30
	M-Sizes M0 and M1	All	MG1	57.00
	M-Size M1P	All	MG2	57.00
8501	CO	All	UE1♦	39.40
	XO	2-12, 2-4 w/Attachments	UE7	99.00
	XDO	2-8 w/o Attachments		
8502	SAO, SBO, SCO	2-4	SCG7	57.00
	SDO	2-4	SDG7	143.00
	SEO	2-4	SEG7	287.00
	SFO	2-4	SFG8	599.00
8536	SAO, SBO, SCO	2-4	SCG8	57.00
	SDO	2-4	SDG8	143.00
	SEO	2-4	SEG8★	287.00
	SFO	2-4	SFG8★	599.00
	SGO	3	SGG8★□	1241.00
8702, 8736	SAO, SBO, SCO	All	SCG9▼	171.00
	SDO	All	SDG9▼	372.00
8903	LO, LXO	All	LXG1◇	143.00
	SPO	All	SDG7△	57.00
	SPO	All	SDG7△	143.00
	SQO	All	SFG8	599.00
	SVO	All	SFG4	1259.00
8910	DP	1-2	DPG1	78.00
	DPA12, 13, 22, 23, 32, 33, 42, 43	2-3	DPG1	78.00
	DPA14, 24, 34, 44, 52, 53	2-4	DPG2	99.00
	DPA62, 63	2-3	DPG3	143.00
	DPA72, 73, 92, 93, 122, 123	2-3	DPG4	287.00
8911	H, J, K, L & M	All	UE6	99.00
	DPSO13, 23, 33, 43	3	DPSG1	59.00
	DPSO53	3	DPSG2	102.00
9050	DPSO63, 73, 93	3	SEG8	287.00
	AO (Single Head)	All	UE6	99.00
9070	HO	All	UE6	99.00
	EO51, EO61, EO71, K750, K1000	—	SDG4	458.00
	EO2, EO3, EO4, EO15, EO16, EO18, EO19, T75, T100, T150, T200, T250, T300, T350, T500	—	LG1	143.00
	EO1, EO17, T50	—	UE7	99.00

- ♦ CP2 Discount Schedule, not CP1.
- ★ Enclosure suitable for starter with melting alloy or solid state overload relay only.
- ▼ For horizontally arranged Class 8702 contactors replace reset assembly with a Class 9001 Type K51 closing plate.
- △ For electrically held contactors only. See page 16-104 for mechanically held contactors.
- Series B starter enclosure.
- ◇ If cover mounted control units are required, select oversized enclosure listed on page 16-104.

**NEMA 1, 4 and Oversized**

**For Addition of Control Circuit Transformer**

The Class 9991 enclosures listed below accept an open type Class 8502 or 8536 Type S, NEMA Size 0, 1, 1P, or 2 contactor or starter along with a fused control circuit transformer (Form F4T) to allow field assembly of enclosed controllers. In the cover of the Class 9991 Type SCG1 enclosure, knock-outs are provided for field addition of Class 9999 cover-mounted control units. All other Class 8502 & 8536 enclosures include a panel with space and drilling for an open-type device and a fused control circuit transformer. In addition, three closing plates are included in each cover for easy installation of Class 9001 Type K or SK control units.

Oversized enclosures for open type Class 8903 Type L & LX, 20 A and Type S, 30 and 60 A electrically and mechanically held lighting contactors include a panel with space and drilling for an open-type contactor and fused control circuit transformer (Form F4T) and/or an auxiliary relay for use with single pole pilot devices (Form R6). When an auxiliary relay is required, use a Class 8501 Type XO11 relay. Three closing plates are provided as standard for easy installation of Class 9001 Type K or SK control units. **Note:** A Class 9991 Type SCG1 NEMA 1 separate enclosure can also be used for Class 8903 Type SMO, 30 A electrically held lighting contactor if Form F4T (control transformer), with or without cover control units is required.



Type SCW4  
NEMA 4 Enclosure



Type SCG1  
With Starter, Transformer  
and Fuse Block Installed



Type SCA4  
NEMA 12 Enclosure

**Table 16.297:**

For Use With				Class 9991 Enclosure						Recommended Class 9070 <sup>◆</sup> Transformer Selection					Fuse Block
Class	Type	NEMA Size or Ampere Rating	No. of Poles	General Purpose NEMA 1		Watertight and Dusttight Stainless Steel NEMA 4 <sup>▼</sup>		Dusttight and Driptight Industrial Use NEMA 12 <sup>■</sup>		Standard		Extra Capacity			
				Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	VA	100 VA Type	150 VA Type	300 VA Type	
<b>Magnetic Contactors and Starters</b>														Class 9999 Type SFR4	
★ 8502 & 8536	SAO, SBO & SCO	00, 0 & 1	1-3	SCG1	270.00	SCW4	827.00	SCA4	485.00	T50	50 VA	T100▲	T150▲		—
			4-5							T100▲	100 VA	—	T150▲		—
	SDO	2	2-5	SDG4	458.00	SDW4	1488.00	SDA4	705.00	T100	100 VA	—	T150		T300
<b>Lighting Contactors, Non-Combination</b>														Class 9999 Type SFR4	
8903	LO, LXO	20 A	All	SDG3	399.00	SDW3	1169.00	SDA3	684.00	T50	50 VA	—	—		—
	SMO▲	30 A	1-3							T50	50 VA	T100▲	T150▲		—
			4-5	T100▲	100 VA	—	T150▲	—							
	SPO▲	60 A	2-5	T100	100 VA	—	T150	T300							

- ▲ For mounting in SCG1 enclosure, a Class 9991 Type S1 adapter bracket is also required — \$44.00
- NEMA 12 modified for outdoor use (see below).
- ◆ For price list and complete description, see the Class 9070 section. **Note:** Class 9991 Type SCG1 enclosure is provided with a Class 9999 Type SF4 fuse block as standard.
- ★ For contactors (Class 8502), a separate closing plate is provided with each enclosure to replace the reset mechanism with the exception of Class 9991 Type SCG1 which requires a separate reset closing plate Class 9999 Type SG2 — \$14.30
- ▼ The standard cabinet has a brushed finish.
- ▲ Mechanically held.

**NEMA 12/3R Enclosures Modified for Outdoor Applications (not to be used in salt air or corrosive environments)**

**Field Modifications for NEMA 3** dusttight, raintight and sleet resistant outdoor applications are as follows: Watertight conduit hubs or equivalent provision for watertight connection at the conduit entrance shall be used.

**Field Modifications for NEMA 3R** rainproof and sleet resistant outdoor applications are as follows:

1. Watertight conduit hubs or equivalent provision for watertight connection at the conduit entrance, when the conduit enters at a level higher than the lowest live part, shall be used.
2. Drain holes of 1/8 inch diameter shall be added to the bottom of the enclosure.

Class 9001 Type K oiltight/watertight control units can be easily installed in NEMAs 4, 12, and oversized NEMA 1 separate enclosures provided with closing plates. When installing control units simply remove the closing plates and install the proper Class 9001 Type K components. Convenient control unit kits complete with assembled and pre-wired operators for quick installation are available as Class 9999 user modification kits. See Table 16.298 for contents of each control unit kit. Class 9001 Type SK NEMA 4X corrosion resistant control units may be used as an alternate.

**Table 16.298: Control Unit Selection Table**

Class 9999 Type	Control Function	Kit Contents	
		Class & Type	Description
SA3	Start-Stop Pushbutton	1-9001 KR1B	Start Operator
		1-9001 KR1R	Stop Operator
		1-9001 KN201	Start Legend Plate
		1-9001 KN202	Stop Legend Plate
		2-9001 KA1	Contact Block
SC8	Hand-Off-Auto Selector Switch	1-9001 KS43B	Selector Operator Switch
		1-9001 KN260	Hand-Off-Auto Legend Plate
		1-9001 KA1	Contact Block
SP28R	Pilot Light (120 V)	1-9001 KP1R31	Red Pilot Light



**Table 16.299: NEMA 1—General Purpose Enclosures (Standard)**

Class 9991 Type	For Use With				Dimensions (inches/millimeters)														Weight (lbs.)	
	Class	Type	Size	No. of Poles	Fig. No.	Mounting Screws (in.)	A	B	C	D	E	F	G	H	I	J	K	L		
LXG1	8903	LO, LXO	20 A	2-12	1	—	7.81 198	12.69 322	6.03 153	—	1.09 28	10.50 267	1.09 28	1.09 28	5.63 143	5.75 146	1.09 28	5.63 143	8	
DPG1	8910	DP	20-40 A	1-2	1	(4)#10	4.85 123	8.5 216	4.03 102	2.42 62	.109 3	5.75 146	.531 13	.92 23	3.00 76	3.75 95	—	—	2	
		DPA		1-3																
SCG7	8903	SMO (E.H.)	30 A	All	1	(3)#10	6.00 152	10.00 254	5.28 134	3.00 76	.88 22	8.13 206	1.00 25	.94 24	4.13 105	5.00 127	—	—	4	
		SAO	00	2-3																
		SBO SCO	0 1	All																
SCG8	8536	SAO	00	2-3	1	(3)#10	6.00 152	10.00 254	5.56 141	3.00 76	.88 22	8.13 206	1.00 25	.94 24	4.13 105	5.00 127	—	—	4	
		SBO SCO	0 1	All																
DPG2	8910	DPA	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
DPSG1	8911	DPS	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
SDG7	8903	SPO (E.H.)	60 A	2-12	1	(4)1/4	7.81 198	12.69 322	6.03 153	—	1.09 28	10.50 267	1.09 28	1.09 28	5.63 143	5.75 146	1.09 28	5.63 143	8	
	8502	SDO	2	All					6.31 160											
SDG8	8536	SDO	2	All	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
DPG3	8910	DPA	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
DPSG2	8911	DPS	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
SEG7	8502	SEO	3	All	1	(4)3/8	11.44 291	21.81 554	8.00 203	—	1.53 39	18.75 476	1.53 39	1.53 39	8.38 213	7.75 197	1.53 39	8.38 213	23	
	8536	SEO	3	All					8.38 213											
	8911	DPSG63 to 93	—	All					—											
DPG4	8910	DPA	—	—	2	(4)7/16	11.25 286	25.15 639	8.99 228	8.60 218	1.25 32	1.25 32	22.31 567	1.42 36	.44 11	—	—	—	—	34
	8502	SFO	4	All																
SFG8	8536	SFO	4	All	2	(4)7/16	11.25 286	25.15 639	8.99 228	8.60 218	1.25 32	1.25 32	22.31 567	1.42 36	.44 11	—	—	—	—	—
	8903	SFO (E.H. & M.H.)	100 A	All																
SCG9	8702▲	SBO, SCO	0 & 1	All	2	(4)5/16	11.88 302	11.88 302	7.41 188	9.75 248	1.06 27	1.06 27	9.75 248	1.06 27	.31 8	—	—	—	—	16
	8922	ETBC20, ETBC36	—	All																
SDG9	8702▲	SCO	2	All	2	(4)5/16	14.88 378	14.13 359	7.56 192	12.75 324	1.06 27	1.06 27	12.00 305	1.06 27	.31 8	—	—	—	—	24
	8922	ETBC60	—	All																

▲ Standard enclosure has space for a fused control transformer, Form F4T, on Sizes 0-2.

**Table 16.300: NEMA 1—General Purpose Enclosures (Oversize)**

Class 9991 Type	For Use With				Dimensions (inches/millimeters)														Weight (lbs.)	
	Class	Type	Size	No. of Poles	Fig. No.	Mounting Screws (in.)	A	B	C	D	E	F	G	H	I					
SDG3	8903	LO, LXO SMO (M.H.) SPO (Form F4T)	20 A 30 A 60 A	All	2	(4)5/16	14.88 378	14.13 359	7.56 192	12.75 324	1.06 27	1.06 27	12.00 305	1.06 27	.31 8	—	—	—	—	15
		SDO (Form F4T)	2	All					7.66 194											
SDG4	8536	SDO (Form F4T)	2	All	2	(4)5/16	14.88 378	14.13 359	7.56 192	12.75 324	1.06 27	1.06 27	12.00 305	1.06 27	.31 8	—	—	—	—	21
	9070	EO51, EO61, EO71, T750, T1000	—	—					7.56 192											
SCG1	8502	SBO, SCO (Form F4T)	0, 1	All	3	(4)9/32	6.34 161	15.88 403	5.19 132	4.66 118	.84 21	14.38 365	.75 19	.28 7	.35 9	—	—	—	—	8
	8536	SBO, SCO (Form F4T)	0, 1	All																
	8903	SMO (E.H.) (Form F4T)	30 A	All																

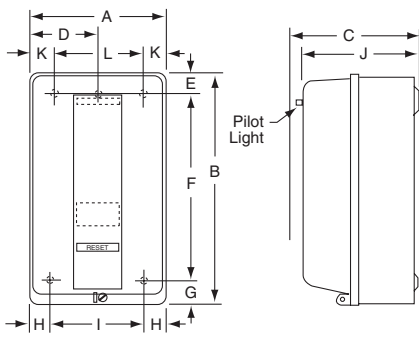


Figure 1

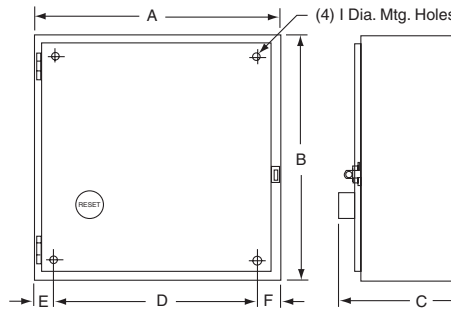


Figure 2

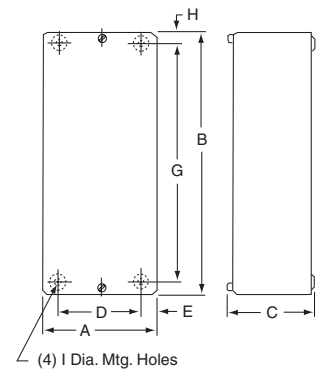


Figure 3

Dual Dimensions: **INCHES**  
Millimeters

Table 16.301: NEMA 1—General Purpose Enclosures

Class 9991 Type	For Use With			Dimensions (See Figure 4)										Weight (lbs.)
	Class	Type	No. of Poles	A	B	C	D	E	F	G	H	J	L	
UE1	8501	CO	All	3.63 92	5.28 134	3.31 84	1.88 48	3.63 92	1.06 27	1.50 38	1/4 in.▲	1/2-3/4 in.		2
UE6	8910	H, J, K L & M	All	4.91 125	5.75 146	5.53 140	3.50 89	4.38 111	1.56 40	2.00 51	9/32 in.	1/2-3/4 in. 1-1-1/4 in.	1/2-3/4 in.	2
	9050	AO (Single Head)	All											
UE7	8501	XO	2-12, 2-4 w/Attachments	4.87 124	7.79 198	7.53 191	3.50 89	6.38 162	1.31 33	1.88 48	#10	1/2-3/4 in.		4
		XDO	2-8											
LG1	9070	EO2, EO3, EO4, EO15, EO16, EO18, EO19 T75, T100, T150, T200, T250, T300, T350, & T500	—	7.53 191	9.78 248	5.91 150	6.13 156	8.38 213	1.31 33	1.88 48	9/32 in.	1/2-3/4-1 in. ■		10

- ▲ Class 9991 UE1 has only (3) -H diameter mounting holes; 2 in the bottom as shown and 1 centered at the top.
- Class 9999 LG1 has three knockouts, top and bottom.

Table 16.302: NEMA 3R—Rainproof & Sleet-Resistant Enclosures

Class 9991 Type	For Use With				Dimensions (see Figure 5)																		
	Class	Type	Size	No. of Poles	A	B	C	D1	D2	E	F	G1	G2	H1	H2	J	K	L	M	N	P	K.O. X	K.O. Y
SCH2	8502 8536	SBO, SCO	0, 1	All	8.83 224	12.30 312	7.12 181	1.39 35	1.44 37	6.00 152	7.50 191	2.61 66	2.19 56	2.08 53	2.62 66	14.28 363	1.37 35	1.37 35	1.88 48	4.38 111	1.83 46	1/2 3/4	1/2 3/4
	8903	SMO	30 Amp		8.83 224	12.30 312	7.12 181	1.39 35	1.44 37	6.00 152	7.50 191	2.61 66	2.19 56	2.08 53	2.62 66	14.28 363	1.37 35	1.37 35	1.88 48	4.38 111	1.83 46	1/2 3/4	1/2 3/4
SDH1	8502 8536	SDO	2	All	9.83 250	16.30 414	8.62 219	1.39 35	1.44 37	7.00 178	11.50 292	2.61 66	2.19 56	2.08 53	2.62 66	16.78 426	1.31 33	1.75 44	2.13 54	4.88 124	1.83 46	1 1-1/4 1-1/2	1/2 3/4
	8903	LO LXO	20 Amp																				
	8903	SPO	60 Amp																				
SEH1	8502 8536	SEO	3	All	12.63 321	25.30 643	8.62 219	1.39 35	1.44 37	10.00 254	20.60 523	2.61 66	2.19 56	2.08 53	2.62 66	19.78 502	1.31 33	2.31 59	2.69 68	6.38 162	1.83 46	1 1-1/4 2 2-1/2	1/2 3/4
	8903	SQO	100 Amp																				
SFH1	8502 8536	SFO	4	All	12.63 321	40.30 1024	9.12 232	1.39 35	1.44 37	10.00 254	35.50 902	2.61 66	2.19 56	2.08 53	2.62 66	20.28 515	1.31 33	2.31 59	2.69 68	6.38 162	1.83 46	1 1-1/4 2 2-1/2	1/2 3/4
	8903	SVO	200 Amp																				

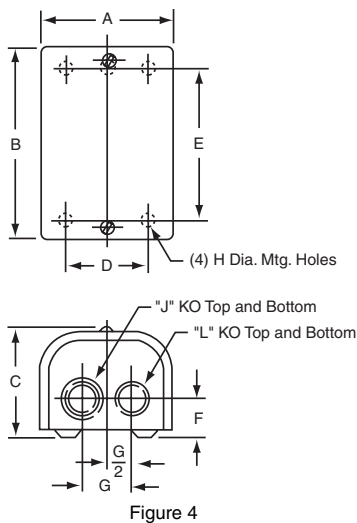


Figure 4

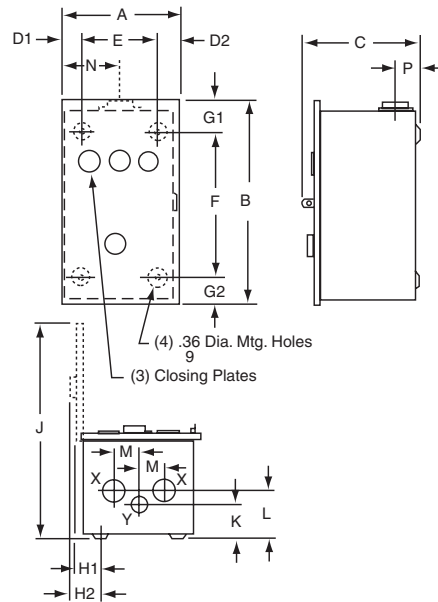


Figure 5

Dual Dimensions: **INCHES**  
Millimeters

**Table 16.303: NEMA 4X—Watertight and Corrosion Resistant Enclosures**

Class 9991 Type	For Use With				Dimensions (see Figure 6)												Hub Dia.		Weight (lbs.)
	Class	Type	Size	No. of Poles	A	B	C	D	E	F	G	H	I	J	K	L	Bot. Only W	Top & Bot. X	
SCW20	8903	SMO (E.H.)	30 Amp	All	6.50 165	6.44 164	12.13 308	.75 19	5.00 127	8.25 210	1.69 43	3.34 85	10.06 256	1.31 33	2.13 54	.31 8	3/4 in.	1 in.	7
	8502	SBO SCO	0, 1	All															
SCW21	8536	SBO, SCO	0, 1	All															
SDW20	8903	LO, LXO	20 Amp	All	8.50 216	7.06 179	13.88 352	.75 19	7.00 178	10.50 267	1.69 43	3.91 99	11.94 303	1.63 41	2.38 60	.31 8	3/4 in.	1-1/2 in.	13
	8903	SPO (E.H.)	60 Amp	All															
	8502	SDO	2	All															
SDW21	8536	SDO	2	All															

**Table 16.304: NEMA 4—Watertight Enclosures (Standard)**

Class 9991 Type	For Use With				Dimensions (see Figure 6)												Hub Dia.		Weight (lbs.)
	Class	Type	Size	No. of Poles	A	B	C	D	E	F	G	H	I	J	K	L	Bot. Only W	Top & Bot. X	
SCW11	8903	SMO	30 Amp	All	6.38 162	7.13 181	13.19 335	1.56 40	3.25 83	12.00 305	.59 15	1.88 48	11.78 299	1.63 41	2.31 59	.31 8	3/4 in.	1 in.	12
	8502	SBO, SCO	0, 1	All															
	8536	SBO, SCO	0, 1	All															
SDW11	8903	LO, LXO	20 Amp	All	8.13 206	7.88 200	16.19 411	1.56 40	5.00 127	15.00 381	1.09 28	1.94 49	14.75 375	2.00 51	2.63 67	.31 8	3/4 in.	1-1/2 in.	18
	8903	SPO	60 Amp	All															
	8502	SDO	2	All															
	8536	SDO	2	All															
SEW11	8903	SQO	100 Amp	All	18.15 461	8.77 223	32.21 818	3.08 78	12.00 305	30.50 775	.86 22	3.67 93	26.71 678	2.58 66	3.19 81	.44 11	3/4 in.	2-1/2 in.	51
	8502	SEO	3	All															
	8536	SEO	3	All															
SFW11	8536	SFO	4	All	18.15 461	9.58 243	32.21 818	3.08 78	12.00 305	30.50 775	.86 22	4.48 114	26.71 678	2.58 66	3.19 81	.44 11	3/4 in.	2-1/2 in.	51
	8502	SFO	4	All															

**Table 16.305: NEMA 4—Watertight Enclosures (Oversize)**

Class 9991 Type	For Use With				Dimensions (see Figure 7)												Hub Dia.		Weight (lbs.)	
	Class	Type	Size	No. of Poles	A	B	C	D	E	F	G	H	I	J	K	L	Bot. Only W	Top & Bot. X		
SCW2	8702 8736	SCO	1	All	12.63 321	7.81 198	14.69 373	2.56 65	7.50 191	13.50 343	.59 15	3.88 98	18.41 468	1.66 42	2.31 59	.31 8	3/4 in.	1 in.	23	
SCW3	8810	SBO SCO	0 1	All																
SCW4	8502 8536	SBO, SCO (Form F4T)	0, 1	All																
SDW2	8702 8736	SDO	2	All																25
SDW3	8903	LO, LXO SMO, SPO (Form F4T)	20 Amp 30 Amp 60 Amp	All	14.88 378	7.25 184	16.19 411	2.56 65	9.75 248	15.00 381	.38 10	3.88 98	20.88 530	1.72 44	2.63 67	.31 8	3/4 in.	1-1/2 in.	29	
SDW4	8502 8536	SDO (Form F4T)	2	All																

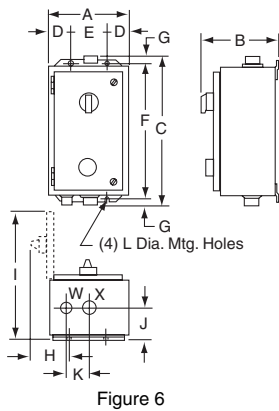


Figure 6

Dual Dimensions: **INCHES**  
**Millimeters**

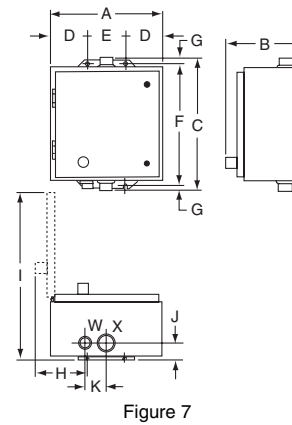


Figure 7

Approximate Dimensions

Table 16.306: NEMA 12/3R—Dusttight and Driptight Enclosures (Standard)

Class 9991 Type	For Use With				Dimensions (see Figure 8)										Weight (lbs.)
	Class	Type	Size	No. of Poles	A	B	C	D	E	F	G	H	I	J	
SCA11	8502	SBO, SCO	0, 1	All	6.38 162	8.53 217	12.75 324	1.56 40	3.25 83	12.00 305	.38 10	3.56 90	12.50 318	.31 8	10
	8536	SBO, SCO	0, 1	All											
	8903	SMO	30 Amp	All											
SDA11	8502	SDO	2	All	8.13 206	9.28 236	16.00 406	1.56 40	5.00 127	15.00 381	.50 13	3.56 90	15.38 391	.31 8	15
	8536	SDO	2	All											
	8903	LO, LXO	20 Amp	All											
SEA11	8903	SPO	60 Amp	All	18.15 461	9.24 235	31.50 800	3.08 78	12.0 305	30.50 775	.50 13	3.67 93	26.71 678	.44 11	51
	8502	SEO	3	All											
	8536	SEO	3	All											
SFA11	8536	SFO	4	All	18.15 461	9.24 235	31.50 800	3.08 78	12.0 305	30.50 775	.50 13	3.67 93	26.71 678	.44 11	51
	8502	SFO	4	All											

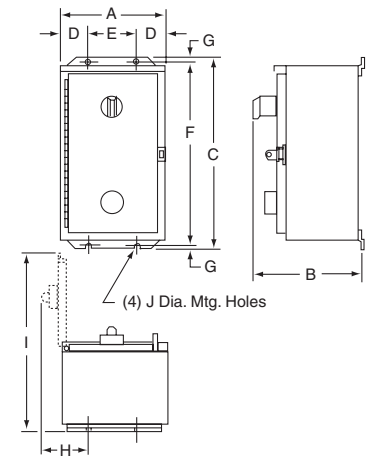


Figure 8

Table 16.307: NEMA 12/3R—Dusttight and Driptight Enclosures (Oversized)

Class 9991 Type	For Use With				Dimensions (see Figure 9)										Weight (lbs.)
	Class	Type	Size	No. of Poles	A	B	C	D	E	F	G	H	I	J	
SCA2	8702	SCO	1	All	11.88 302	7.75 197	13.5 343	2.56 65	6.75 171	12.75 324	.38 10	3.66 93	18.13 460	.31 8	17
	8736														
SCA3	8810	SBO, SCO	0, 1	All	11.88 302	7.75 197	13.5 343	2.56 65	6.75 171	12.75 324	.38 10	3.66 93	18.13 460	.31 8	18
SCA4	8502 8536	SBO, SCO (Form F4T)	0, 1	All											
SDA2	8702 8736	SDO	2	All	14.88 378	7.88 200	16.00 406	2.56 65	9.75 248	15.00 381	.50 13	3.66 93	21.25 540	.31 8	24
SDA3	8903	LO, LXO, SMO, SPO (Form F4T)	20 Amp, 30 Amp, 60 Amp	All											
SDA4	8502 8536	SDO (Form F4T)	2	All	14.88 378	7.88 200	16.00 406	2.56 65	9.75 248	15.00 381	.50 13	3.66 93	21.25 540	.31 8	27

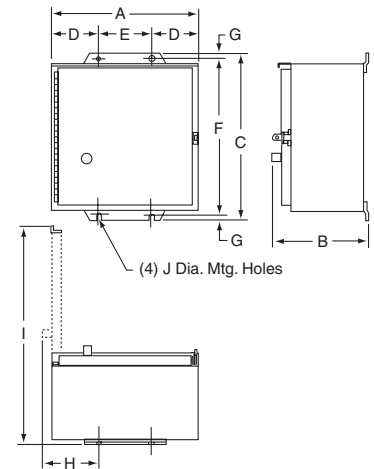


Figure 9

Table 16.308: Flush Mounting General Purpose Enclosures

Class 9991 Type	For Use With				Dimensions (see Figure 10)								Weight (lbs.)
	Class	Type	Size	No. of Poles	A	B	C	D	E	F	G	H	
SDF13 (w/SDF1 & SDF2)	8903	LO, LXO	20 Amp	All	15.19 386	8.94 227	7.63 194	12.88 327	5.44 138	10.94 278	5.13 130	.38 10	17
SCF11 (w/SDF1 & SDF2)	8502	SBO, SCO	0, 1	All	13.44 341	7.19 183	5.88 149	11.13 283	4.75 121	9.19 233	4.50 114	.38 10	10
	8536	SBO, SCO	0, 1	All									
	8903	SMO (E.H.)	30 Amp	All									
SDF11 (w/SDF1 & SDF2)	8502	SDO	2	All	15.19 386	8.94 227	7.63 194	12.88 327	5.44 138	10.94 278	5.13 130	.38 10	17
	8536	SDO	2	All									
	8903	SPO (E.H.)	60 Amp	All									
SEF11	8502	SEO	3	All	31.00 787	16.75 425	14.25 362	26.25 667	8.00 203	—	—	.18 5	48
	8903	SQO	100 Amp	All									

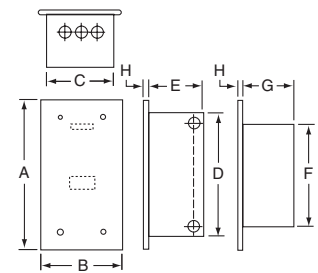


Figure 10

## Factory Modifications (Forms)

## For Full Voltage Contactors and Starters

Factory installed modifications are available for the classes of control equipment listed in the respective tables. Prices shown are **additions** to standard equipment prices and are **not** to be used as separate selling prices. Kits are also available for many field modifications and normal parts replacement on most control items. Refer to Classes 9998 and 9999 for complete listings.

Standard equipment dimensions and enclosure construction may not apply when certain special features are added. Such cases should be referred to the factory with complete description when accurate dimensions are required.

**NOTE:** If UL label is required, consult Square D/Schneider Electric CIC at 1-888-SquareD (1-888-778-2733). Some Forms are not UL Listed.

**Table 16.309: Full Voltage Starters**

	Factory Modifications	Enclosure Type	Form	NEMA Size												
				00	0	1	2	3	4	5	6	7				
PILOT DEVICES IN COVER Full Voltage Non-Reversing Controllers Only Classes 8502 8536 8538 8539	<b>Push Buttons ▲</b>															
	Start-Stop	1□, 3R, 4, 4X, 12 7 & 9	A	—	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	
	Start-Stop (maintained contact) ▼	1□, 3R, 4, 4X, 12	A16	—	378.00	378.00	378.00	378.00	378.00	378.00	378.00	378.00	378.00	378.00	378.00	
	Start-Stop push button and Hand-Off-Auto selector switch	1□, 3R, 4, 4X, 12	AC	—	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	
	On-Off	1□, 3R, 4, 4X, 12	A3	—	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	
	Single Oiltight Pushbutton (specify marking)	1, 3R, 4, 4X, 12	A11	—	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	
	<b>Selector Switches</b>															
	Hand-Off-Auto	1□, 3R, 4, 4X, 12 7 & 9	C	—	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	
	On-Off	1□, 3R, 4, 4X, 12 7 & 9	C6	—	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	
	NON-STANDARD markings for Pilot Devices	1, 3R, 4, 12	G12★	—	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	
	Addition of padlock attachment to Class 9001 operators	1, 3R, 4, 12	G12Z	—	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	
	Pilot Lights (specify color/type) ■ See Table 16.310 below.															
	With Operating Interlock: Add price of each interlock per light	1, 3R, 4, 4X, 12	XΔ	158.00	158.00	158.00	158.00	158.00	158.00	158.00	158.00	158.00	158.00	158.00	158.00	158.00
	PILOT DEVICES IN COVER Full Voltage Reversing and Multi-Speed Controllers Only Classes 8702 8736 8738 8739 8810 8811 8812	<b>Push Buttons ▲</b>														
		Forward-Reverse-Stop	1, 4, 4X, 12 7, 9	A1	—	570.00	570.00	570.00	570.00	570.00	570.00	570.00	570.00	570.00	570.00	570.00
High-Low-Stop		1, 4, 12	A2	—	570.00	570.00	570.00	570.00	570.00	570.00	570.00	570.00	570.00	570.00	570.00	
Fast-Off-Slow		1, 4, 12	A9	—	570.00	570.00	570.00	570.00	570.00	570.00	570.00	570.00	570.00	570.00	570.00	
High-Low push button and Hand-Off-Auto selector		1, 4, 12	A10C	—	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	
Single Oiltight Pushbutton (specify marking)		1, 4, 4X, 12	A11	—	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	
<b>Selector Switches</b>																
Hand-Off-Auto		1□, 4, 4X, 12 7 & 9	C	—	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	
On-Off		1□, 4, 4X 7 & 9	C6	—	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	
High-Off-Low		1, 4, 12	C7	224.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	
Forward-Off-Reverse		1, 4, 4X, 12 7 & 9	C14	—	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	
High-Low and Hand-Off-Auto		1, 4, 12	CC17	—	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	
Slow-Fast		1, 4, 4X, 12	C19	—	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	
Forward-Reverse		1, 4, 4X, 12	C20	—	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	336.00	
High-Low-Off-Auto		1, 4, 12	C25	—	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	671.00	
NON-STANDARD markings for Pilot Devices	Any	G12★	—	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00		
Pilot Lights ■ With Operating Interlock: Add price of each interlock per light	1, 4, 4X, 12	XΔ	158.00	158.00	158.00	158.00	158.00	158.00	158.00	158.00	158.00	158.00	158.00	158.00		

- ▲ All push buttons are momentary contact unless specified otherwise.
- Indicate pilot light color as **Form P1** (red) or **Form P2** (green), etc. as shown in the table below. Unless otherwise requested, standard practice is to wire red pilot light to indicate device is energized. No additional auxiliary contact is required. Also, standard practice is to wire green pilot light to indicate device is de-energized. An additional normally closed auxiliary contact is supplied. A wiring diagram must be supplied for other pilot light colors and/or arrangements.
- ◆ Pilot lights available at 120 to 600 V only.
- ★ Specify marking and/or Class 9001 Type KN or Type SKN legend plate required.
- ▼ Specify appropriate Class 9001 Type K or SK operator required.
- Δ To determine the maximum number of auxiliary contacts which can be added to each Type S device and for the appropriate "X Form", refer to the tables in the Class 8536 section on page 16-14 (for non-reversing single-speed devices) or the Class 8736 section on page 16-51 (for reversing or two-speed devices). For Class 8600 Reduced Voltage controllers, consult Square D/Schneider Electric CIC at 1-888-SquareD (1-888-778-2733).
- Various form combinations selected may force the use of a larger enclosure.

**Table 16.310: Pilot Light Forms**

	Standard			Push-to-Test			LED			LED-Push-to-Test		
	Form	Ty 1/4/12	Ty 7/9	Form	Ty 1/4/12	Ty 7/9	Form	Ty 1/4/12	Ty 7/9	Form	Ty 1/4/12	Ty 7/9
Red ON	P1	336.00	599.00	P21	435.00	599.00	P51	383.00	599.00	P42	482.00	599.00
Red OFF	P71	336.00	599.00	P81	435.00	599.00	P91	383.00	599.00	P43	482.00	599.00
Red Unwired	P38	336.00	599.00	P28	435.00	599.00	P58	383.00	599.00	P44	482.00	599.00
Green ON	P72	336.00	599.00	P82	435.00	599.00	P92	383.00	599.00	P45	482.00	599.00
Green OFF	P2	336.00	599.00	P22	435.00	599.00	P52	383.00	599.00	P46	482.00	599.00
Green Unwired	P39	336.00	599.00	P29	435.00	599.00	P59	383.00	599.00	P47	482.00	599.00
Amber	P3	336.00	599.00	P23	435.00	599.00	P53	383.00	599.00	P63	482.00	599.00
Clear	P4	336.00	599.00	P24	435.00	599.00	P54	383.00	599.00	P64	482.00	599.00
Yellow	P35	336.00	599.00	P25	435.00	599.00	P55	383.00	599.00	P48	482.00	599.00
Blue	P36	336.00	599.00	P26	435.00	599.00	P56	383.00	599.00	P66	482.00	599.00
White	P37	336.00	599.00	P27	435.00	599.00	P57	383.00	599.00	P67	482.00	599.00
Red LOW - Green HI	P73	672.00	1197.00	P83	870.00	1197.00	P93	765.00	1197.00	P77	963.00	1197.00
Green LOW - Red HI	P74	672.00	1197.00	P84	870.00	1197.00	P94	765.00	1197.00	P78	963.00	1197.00
Red OFF - Green FWD/REV	P75	1008.00	1796.00	P85	1305.00	1796.00	P95	1184.00	1796.00	P79	1445.00	1796.00
Green OFF - Red FWD/REV	P76	1008.00	1796.00	P86	1305.00	1796.00	P96	1184.00	1796.00	P80	1445.00	1796.00

**16 NEMA DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS**

For Full Voltage Contactors and Starters

Table 16.311: Full Voltage Controllers Only

Classes 8502, 8536, 8538, 8539, 8702, 8736, 8738, 8739, 8810, 8811 and 8812

Factory Modifications	Enclosure Type	Form	NEMA SIZE									
			00	0	1	2	3	4	5	6	7	
Separate Control Circuit— (specify voltage and frequency)	Any	S▲		No Charge	No Charge	No Charge	No Charge	No Charge	No Charge	No Charge	No Charge	No Charge
Fused Control Circuit (without control transformer)												
One fuse	1, 3R, 4, 4X, 12	F	314.00	314.00	314.00	314.00	314.00	314.00	314.00	314.00	—	—
Two fuses	1, 3R, 4, 4X, 7, 9, 12	F4	314.00	314.00	314.00	314.00	314.00	314.00	314.00	314.00	—	—
Control Circuit Transformers ■—Standard capacity (50 or 60 Hz) Note: All orders requesting Form FT will be supplied as Form F4T.												
FUSES												
Primary	Secondary											
2	0	1, 4, 4X, 12	F4T△	386.00	386.00	386.00	543.00	797.00	968.00	1097.00	◆ 1097.00	1097.00
2	0	7 & 9	F4T△	441.00	441.00	441.00	741.00	1070.00	1326.00	1524.00	◆ 1524.00	1524.00
1	0	1, 4, 4X, 12	FF1T	698.00	698.00	698.00	855.00	1112.00	1283.00	1412.00	◆ 1412.00	1412.00
2	1	1, 4, 4X, 12	FF4T	698.00	698.00	698.00	855.00	1112.00	1283.00	1412.00	◆ 1412.00	1412.00
2	1	7 & 9	FF4T	755.00	755.00	755.00	1053.00	1353.00	1640.00	1839.00	◆ 1839.00	1839.00
1	2	1, 4, 4X, 12	F1F10T	698.00	698.00	698.00	855.00	1112.00	1283.00	1412.00	◆ 1412.00	1412.00
2	2	1, 4, 4X, 12	F4F10T	698.00	698.00	698.00	855.00	1112.00	1283.00	1412.00	◆ 1412.00	1412.00
Additional Capacity (50 or 60 Hz)												
Two fuses in primary												
100 VA additional capacity	1, 4, 4X, 12	F4T11□	684.00	684.00	684.00	882.00	1112.00	—	—	—	—	1395.00
100 VA additional capacity	7 & 9	F4T11□	741.00	741.00	741.00	1083.00	1353.00	—	—	—	—	—
200 VA additional capacity	1, 4, 4X, 12	F4T12□	926.00	926.00	926.00	1155.00	—	—	—	—	—	1524.00
Two fuses in primary and one fuse in secondary												
100 VA additional capacity	1, 4, 4X, 12	FF4T11	998.00	998.00	998.00	1197.00	1425.00	1566.00	◆ 1710.00	◆ 1710.00	◆ 1710.00	1710.00
100 VA additional capacity	7 & 9	FF4T11	1053.00	1053.00	1053.00	1395.00	1668.00	1925.00	◆ 2138.00	◆	—	—
200 VA additional capacity	1, 4, 4X, 12	FF4T12	1241.00	1241.00	1241.00	1467.00	1695.00	◆ 1839.00	◆ 1839.00	◆ 1839.00	◆ 1839.00	1839.00
300 VA additional capacity	1, 4, 4X, 12	FF4T13	1481.00	1481.00	◆ 1481.00	◆ 1737.00	◆ 1967.00	◆ 2109.00	◆ 2109.00	◆ 2109.00	◆ 2109.00	2109.00
400 VA additional capacity	1, 4, 4X, 12	FF4T14	1967.00	1967.00	◆ 1967.00	◆ 2280.00	◆ 2507.00	◆ 2793.00	◆ 2793.00	◆ 2793.00	◆ 2793.00	◆ 2793.00
500 VA additional capacity	1, 4, 4X, 12	FF4T15	2250.00	2250.00	◆ 2250.00	◆ 2564.00	◆ 2793.00	◆ 3077.00	◆ 3077.00	◆ 3077.00	◆ 3077.00	◆ 3077.00

- ▲ All combination style devices such as 8538, 8539, 8738, 8739, that use Form S should also use Form Y74 (auxiliary contact installed on disconnect switch) per NEC Article 430-74.
- Table 16.314 at right.
- ◆ Single primary voltage must be specified.
- ★ Not available on Size 2 or Size 3 devices with 4- or 5-poles.
- ▼ Not available on this Size. Select appropriate transformer with secondary fuse protection.
- △ Not available with 24 V secondary on Size 3. Select appropriate transformer with secondary fuse protection. See Table 16.314 for 24 V secondary restrictions.
- Not available with 24 V secondary. Select appropriate transformer with secondary fuse protection. See Table 16.314 for 24 V secondary restrictions.
- ◇ Single phase with one leg grounded or grounded B phase applications ONLY.

Table 16.312: Marine Control

Class	Factory Modification	Enclosure Type	Form	\$ Price
8502 8536 8538 8539 8702 8736 8738 8739 8810 8811 8812	Modification of standard device for use as marine control per UL508	12/3R 4/4X (S.S. only)	M10	See Below

Table 16.313:

Form	NEMA Size★							
	00▼	0▼	1	2	3	4	5	6
M10	—	—	338.00	450.00	720.00	1260.00	3015.00	4725.00

- ★ Not available for NEMA Size 7.
- ▼ Cannot be used with Marine controls.

■ Selection of Control Circuit Transformers

The standard primary/secondary voltages for control circuit transformers are indicated in the following table.

Table 16.314:

AC-OPERATED DEVICES With Control Transformers		Code
Voltage		
60 Hz (Primary-Secondary)		
120-12	◆	V88
120-24	◆	V89
208-120	◆	V84
240-24	◆	V82
240-120	◆	V80
277-120	◆	V85
480-24	◆	V83
480-120	◆	V81
480-240	◆	V87
600-120	◆	V86
Specify		V99

- ◆ 12 V coils are not available on Sizes 3-7.
- ◆ 24 V coils are not available on Sizes 4-7.

To order, select the desired device with the appropriate transformer Form designation. Then convert the previously selected voltage code (V◆) to reflect the desired primary/secondary voltage for the transformer. The secondary voltage should equal the previously selected coil voltage of the device.

Example:

You have previously selected a Class 8536SDG1V02S. V02S means that you need a coil voltage of 120-60/110-50 wired for separate control. You would like to add Form FF4T with the transformer voltages being 480 volt primary, 120 volt secondary with Solid State Overload Relay Protection Class 20 Trip Class (H20).

The new and complete class, type, voltage code and form number will be:

<b>Class</b>	<b>Type</b>	<b>Voltage Code</b>	<b>Form *</b>
8536	SDG1	V81	FF4H20T

- \* Form numbers should always be shown in alphabetical order. Each letter indicates the beginning of a new form and may be followed by one or more numbers.

**Table 16.315: Full Voltage Controllers Only**

Classes 8502, 8536, 8538, 8539, 8702, 8736, 8738, 8739, 8810, 8811 and 8812													
Factory Modifications		Enclosure Type	Form	NEMA Size									
				00	0	1	2	3	4	5	6	7	
Overload Relays	<b>Non-Compensated Bimetallic Overload Relays</b> <b>Single Phase:</b> Types SB-SD (Sizes 0-2) ■		Any	B1	—	35.60	35.60	35.60	—	—	—	—	—
	<b>Polyphase:</b> <b>Two Element</b> —For 2 Phase Only Types SB-SD (Sizes 0-2)		Any	B1	—	35.60	35.60	35.60	—	—	—	—	—
	<b>Three Element</b> Types SB-SD (Sizes 0-2) Type SG (Size 5) Type SH (Size 6)		Any Any Any	B2 B2 B2	— — —	35.60 — —	35.60 — —	35.60 — —	— — —	— — —	— — —	35.60 — —	— — ▲
	<b>Ambient Compensated Bimetallic Overload Relays</b> <b>Three Element</b> Types SB-SD (Sizes 0-2) Types SE-SF (Sizes 3 & 4) Type SG (Size 5) Type SH (Size 6)		1, 4, 7, 9, 12 Any Any Any	B Y59 B B	— — — —	64.00 — — —	64.00 — — —	64.00 — — —	— 64.00 — —	— 64.00 — —	— — 64.00 —	— — — 64.00	— — — ▲
	<b>Overload Relays—General</b> Modify Size 3 Type SE starters with melting alloy overload relays to accept Type FB quick trip or SB slow trip thermal units		Any	Y81	—	—	—	—	—	N/C	—	—	—
	Substitute 9999 SO4 isolated alarm contact (N.O.) on melting alloy overload relay		Any	Y342	179.00	179.00	179.00	179.00	179.00	179.00	179.00	179.00	▲
	Substitute 9999 SO5 isolated alarm contact (N.C.) on melting alloy overload relay		Any	Y344	179.00	179.00	179.00	179.00	179.00	179.00	179.00	179.00	▲

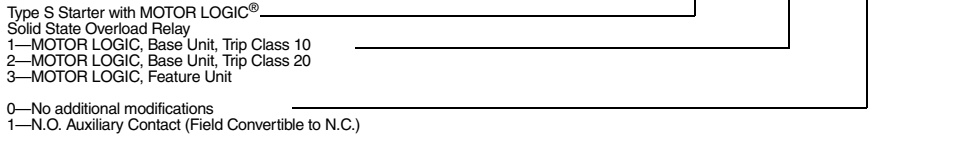
- ▲ Size 7 uses a solid state overload relay as standard. See Class 8536 for complete details.
- Single phase bimetallic overload relays for Type S Sizes 0-2 require two (2) thermal units per starter.
- ◆ For Classes 8736, 8738 and 8739 Type SG, consult Square D/Schneider Electric CIC at 1-888-SquareD (1-888-778-2733).

Accessories available on page 16-120.

**Solid State Overload Relay Factory Modifications (Forms)**

The solid state overload relay is available on NEMA Size 00-7.  
For Class 8536, 8538, 8539, 8736, 8738, 8739 and 8810 devices.

**Form Description**



**Special Overload/Contactor Size Combinations (Base Unit & Feature Units):**

- (Must Be Specified On Size 00 Starter Orders)
- Blank -Overload Matched to Starter Size (i.e., Size 1 contactor & 9-27 A overload)
- 0—A 6-18 A overload on a starter size as indicated by the Starter Catalog Number
- 1—A 9-27 A overload on a starter size as indicated by the Starter Catalog Number
- 2—A 15-45 A overload on a starter size as indicated by the Starter Catalog Number
- 3—A 30-90 A overload on a starter size as indicated by the Starter Catalog Number
- 4—A 45-135 A overload on a starter size as indicated by the Starter Catalog Number
- 8—A 1.5-4.5 A overload on a starter size as indicated by the Starter Catalog Number (only offered on Feature Units)
- 9—A 3-9 A overload on a starter size as indicated by the Starter Catalog Number

**SPECIAL NOTE for Class 8810 devices:**

You MUST SPECIFY TWO SEPARATE FORM NUMBERS TO GET MOTOR LOGIC OVERLOADS ON TWO SPEED STARTERS. The first form number is for the low speed winding and the second is for the high speed winding.  
EXAMPLE: Open Style, Size 4 Two Speed Starter with MOTOR LOGIC Overload Relays Required.  
Single Winding, 460 V, Constant or Variable Torque  
High Speed FLA = 96 A  
Low Speed FLA = 27 A (use Size 2 Overload)  
Catalog Number to Order: 8810 SF01V02 H202 H20S  
Where: Form H20 is a Size 4 Contactor with a 45-135 A MOTOR LOGIC Overload Relay for the High Speed and form H202 is a 15-45 A MOTOR LOGIC Overload Relay on the low speed contactor.

**Table 16.316: Classes 8536, 8538, 8539, 8736, 8738, 8739 and 8810**

Factory Modifications		Form	NEMA Size (Overload Current Range)								
			00	0	1	2	3	4	5	6	7
			3-9 A	6-18 A	9-27 A	15-45 A	30-90 A	45-135 A	90-270 A	180-540 A	270-810 A
MOTOR LOGIC Solid State Overload Relay	Base Unit, Trip Class 10	H10	64.00	64.00	64.00	64.00	64.00	64.00	64.00	—	—
	Base Unit, Trip Class 20	H20	64.00	64.00	64.00	64.00	64.00	64.00	64.00	—	—
	Feature Unit	H30	93.00	93.00	93.00	102.00	116.00	131.00	215.00	215.00	Std.
MOTOR LOGIC Solid State Overload Relay with Auxiliary Contact	Base Unit, Trip Class 10	H11	122.00	122.00	122.00	122.00	122.00	122.00	122.00	—	—
	Base Unit, Trip Class 20	H21	122.00	122.00	122.00	122.00	122.00	122.00	122.00	—	—
	Feature Unit	H31	149.00	149.00	149.00	161.00	171.00	188.00	270.00	270.00	56.00

**Table 16.317: Special Starter Combinations with MOTOR LOGIC Overload Relay Protection**

NEMA Contactor Size	Solid State Overload Relay Size							NEMA Contactor Size	Solid State Overload Relay Size						
	00B	00C	0	1	2	3	4		00B	00C	0	1	2	3	4
00	★	Std						2	★	★	★	★	Std		
0	★	★	Std					3	n/a	n/a	n/a	n/a	n/a	Std	
1	★	★	★	Std				4	n/a	n/a	n/a	n/a	n/a	★	Std

★ Possible factory starter combinations available.



**Table 16.318: MOTOR LOGIC® Plus Factory Modifications—Form B For use with Class 8536 (Open Starters)**

Factory Modification Form B	Second Digit Designator	First Digit Designator - Starter Packages with MOTOR LOGIC Plus Current Ranges							
		2	3	4	5	6	7	8	9
		.5-2.3 A	2-9 A	6-27 A	10-45 A	20-90 A	60-135 A	120-270 A	240-540 A
No modification for 200-480 V	0	957.00	957.00	957.00	957.00	957.00	1070.00	1070.00	1070.00
Add communication module for 200-480 V	2	171.00	171.00	171.00	171.00	171.00	171.00	171.00	171.00
No modification for 600 V	4	957.00	957.00	957.00	957.00	957.00	1070.00	1070.00	1070.00
Add communication module for 600 V	6	171.00	171.00	171.00	171.00	171.00	171.00	171.00	171.00

Example: Form B 4 2 = MOTOR LOGIC Plus overload relay with a current range of 9-18 A and factory modifications to add A communication module for 200-480 volt applications

**Table 16.319: Full Voltage Controllers Only**

Classes 8502, 8536, 8538, 8539, 8702, 8736, 8738, 8739, 8810, 8811 and 8812

Factory Modifications		Enclosure Type	Form	NEMA Size								
				00	0	1	2	3	4	5	6	7
Power Poles	Addition of one NEMA Size 1, 30 A single pole N.O. unit	Any	Y428	—	287.00	287.00	287.00	287.00	287.00	287.00	287.00	287.00
	Addition of one NEMA Size 1, 30 A single pole N.C. unit	Any	Y429	—	287.00	287.00	287.00	287.00	287.00	287.00	287.00	287.00
	Addition of one NEMA Size 1, 30 A double pole N.O./N.O. unit	Any	Y430	—	441.00	441.00	441.00	441.00	441.00	441.00	441.00	441.00
	Addition of one NEMA Size 1, 30 A double pole N.C./N.C. unit	Any	Y434	—	441.00	441.00	441.00	441.00	441.00	441.00	441.00	441.00
	Addition of one NEMA Size 1, 30 A double pole N.O./N.C. unit	Any	Y435	—	441.00	441.00	441.00	441.00	441.00	441.00	441.00	441.00
	Addition of one NEMA Size 2 single pole N.O. unit	Any	Y436	—	—	—	414.00	414.00	414.00	414.00	414.00	414.00
	Addition of one NEMA Size 2 single pole N.C. unit	Any	Y437	—	—	—	414.00	414.00	414.00	414.00	414.00	414.00
	Addition of one NEMA Size 2 double pole N.O./N.O. unit	Any	Y438	—	—	—	698.00	698.00	698.00	698.00	698.00	698.00
	Addition of one NEMA Size 2 double pole N.C./N.C. unit	Any	Y439	—	—	—	698.00	698.00	698.00	698.00	698.00	698.00
Miscellaneous	Coil transient suppressor (120 Volt only). Per Coil.	Any	Y145	158.00	158.00	158.00	158.00	158.00	158.00	158.00	158.00	158.00
	Addition of terminal blocks (specify wired or unwired). Wired, per terminal. Each Unwired, per terminal. Each	1, 4, 12 1, 4, 12	G56▲ G50▲	— —	116.00 57.00	116.00 57.00	116.00 57.00	116.00 57.00	116.00 57.00	116.00 57.00	116.00 57.00	116.00 57.00

▲ Addition of terminal block type 9080CA or 9080GR6 only. Number of circuits is same as ending of form number. (Ex.: G505 is 5 wire terminal block.) Available in groups of 5 only.  
■ When adding a power pole to a Size 2 device, also specify Form Y118 and add \$140.00.

**Table 16.320: Reversing Full Voltage Starters Only\***

Class 8810

Factory Modifications		Enclosure Type	Form	NEMA Size							
				0	1	2	3	4	5	6	7
Circuit Breaker or Disconnect Switch	Molded case circuit breaker	1	Y791	2010.00	2010.00	2451.00	2664.00	4872.00	9471.00	13944.00	19328.00
		4, 7★, 9★	Y791	2862.00	2862.00	3533.00	4886.00	7092.00	11808.00	18216.00	23601.00
		12	Y791	2037.00	2037.00	2564.00	2862.00	5079.00	10839.00	14990.00	20397.00
	Non-fusible disconnect switch	1	Y792	1340.00	1340.00	1710.00	2165.00	2165.00	5355.00	—	—
		4, 9★	Y792	2172.00	2172.00	2646.00	4388.00	5327.00	7691.00	—	—
	Fusible switch with 30 A fuse clips	1	Y793	1566.00	1566.00	—	—	—	—	—	—
		4	Y793	2421.00	2421.00	—	—	—	—	—	—
		12	Y793	1596.00	1596.00	—	—	—	—	—	—
	Fusible switch with 60 A fuse clips	1	Y794	—	1566.00	1823.00	—	—	—	—	—
		4	Y794	—	2421.00	2885.00	—	—	—	—	—
		12	Y794	—	1596.00	1938.00	—	—	—	—	—
	Fusible switch with 100 A fuse clips	1	Y795	—	—	—	1336.00	—	—	—	—
		4	Y795	—	—	—	4559.00	—	—	—	—
		12	Y795	—	—	—	2537.00	—	—	—	—
	Fusible switch with 200 A fuse clips	1	Y796	—	—	—	2885.00	3596.00	—	—	—
4		Y796	—	—	—	5129.00	5840.00	—	—	—	
12		Y796	—	—	—	3105.00	5327.00	—	—	—	
Fusible switch with 400 A fuse clips	1	Y797	—	—	—	—	—	5868.00	11039.00	—	
	4	Y797	—	—	—	—	—	8204.00	15354.00	—	
	12	Y797	—	—	—	—	—	6438.00	12861.00	—	
Automatic molded case switch with 600 A fuse clips	1	Y798	—	—	—	—	—	—	13802.00	—	
	4	Y798	—	—	—	—	—	—	18075.00	—	
	12	Y798	—	—	—	—	—	—	14871.00	—	
Automatic molded case switch with 1200 A or less fuse clips	1	Y799	—	—	—	—	—	—	15425.00	15425.00	
	4	Y799	—	—	—	—	—	—	19697.00	19697.00	
	12	Y799	—	—	—	—	—	—	17562.00	17562.00	
Automatic molded case switch	1	Y7910	—	—	—	—	—	—	12293.00	13004.00	
	4	Y7910	—	—	—	—	—	—	16565.00	17276.00	
	12	Y7910	—	—	—	—	—	—	13361.00	14072.00	

◆ For non-reversing 2-speed starters with disconnect switch or circuit breaker, see pages 16-65-16-70.  
★ NEMA 7 & 9 adders apply to 8810 non-reversing devices Sizes 0, 1 and 2 only.

**16 NEMA DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS**



**For Full Voltage Contactors & Starters**

**Table 16.321: Full Voltage Controllers**

		Classes 8502, 8536, 8538, 8539, 8702, 8736, 8738, 8739, and 8810										
Factory Modifications	Enclosure Type	Form	NEMA Size									
			0	1 PW 1 YD	2 PW 2 YD	3 PW 3 YD	4 PW 4 YD	5 PW 5 YD	6 PW 6 YD	7 PW 7 YD		
Control relay (4 & 8 poles)	1, 12	R174	\$ 485.00	\$ 485.00	\$ 485.00	\$ 485.00	\$ 485.00	\$ 485.00	\$ 485.00	\$ 485.00	\$ 485.00	
	4, 4X	R174	741.00	741.00	741.00	741.00	741.00	741.00	741.00	741.00	741.00	
	7, 9	R174	741.00	741.00	741.00	741.00	741.00	741.00	741.00	741.00	741.00	
	1, 12	R178	741.00	741.00	741.00	741.00	741.00	741.00	741.00	741.00	741.00	
	4, 4X	R178	1112.00	1112.00	1112.00	1112.00	1112.00	1112.00	1112.00	1112.00	1112.00	
	7, 9	R178	1112.00	1112.00	1112.00	1112.00	1112.00	1112.00	1112.00	1112.00	1112.00	
	<b>Pneumatic Timing Relay – specify Class 9050 Type A or B</b>											
	0.1 seconds to 1.0 minute—On delay	1 3R, 4, 4X, 12 7, 9	K25	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00
	0.1 seconds to 1.0 minute—Off delay	1 3R, 4, 4X, 12 7, 9	K26	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00
	1.0 to 3.0 minute—On delay	1, 3R, 4, 12 4X, 7, 9	K37	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00
1.0 to 3.0 minute—Off delay	1, 3R, 4, 12 4X, 7, 9	K38	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00	1197.00	
Solid State Timing Relay (specify timing range) and timer (120 V control required)	1, 4, 4X, 7, 9, 12	K1070	449.00	449.00	449.00	449.00	449.00	449.00	449.00	449.00	449.00	
Motor driven timing relay▲◆	1, 4, 12	K5	2507.00	2507.00	2507.00	2507.00	2507.00	2507.00	2507.00	2507.00	2507.00	
Phase failure and phase reversal relay with time delay option including under and over voltage protection. Addition of a protective relay with options of Phase Failure with Time Delay, Phase Reversal and Under/Over Voltage Protection. (RM3TR1). Both motor voltage and control voltage (V* voltage code) must be specified with device even if Form S is specified. Form replaces Forms Y444, Y445, Y447, Y448 and Y449. For multispeed controllers: Compelling relay (requires motor to be started in low speed) Accelerating relay (provides timed acceleration to selected speed): For Class 8810 For Class 8811 For Class 8812 Decelerating relay (imposes a timing delay during transfer from a higher to a lower speed): For Class 8810 For Class 8811 For Class 8812 Antiplugging timers and relays	1, 3R, 4, 4X, 7/9, 12  1, 4, 7, 9, 12  1, 4, 7, 9, 12 1, 4, 7, 9, 12 1, 4, 7, 9, 12 1, 4, 7, 9, 12 1, 4, 7, 9, 12 1, 4, 7, 9, 12	R44  R1  R2 R2 R2  R3 R3 R3 R10	1463.00  941.00 2195.00 4388.00 6579.00  2195.00 4388.00 6579.00 3846.00	1463.00  941.00 2195.00 4388.00 6579.00  2195.00 4388.00 6579.00 3846.00	1463.00  941.00 2195.00 4388.00 6579.00  2195.00 4388.00 6579.00 3846.00	1463.00  941.00 2195.00 4388.00 6579.00  2195.00 4388.00 6579.00 3846.00	1463.00  941.00 2195.00 4388.00 6579.00  2195.00 4388.00 6579.00 3846.00	1463.00  941.00 2195.00 4388.00 6579.00  2195.00 4388.00 6579.00 3846.00	1463.00  941.00 2195.00 4388.00 6579.00  2195.00 4388.00 6579.00 3846.00	1463.00  941.00 2195.00 4388.00 6579.00  2195.00 4388.00 6579.00 3846.00	1463.00  941.00 2195.00 4388.00 6579.00  2195.00 4388.00 6579.00 3846.00	
★ Meters and Metering	Ammeter in cover (includes current transformer if required)	1, 12	G91	1994.00	1994.00	1994.00	1994.00	2820.00	2820.00	2820.00	2820.00	
	Ammeter and switch with two current transformers	1, 12	G92	—	4274.00	4274.00	4274.00	4274.00	4274.00	4274.00	4274.00	
	Ammeter and switch with three current transformers	1, 12	G93	—	5270.00	5270.00	5270.00	5270.00	5270.00	5270.00	5270.00	
	Voltmeter mounted	1, 12	G94	—	2820.00	2820.00	2820.00	2820.00	2820.00	2820.00	2820.00	
	Voltmeter and switch mounted	1, 12	G95	—	4274.00	4274.00	4274.00	4274.00	4274.00	4274.00	4274.00	
	Elapsed time meter	1, 12	G97	827.00	827.00	827.00	827.00	827.00	827.00	827.00	827.00	
	Operation counter	1, 12	G99	1425.00	1425.00	1425.00	1425.00	1425.00	1425.00	1425.00	1425.00	
	Auxiliary Contacts	Additional starter (contactor) auxiliary contacts (Specify number of additional N.O. or N.C. contacts required per contactor.) Each	Any	X▼	158.00	158.00	158.00	158.00	158.00	158.00	158.00	158.00
Auxiliary contacts installed on disconnect switch or circuit breaker operating mechanism. SPDT		1, 4, 4X, 12	Y74	192.00	192.00	192.00	221.00	221.00	413.00	413.00	413.00	
DPDT		1, 4, 4X, 12	Y75	386.00	386.00	386.00	441.00	441.00	570.00	570.00	570.00	
(Note: Above contacts do not switch with automatic tripping of circuit breaker. If such operation is required, consult your nearest Square D/Schneider Electric Sales Office.)												
Enclosures	Space heater with N.C. auxiliary contact	1, 4, 4X, 12	G51	386.00	386.00	684.00	1097.00	1767.00	2622.00	3987.00	3987.00	
	Function identification plate, with marking as specified	Any	G11	42.80	42.80	42.80	42.80	42.80	42.80	42.80	42.80	
	Drain and breather installed	7 & 9◇	Y41	372.00	372.00	372.00	372.00	372.00	372.00	372.00	—	
	Cover gaskets added to NEMA 1 enclosures: For Classes 8538 and 8539	1	Y47	143.00	143.00	Std.	Std.	Std.	Std.	—	—	
	For Classes 8738 and 8739	1	Y47	Std.	Std.	Std.	Std.	Std.	—	—		
	For other full voltage controllers	1	Y47	143.00	143.00	215.00	320.00	534.00	1070.00	1710.00	1710.00	
	For reduced voltage controllers	1	Y47	143.00	143.00	215.00	320.00	534.00	1070.00	1710.00	1710.00	
	Brushed stainless steel watertight device (add to catalog price of sheet steel watertight device): Class 8606	—	Y56	—	—	1710.00	2138.00	3419.00	4773.00	8546.00	8546.00	
	Classes 8630 and 8640	—	Y56	—	Std.	Std.	Std.	Std.	4773.00	8546.00	8546.00	
	Non-standard size or location of conduit openings or hubs (Specify size and location. Does not apply to SPIN TOP® starters. No deduction for omission of standard conduit provision. Use of standard pipe plug by user recommended instead.)											
	For 2-1/2 inch and smaller conduit. Each	4, 4X	G7	86.00	86.00	86.00	99.00	99.00	99.00	—	—	
For 3 inch to 4 inch conduit. Each	4, 4X	G7	215.00	215.00	215.00	215.00	215.00	215.00	—	—		

▲ If controller has a control transformer, price that transformer with additional capacity for the relay provided.  
 ■ This adder, used with a NEMA 4X enclosure, applies only to Classes 8538, 8539, 8738, 8739 and 8810 non-reversing.  
 ◆ Specify control and line voltage.  
 ★ Motor hp and voltage required when placing order. Meters will be panel mounted in NEMA 12 enclosures.  
 ▼ To determine the maximum number of auxiliary contacts which can be added to each Type S device and for the appropriate "X Form", refer to the tables in the Class 8536 section on page 16-14 (for non-reversing single-speed devices) or the Class 8736 section on page 16-44 (for reversing or two-speed devices). For Class 8600 Reduced Voltage controllers, consult Square D/Schneider Electric C1C at 1-888-SquareD (1-888-778-2733).  
 △ Addition of control relay 1-8 poles. Number of poles is same as ending of form number. (Ex: R174 = 4-Pole relay).  
 □ NEMA 7 & 9 enclosures not available with Class 8600 devices.  
 ◇ Available only on SPIN TOP and cast aluminum NEMA 7/9 enclosures.

**16 NEMA DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS**

**Table 16.322: Replacement AC Magnet Coils for Magnetic Contactors and Starters**  
(Refer to Table 16.324 on page 16-115 for listing of mechanically held unlatch coils.)

Equipment To Be Serviced				Coil Prefix or Class and Type	Hz	Suffix Number (Complete Coil Number Consists of Prefix or Class and Type Followed by Suffix Number.)												Coil VA		\$ Price	
Device	Size	Type	Poles			24 V	110-115 V	120 V	208 V	220 V	240 V	277 V	380 V	440 V	480 V	550 V	600 V	In-rush	Sealed		
Coils for Present Design Magnetic Contactors and Starters Classes 8502, 8536, 8538, 8539, 8606, 8630, 8640, 8647, 8650, 8651, 8702, 8736, 8738, 8739, 8810, 8811, 8812, 8903, 8910 and 8940 (except NP)	30 Amp	L	2-6	9998L	60/50	23/24	—/44	44/45	50/52	▲53	53/54	55/—	60/—	62/63	65/—	65/66	150/140	30/30	85.00		
			8-12	9998LH	60/50	23/24	—/44	44/45	50/—	▲53	53/54	55/—	60/—	62/—	62/65	—/65	—/66	180/170	35/35	85.00	
		LX (Latch)	2-4	9998L	60/50	23/24	—/44	44/45	50/52	—/53	53/54	55/—	60/—	62/63	65/—	65/66	—/66	150/140	—/—	85.00	
			6-12	9998LH	60/50	23/24	—/44	44/45	50/—	53/54	55/—	60/—	62/—	62/65	—/65	—/66	—/66	180/170	—/—	85.00	
	00, 0, 1, 1-P & 30 Amp	SA (Series B)	All	9998SAC	60/50	23/24	▲45	45/—	52/—	▲54	54/—	55/—	59/—	▲62	62/—	▲65	—/—	65/—	165/—	33/—	85.00
			All	31041-400	60/50	20/22	▲42	42/43	48/—	▲51	51/53	52/—	56/57	58/60	▲60	61/62	62/64	245/232	27/26	98.00	
	2 & 60 Amp	SD & SP	2 & 3	31063-409	60/50	16/17	▲38	38/39	44/—	▲47	47/48	49/—	53/54	▲57	57/—	▲60	60/61	311/296	37/36	128.00	
			4 & 5	31063-400	60/50	16/17	▲38	38/39	44/—	▲47	47/48	49/—	53/54	▲57	57/—	▲60	60/61	438/429	38/37	128.00	
	3 & 100 Amp	DPA12, SE, SQ & SYD138	2 & 3	31074-400	60/50	16/17	▲38	38/39	44/—	▲47	47/48	49/—	53/54	▲57	57/—	▲60	60/61	700/678	46/47	254.00	
			4 & 5	31091-400	60/50	—/—	▲38	38/39	44/—	▲47	47/48	49/—	53/54	▲57	57/—	▲60	60/61	1185/1260	85/89	254.00	
	4 & 200 Amp	SF, SV & SYD230	All	31091-400	60/50	—/—	▲38	38/39	44/—	▲47	47/48	49/—	53/54	▲57	57/—	▲60	60/61	1185/1260	85/89	254.00	
			All	31096-400	60/50	—/—	▲09	09/10	15/—	▲18	18/—	19/—	21/22	▲24	24/—	▲29	29/30	2970/2970	212/250	354.00	
5 & 300 Amp	SG, SX & SYD368 Series B	All	31096-320	60/50	—/—	50/50	50/51	51/—	52/52	53/—	54/—	55/55	—/—	—/—	—/—	—/—	1300/—	14/—	600.00		
		All	31104-418	60/50	—/—	▲09	09/—	15/—	▲18	18/—	19/—	—/—	▲24	24/—	▲29	29/—	1530/1250	—/—	860.00		
6 & 7	SH & SJ	2-3	Coil Part Number 3110440050 (All System Voltages)														1780	48	860.00		
			1960	59																	
400, 600 & 800 Amp	SY, SZ, SJ (Elect. Held)	2-3	Coil Part Number 3110440050 (All System Voltages)														1530	—	860.00		
			1250	—																	

- ▲ Use next higher voltage, 60 Hz coil.
- Use on Type S Series B devices only.
- ◆ For 8910DPA1x to DPA9x, see page 16-77.
- ★ For 8911, see page 16-80
- ▼ For 8965, see page 16-88 and 16-89.

**NEMA S Size 5 E-Coil Modification Kit**

Classes 8502, 8536, 8538, 8539, 8606, 8630, 8640, 8647, 8650, 8651, 8702, 8736, 8738, 8739, 8810, 8811, 8812, 8910 and 8903

Consisting of:

- E-Coil
- Armature
- 15 A, 600 V Fuse and Holder (Class 9999SFR)
- Bottom Magnet
- Instruction Material

**Table 16.323:**

Catalog Number	Description	\$ Price
9998SG120	Coil Modification Kit 120 V	1506.00
9998SG480	Coil Modification Kit 480 V	1506.00
9998SG277	Coil Modification Kit 277 V	1506.00
9998SG208	Coil Modification Kit 208 V	1506.00
9998SG240	Coil Modification Kit 240 V	1506.00
9998SG380	Coil Modification Kit 380 V	1506.00

**Table 16.324: Replacement AC Magnet Coils for Relays, Timers and Contactors**

Equipment To Be Serviced			Coil Prefix or Class and Type	Hz	Suffix Number (Complete Coil Number Consists of Prefix or Class and Type Followed by Suffix Number)											Coil VA		\$ Price
Device	Type	Poles			24 V	110-115 V	120 V	208 V	220 V	240 V	277 V	380 V	440 V	480 V	550 V	600 V	In-rush	
<b>Classes 8501 and 9050</b>																		
8501 (Relays)	X	All	9998-X▲	60 50	23 24	— 44	44 —	51 52	— 53	55 —	— —	— 62	— 65	65 —	148 143	23 25	69.00	
9050 (Timer)	A	All	2959-S49-	60 50	W25A W25B	W31B W32A	W32A W32B	W34A W34B	W34B W35A	W35A W35B	W35B W36A	— W37B	W38A W38B	W38B W39A	W39A W39B	74 68	17 17	132.00
	B■	All	31017-400-	60 50	33 34	— —	54 55	61 —	61 63	63 64	65 —	— 70	72 73	73 75	75 76	165 155	27 27	98.00

**Mechanically Held Unlatch Coils—Classes 8508 and 8903**

Note: A latch coil is also used with mechanically held devices. For selection of latch coils for mechanically held relays, refer to page 16-114.

8903 (Lighting Contactors)	LX	All	9998LX	60 50	23 —	— 44	44 —	51 —	— 53	55 —	— —	— 62	— 65	65 —	25 —	— —	118.00
	SM, SP	All	2959-S13	60 50	W23B W24B	W30B W31B	W33A —	— W33B	W34A W34B	— —	W36A W36B	— —	W36B —	W37B —	80 —	— —	202.00
	SQ, SV, SX, SY, SZ	All	31096-416	60 50	03 —	09 09	— 15	— 18	18 —	20 —	22 —	24 —	24 —	28 —	28 —	550 —	202.00
	SJ	All	31123-403	60 50	03 —	09 —	09 —	15 —	18 —	18 —	20 —	22 —	24 —	24 —	28 —	2100 —	202.00

**Table 16.325: Replacement DC Magnet Coils for Magnetic Relays and Timers**

Equipment To Be Serviced			Coil Prefix or Class and Type	Suffix Number (Complete Coil Number Consists of Prefix or Class and Type Followed by Suffix Number.)													Coil Burden Watts	\$ Price
Class	Type	Poles		6 V	12 V	18 V	24 V	32 V	48 V	64 V	72 V	90 V	110 V	115/125 V	220 V	230/250 V		
8501 (Relays)	XD	All	9998 XD	19	28	34	37	40	46	49	52	55	—	58	—	67	18	168.00
	XDL	—	9998 XDL	19	28	34B	37B	40B	46B	49B	52B	55B	—	58B	—	67B	50	216.00
	XUD	All	9998 XUD	19	28	—	37	—	46	—	—	—	—	58★	—	67★	16	168.00
9050 (Timers)	C	—	31018-400-	22	31	—	40	—	49	—	—	—	—	61	—	70	14	312.00
	H	—	4491S1	W21	W24	—	W27	—	W30	—	—	—	—	W34	—	W37	14	210.00

**Table 16.326: Replacement Coil for 8903 Panel Board Lighting Contactors**

Class	Type	Replacement Solenoid	Catalog Number	\$ Price ▼
8903	PB	120 V	9998PBV02	428.00
		208 V	9998PBV08	428.00
		240/277 V	9998PBV39	428.00
		480 V	9998PBV28	428.00

- ▲ To order an unlatch coil add the letter "L" to the type number and the letter "B" to the suffix number. Example: For a 120 V 60 Hz unlatch coil order a Class 9998 Type XL44B. Price for the 9998 Type XL coil series is \$114.00.
- Series C (Double Pole) and Series E (Single Pole).
- ◆ Use next higher voltage, 60 Hz coil.
- ★ Not dual rated. 125 Vdc or 250 Vdc only.
- ▼ CP1 discount schedule.



Class 9998 replacement parts kits are available for servicing Square D relays, contactors, and starters as well as pressure, vacuum, and float switches. Each kit contains the necessary movable and stationary contacts, contact springs (when required—NEMA Size 3 and above do not include contact springs, and springs are not available), and additional

hardware required to service the devices listed below. When servicing devices having more poles than contained in the corresponding kit, it may be necessary to order an additional kit.

**Table 16.327: Magnetic Contactor and Starter Contact Kits for Present Designs**

Equipment To Be Serviced					
Class	Type	NEMA Size or Amp Rating	No. of Poles in Kit	Class 9998 Parts Kit Type No.	\$ Price
8502 8536 8538 8539 8547 8549 8606 8630 8640 8647 8702 8736 8738 8739 8810 8811 8812 8940	SA-, (Series B)	00	3	SL1	90.00
	SB-	0	3	SL2	130.00
			4	SL12	176.00
	SB-, SC-(Power Pole Adder)	0 & 1	1	SL22	63.00
	SC-	1 & 1P	3	SL3	188.00
		1	4	SL13	246.00
	SD-	2	3	SL4	370.00
			4	SL14	494.00
	SD-(Power Pole Adder)	2	1	SL24	124.00
	SE-	3	2	SL6	442.00
			3	SL7	662.00
	SF-	4	2	SL8	848.00
			3	SL9	1270.00
	SG-	5	2	SL10	2104.00
		3	SL11	3120.00	
SH-	6	2	SL25	3762.00	
		3	SL26	5606.00	
SJ-	7	2	SL30	5454.00	
		3	SL31	8162.00	
8903	L (Series C) & LX (Series B)	30 Amp	4	RA5B	174.00
	SM-	30 Amp	3	SL3	188.00
			4	SL13	246.00
	SP-	60 Amp	3	SL4	370.00
			4	SL14	494.00
	SQ-	100 Amp	2	SL6	442.00
			3	SL7	662.00
	SV-	200 Amp	2	SL8	848.00
			3	SL9	1270.00
	SX-	300 Amp	2	SL10	2104.00
			3	SL11	3120.00
	SY-	400 Amp	2	SL25	3762.00
			3	SL26	5606.00
	SZ-	600 Amp	2	SL32	3762.00
			3	SL33	5606.00
	SJ-	800 Amp	2	SL30	5454.00
			3	SL31	8162.00
	PBM, PBP	30, 60 A	2	PB2	520.00
PBN, PBQ	75, 100 A				
PBM, PBP	30, 60 A	3	PB3	780.00	
PBN, PBQ	75, 100 A				
PBR, PBV, PBW	150, 200, 225 A	2	PB14	850.00	
PBR, PBV, PBW	150, 200, 225 A	3	PB15	1276.00	

**Table 16.328: Magnetic Contactor and Starter Contact Kits for Obsolete Designs**

Equipment To Be Serviced					
Class	Type	NEMA Size	No. of Poles in Kit	Class 9998 Parts Kit Type No.	\$ Price
8502 & 8536▲	SA-, (Series A)	00	3	SL2	130.00
			4	SL12	176.00
8903	LL, L (Series A, B) & LX (Series A)	20	4	RA5	174.00

▲ Includes reversing, two speed and similar devices. Select coil based on NEMA size of basic starter or contactor.

**Table 16.329: Class 8965 Replacement Contact Kits**

Device Type	Device Series	Class 9998 Kit Type	Device Series	Class 9998 Kit Type	\$ Price
DPR53	A	DRC5	—	—	52.00
DPR63	A	DRC6	—	—	59.00
RO10	A & B	RA10	C	RA14	202.00
RO11	A & B	RA11	C	RA15	202.00
RO12	A & B	RA12	C	RA16	236.00
RO13	A & B	RA13	C	RA17	236.00

■ Single pole kits.

**Table 16.330: Manual Starter Contact Kits**

Equipment To Be Serviced				No. of Poles in Kit	Class 9998 Parts Kit Type No.	\$ Price
Class	Type	NEMA Size				
2510 Manual Starters	M-, T-	M-0	3	3	ML1	90.00
		M-1 & M-1P	3	3	ML2	106.00

**Table 16.331: Replacement Control Transformers (150 VA) Class 8502, 8536 Type S Size 6**

Voltage		Part Number	\$ Price
60 Hz	50 Hz		
240/480-120	220/440-110	3110451250	188.00
208-120	—	3110451252	
277-120	—	3110451253	
—	380-110	3110451254	
600-120	550-110	3110451251	
120-120	110-110	3110451255	
240-120	220-110	3110451256	

**Table 16.332: Replacement Control Transformers (200 VA) Class 8502, 8536 Type S Size 7**

Voltage		Part Number	\$ Price
60 Hz	50 Hz		
240/480-120	220/440-110	3112350150	236.00
208-120	—	3112350152	
277-120	—	3112350153	
—	380-110	3112350154	
600-120	550-110	3112350151	
120-120	110-110	3112350155	
240-120	220-110	3112350156	

**Table 16.333: Class 8910, 8911 & 8965 Replacement Contact Kits**

Device To Be Serviced				Class 9998		\$ Price
Class 8910 Type	Class 8911 Type	Class 8965 Type	Series	1-Pole Type	3-Pole Type	
SYD138	—	—	—	—	SL27	662.00
SYD230	—	—	—	—	SL28	1270.00
SYD368	—	—	—	—	SL29	3120.00
DPA 20A	DPSO1_	DPR1_	B	DRC1	—	24.80
DPA 25A	DPSO2_	DPR2_	B	DRC2	—	22.80
DPA 30A	DPSO3_	DPR3_	B	DRC3	—	24.80
DPA 40A	DPSO4_	DPR4_	B	DRC4	—	29.00
DPA 50A	DPSO5_	DPR5_	A, B	DRC5	—	52.00
DPA 60A♦	DPSO6_	DPR6_	A, B	DRC6	—	59.00
DPA 75A	DPSO7_	—	A	DRC7	—	100.00
DPA 90A	DPSO9_	—	A	DRC9	—	132.00
DPA 120A	—	—	A	DRC12	—	222.00

♦ For class 8911, 60 A starter, use the 9998DRC7 contact kit.

**Table 16.334: How to Order**

To Order Specify:	Catalog Number	
• Class Number	Class	Type
• Type Number	9998	SL6



Class 9998 Type SO1

**Contact Units for Melting Alloy Type Overload Relays**

One normally closed contact, Class 9998 Type SO1, is provided in each overload relay block on Type S starters Sizes 00-4 and Size 6. On the Type S Size 5, a normally closed contact is provided with each of the three overload relay blocks. The Class 9998 Type SO1 contact unit listed below is provided as standard in each Class 9065 melting alloy overload relay. Contact modules can be easily replaced and are identified in the table below. Isolated overload relay alarm circuit contacts are available as an optional feature. A pilot light or alarm bell can be wired in series with this contact to indicate that the overload relay has tripped. For further information on isolated alarm contacts refer to Class 9999 Types SO4 and SO5 (page 16-122).

**Table 16.335:**

Magnetic Starter			Description ▲	Parts Kit Number	\$ Price
NEMA Size	Type	Series			
00-4 & 6	SA-SF SH	A & B	Standard N.C. contact unit	Class 9998 Type SO1 ■	39.40
			N.C. and N.O. alarm (three point) contact unit		
5	SG	A	Standard N.C. contact unit	3110251450	134.00

- ▲ Refer to page 16-119 for contact ratings.
- The Type SO1 is also the replacement contact unit for Class 9065 Type M melting alloy overload relays.



Overload Contact Unit  
Part No. 31102-514-50.  
Used on Size 5 Starter  
(8536SGO) with Melting Alloy  
Overload Relay.

**Class 9998 Type UB Universal Baseplate**

A universal baseplate may be used to retrofit a Square D Type S NEMA starter into an application which is currently using a competitive NEMA starter. The universal baseplate is a metal plate which attaches to the panel in the location of the starter to be replaced. The Type S starter then mounts to the baseplate. It is available for NEMA Sizes 00 through 4, and mounting screws are provided with each plate.

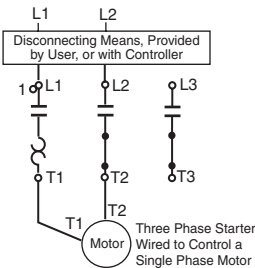
The universal baseplate adapter allows the Type S starter to replace the following competitive starters:

**Table 16.336:**

Competitor Starter	NEMA Size	Baseplate	NEMA Size	Baseplate	NEMA Size	Baseplate	NEMA Size	Baseplate	\$ Price
Allen Bradley 509	0, 1	UB01	2	UB02	3	UB03	4	UB04	No charge
Allen Bradley 709	1		2		3		4		
Cutler Hammer Freedom Series	00, 0, 1		2		3		4		
Furnas ESP100	0, 1		2		3		4		
Furnas INNOVA	0, 1		2		3		4		
General Electric CR306	00, 0, 1		2		3		4		
Telemecanique "A" Line and Pre-type "S"	0, 1	UB11	2	UB12	3	UB13	4	UB14	

**Melting Alloy Overload Relay Jumper Strap Kits**

Jumper strap kits are for use on three-phase manual or magnetic starters with melting alloy overload relays only, where a three-phase starter is used to control a single-phase motor. These kits will include two jumper straps, a wiring diagram showing how to wire a three-phase starter to control a single-phase motor, and single-phase (one thermal unit) selection tables.



Melting Alloy Overload Relay  
Jumper Strap Kits

**Table 16.337: Melting Alloy Overload Relay Jumper Strap Kits**

Class	For Starter		Class 9998 Kit Type	\$ Price ♦
	Size	Type		
ALL	00, 0, 1, 2 and M0 & M1	SA, SB, SC, SD and M & T (Manual)	SO31	14.30
	3,4	SE, SF	SO32	21.50
	5	SG	None Available	

- ♦ CP1 discount schedule.

**How to Order**

**Table 16.338: How to Order**

To Order Specify:	Catalog Number	
• Class Number	Class	Type
• Type Number	9998	UB01

**Cover-Mounted Control Units**

Class 9999 push button, selector switch and pilot light cover-mounted control unit kits can be easily field installed in a NEMA 1, 3R, 4 or 12 Type S contactor or starter enclosure cover. Knockouts or removable closing plates are furnished with many enclosure covers for convenient field installation of control units. Kits are supplied with leads and clearly illustrated instructions. The Class 9999 cover mounted control unit kits are identical to the units which are factory installed.

**Table 16.339:**

For Use With				NEMA 1 Kit Description						NEMAs 3R & 12 Kit Description*				NEMA 4/4X Kit (Stainless) Description*															
Class	Type	NEMA Size or Ampere Rating	No. of Poles	Voltage	Red or Green Pilot Light■		Push Button		Selector Switch		\$ Price	Red or Green Pilot Light■	Push Button	Selector Switch	\$ Price	Red or Green Pilot Light■	Push Button	Selector Switch	\$ Price										
					With Control Transformer (Form F4T)	Standard	Start-Stop	On-Off	Hand-Off-Auto	On-Off		120 V 60 Hz	Start-Stop or On-Off	Hand-Off-Auto		120 V 60 Hz	Start-Stop or On-Off	Hand-Off-Auto											
					Type	Price	Type	Price	Type	Type		Type	Type	Type		Type	Type	Type		Type									
8502 & 8536	SA, SB & SC	00, 0, 1 & 1P	All	6-600 Volts 50-60 Hz	SP28R♦	215.	SP2R	215.	SA2	SA10	SC2	SC22	116.	SP28R♦	SA3▲	SC8	215.	SP29R	SA13	SC9	215.								
	SD	2	All		SP28R♦	215.	SP3R	215.																					
	SE	3	2-3		SP28R♦	215.	SP4R	215.																					
			4-5		SP28R♦	215.	SP5R	215.																					
	SF	4	All		SP28R♦	215.	SP28R♦	215.	SA3	SA3	SC8	—	215.																
SG-SJ	5-7	All	SP28R♦		215.	SP28R♦	215.	SA2	SA10	SC2	SC22	116.																	
SB & SC	0 & 1	All	SP12R		215.	SP12R	215.																						
8538 & 8539	SD	2	All		SP13R	215.	SP13R	215.	SA3	SA3	SC8	—	215.									SP28R♦	SA3▲	SC8	215.	SP29R	SA13	SC9	215.
	SE	3	All		SP14R	215.	SP14R	215.																					
	SF	4	All		SP15R	215.	SP15R	215.																					
	SG-SJ	5-7	All		SP28R♦	215.	SP28R♦	215.																					
△ 8903 (Electrically Held)	L	20 Amp	All		SP28R♦	215.	—	—	SA10▼	—	SC22▼	116.	SP28R♦									SA3▲	SC8	215.	SP29R	SA13	SC9	215.	
	SM	30 Amp	All		SP28R♦	215.	SP2R	215.	SA2▲	SA10▲	SC2	SC22																	116.
	SP	60 Amp	All		SP28R♦	215.	SP3R	215.	SA3▲	SA3▲	SC8	—																	215.
	SQ	100 Amp	All		SP28R♦	215.	SP28R♦	215.	SA3▲	SA3▲	SC8	—																	215.
	SJ, SV, SX SY, SZ	200-800 Amp	All	SP28R♦	215.	SP28R♦	215.	SA3▲	SA3▲	SC8	—	215.																	

▲ Also requires N.O. auxiliary contact for holding circuit contact when used on Class 8903 electrically held lighting contactors.  
 ■ Each pilot light kit contains 1 red and 1 green lens cap.  
 ♦ The coil voltage must be the same as the pilot light rating. Kit contains one Class 9001 Type KP1R31120V, 60 Hz red pilot light control unit. For other voltages, refer to Class 9001 Type KP.  
 ★ User made openings are required in order to field install these modification kits on standard 8502, 8536 Type S Sizes 0-2, and 8903 Sizes 30-60 A NEMAs 4 and 12 enclosures.  
 ▼ To mount control unit in a NEMA 1 enclosure, a Class 9999 Type BLX bracket is also required, \$35.60.  
 △ For Class 8903 (mechanically held contactor) control unit kits, refer to the Class 8903 section, page 16-71.  
 Note: There are no field modification kits available for the polyester enclosures.

**Table 16.340: NEMA 1 Enclosure Closing Plates**

For Use With			Description	Type	\$ Price
Class	Type	NEMA Size or Ampere Rating			
8502, 8536, 8903	SA-SE or SM-SP	00-3 or 30-60 Amp	For Pilot Light or Reset—Slip-on Cover NEMA 1 Enclosure	SG2	14.30
			For Push Button or Selector Switch—Slip-on Cover NEMA 1 Enclosure	SG3	14.30
8538 & 8539 Pre-series "J"	SB-SF	0-4	For Push Button or Selector Switch—Hinged Cover NEMA 1 Enclosure	SG1	14.30
			For Pilot Light—Hinged Cover NEMA 1 Enclosure	SG2	14.30

**Table 16.341: How to Order**

To Order Specify:		Catalog Number	
• Class Number		Class	Type
• Type Number		9999	SP29R

**16 NEMA/DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS**



Class 9999 Type SP2R Pilot Light Kit



Class 9999 Type SA2 Push Button Kit



Class 9999 Type SC2 Selector Switch Kit



Class 9999 Type SA3 Push Button Kit

**Auxiliary Contacts for Manual and Magnetic Contactors and Starters**

**Internal Contacts**



Internal Auxiliary Contact

Class 9999 Type SX11 internal contact kit is a replacement unit for the N.O. holding circuit contact supplied as standard on Type S Sizes 00–2 three phase starters and contactors. The Class 9999 Type SX12 is a replacement unit for the N.C. electrical contact which is furnished as standard on Type S, Sizes 00–2 mechanically interlocked devices (e.g., Class 8736 reversing starters). Internal contacts are also used on Class 2510 Types M & T manual starters. The internal contacts can be used for other applications as long as the electrical rating is not exceeded. See table below for electrical ratings.

**External Contacts**



External Single Circuit Auxiliary Contact

Class 9999 Type SX6 external auxiliary contact is supplied as standard for the N.O. holding circuit contact on Type S Sizes 3–7 starters and contactors. Additional auxiliary contacts can be added to Type S contactors, starters and lighting contactors. These contacts mount on either side of the basic contactor and are available with convertible or non-convertible contacts. The contacts of the convertible version can be changed from N.O. to N.C. or vice versa in the field. The non-convertible version has fixed contacts, either N.O. or N.C.

To determine the number of auxiliary contacts which can be added to each Type S contactor or starter, refer to the Class 8536 or Class 8736 section.

See table below for electrical ratings.

**Table 16.342: Maximum Ratings for Type S Auxiliary Contacts and Timers**

Class 9999 Type	Contact Ratings				Class 9999 Type	Contact Ratings			
	Volts AC	AC Only (35% Power Factor)		Continuous		Volts AC	AC Only (35% Power Factor)		Continuous
		Make	Break				Make	Break	
SX11, SX12	120 or Less	30 A	3 A	3 A	SX6-SX10 SX13-SX17	120 or Less	60 A	6 A	10 A
	120-600	3600 VA	360 VA	3 A		120–600	7200 VA	720 VA	10 A

**Table 16.343: Class 8502, 8536 and 8903 Type S**

For Use With		Kit Description	Ordering Information	
Type	NEMA Size		Class 9999	
			Type	\$ Price
<b>External—Field Convertible</b>				
SA-SJ	00–7	1-N.O. Contact	SX6	86.00
		1-N.C. Contact	SX7	86.00
		1-N.O. and 1-N.C. Isolated Contacts	SX8	116.00
		1-N.O. Overlapping Contact	SX9▲	116.00
		1-N.C. Overlapping Contact	SX10▲	116.00
<b>External—Non-Convertible</b>				
SA-SJ	00–7	1-N.O. Contact	SX13	99.00
		1-N.C. Contact	SX14	99.00
		1-N.O. & 1 N.C. Isolated Contacts	SX15	134.00
		1-N.O. Overlapping Contact	SX16▲	134.00
		1-N.C. Overlapping Contact	SX17▲	134.00
<b>Internal—Non-Convertible</b>				
SA-SD	00–2	1-N.O. Contact	SX11■	99.00
		1-N.C. Contact	SX12■	99.00

▲ Types SX9 and SX10 or Types SX16 and SX17 must be used together and mounted on the same side of the contactor. They are suitable for applications where it is necessary for a normally open contact to overlap a normally closed contact.

■ Types SX11 and SX12 are not applicable for use on NEMA Sizes 3 or larger. Internal contacts can also be used on Class 2510 Types M and T manual starters.

**Table 16.344: Class 8910 and 8911 Definite Purpose Contactors and Starters – Auxiliary Contacts**

Device To Be Serviced	Auxiliary Contact Kit		
Class 8910 or 8911 Type	Contact Arrangement	Class 9999 Type	\$ Price Each
DPA◆ DPS	1 N.O.	D10	24.60
	1 N.C.	D01	
	1 N.O./1 N.C.	D11	44.30
	2 N.O.	D20	

◆ Type DPA122 and DPA123 use same auxiliary contacts as Type SA-SJ above. (Example: Class 9999 Type SX6).

**Table 16.345: Class 8965 Reversing/Hoist Contactors –Auxiliary Contacts**

Device To Be Serviced	Auxiliary Contact Kit			
Class 8965 Type	Contact Arrangement	Type of Connector	Class 9999 Type	\$ Price Each
DPR	1 N.O.	Screw/ Quick-Connect	D10	35.60
	1 N.C.		D01	
	1 N.O./1 N.C.		D11	64.00
	2 N.O.		D20	
RO2 & RG2 RO10 Form X1 RO11 Form X1	1 N.O. each side	Slip-on	R10	50.00
RO3 & RG3 RO10 Form X2 RO11 Form X2	1 N.C. each side		R11	
RO5 & RG5 RO12 Form X1 RO13 Form X1	1 N.O. each side	Screw	R12	
RO6 & RG6 RO12 Form X2 RO13 Form X2	1 N.C. each side		R13	

**Table 16.346: How to Order**

To Order Specify:	Catalog Number	
• Class Number	Class	Type
• Type Number	9999	SX6

16 NEMA/DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS

**Motor Logic—Class 9999**

**Isolated Auxiliary Contacts for Motor Logic Overload Relays**

Overload relay auxiliary contacts are available factory installed or in kit form for field installation on MOTOR LOGIC overload relays. These contacts may be used for isolated alarm contact applications.

**Table 16.347:**

For Use With		Parts Kit Description	Class 9999 Type	\$ Price
Class & Type	NEMA Size			
8536 SA-SJ	00B through 7	N.O. or N.C. Auxiliary Contact (Field Convertible)	AC04	57.00
9065 SS, SR, SF, ST	00B through 7			

**DIN Adapter**

The DIN adapter provides a method to mount the MOTOR LOGIC overload relay to a 35 mm DIN rail.

**Table 16.348:**

For Use With		Parts Kit Description	Class 9999 Type	\$ Price
Class & Type	NEMA Size			
9065 SS or SF	00B, 00C, 0, and 1	DIN Adapter	DA01	23.90

**Lug-Lug and Lug-Extender Kits**

A Class 9999 LL0 Lug-Lug Kit can be field installed on separately mounted overload relays. The standard Size 00B, 00C, 0, and 1 Class 9065 Type SS and SF overload relays are supplied without lugs. A Class 9999 LB0 Lug-Extender Kit is designed for Size 00B, 00C, 0, and 1 Retrofit Starter Applications. This kit allows the lugs to be in the same location as the Class 9065 melting alloy overload relay, eliminating the need for additional wire length.

**Table 16.349:**

For Use With		Parts Kit Description	Class 9999 Type	\$ Price
Class & Type	NEMA Size			
9065 SS or SF	00B, 00C, 0, and 1	Lug-Lug Kit for separate mounting	LL0	42.80
9065 SS or SF	00B, 00C, 0, and 1	Lug-Extender Kit for retrofitting existing NEMA S starters	LB0	35.60

**Remote Reset Module**

The Remote Reset Module can be easily field installed on solid state overload relays. This module will allow the overload relay to be reset from a remote location.

**Table 16.350:**

For Use With		Parts Kit Description	Class 9999 Type	\$ Price
Class and Type	NEMA Size			
536 SA-SJ	00B through 7	Remote Reset Module	RR04	162.00
9065 SS, SR, SF, ST	00B through 7			
8536 SE-SF	3 and 4	Top Mounting Bracket	RB34	35.60
9065 SS, SR, SF, ST	3 and 4			

- ▲ To be used to mount the remote reset module on the top of the overload relay.
- 120 Vac power required.
- ◆ NEMA Size 00B and 00C are not actual NEMA sizes. These designations are used to differentiate the lower FLA of these devices from the NEMA size 00 Motor Logic Solid State Overload Relay.

**Motor Logic Plus—Class 9065**

**Lug-Lug Kit**

This kit can be field installed on separately mounted Motor Logic Plus overload relays.

**Table 16.351:**

For Use With		Parts Kit Description	Class 9999 Type	\$ Price
Class & Type	NEMA Size			
8536 SA-SH	1-6	Lug-Lug Kit	MLPL	80.00
9065 SP	1-6			

**Software Kit**

Solutions software program allows an IBM PC compatible computer (with Windows 95 or greater) to communicate with a Motor Logic Plus overload relay connected to an RS-485 network using Modbus protocol.

**Table 16.352:**

For Use With		Parts Kit Description	Class 9999 Type	\$ Price
Class & Type	NEMA Size			
8536 SA-SH	1-6	Software Kit	MLPS	1295.00
9065 SP	1-6			

**Communication Module**

This module allows the Motor Logic Plus overload relay to support RS-485 electrical communications standards. Up to 99 Motor Logic Plus overload relays can be controlled and monitored from one remote personal computer.

**Table 16.353:**

For Use With		Parts Kit Description	Class 9999 Type	\$ Price
Class & Type	NEMA Size			
8536 SA-SH	1-6	Modbus Communication Module	MB22	171.00
9065 SP	1-6			

**Table 16.354: How to Order**

To Order Specify:	Catalog Number	
• Class Number	Class	Type
• Type Number	9999	AC04



**Power Pole Adders**



Class 9999 Type SB9 Double Power Pole Adder

One single or double circuit power pole kit may be field added to a basic 2 or 3-Pole Type S contactor or starter Sizes 0, 1 and 2, or 30–60 A lighting contactors. See table below for selection. The ratings for these power pole adders correspond to the NEMA contact ratings found on page 16-114. A two or three pole contactor or starter accepts only one single or double circuit unit. A power pole cannot be used on four or five pole devices or devices which are mechanically interlocked.

To add a power pole to a Size 0 and 1 device, remove return springs.

When adding a power pole to a Size 2 or 60 A device, a coil change is required. Select a 4- and 5-Pole coil from the coil selection table on page 16-114, or specify Form Y118 as noted in the footnote below.



Class 9999 Type SB9 Double Power Pole Adder

When adding Sizes 0–2 power pole kits to a Size 3–7 or 100–800 A device, an adapter bracket (9999 SBT1) is required. The Class 9999 Types SB6 through SB15 power pole kits are suitable for copper wire only. Types SB21 through 25 are supplied with lugs suitable for copper and aluminum wire.

**Table 16.355:**

For Use With		Power Pole Adder Kit		
Type	Size	Description	Class 9999 Type	\$ Price
SB, SC & SM	0, 1 & 30 A	One N.O. power pole adder	SB6	158.00
			SB11▲	287.00
			SB21▲	158.00
SB, SC & SM	0, 1 & 30 A	One N.C. power pole adder	SB7	158.00
			SB12▲	287.00
			SB22▲	365.00
SB, SC & SM	0, 1 & 30 A	One N.O. and one N.C. power pole adder	SB8	365.00
			SB13▲	656.00
			SB23▲	365.00
SB, SC & SM	0, 1 & 30 A	Two N.O. power pole adders	SB9	365.00
			SB14▲	656.00
			SB24▲	365.00
SB, SC & SM	0, 1 & 30 A	Two N.C. power pole adders	SB10	365.00
			SB15▲	656.00
			SB25▲	26.10
SE-SJ & SQ-SZ & SJ	3-7 & 100-800 A	Adapter Bracket	SBT1	26.10

▲ To order a Size 2 or 60 A power pole kit complete with a new starter coil, specify **Form Y118**, voltage and frequency and add \$140.00 to the price of the kit (e.g., Class 9999 Type SB11 **Form Y118**, 120 volts, 60 cycles. Priced at \$426.00).



Class 9999 Type SB6 Single Power Pole Adder

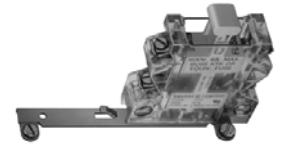
**Control Circuit Fuse Holder**

The control circuit fuse holder is designed to be used on Type S contactors and starters, Sizes 00–7, when either one or two control circuit fuses, 600 V maximum, are required. The Type SF3 and SF4 fuse holders will accept standard 600 V Bussmann Type KTK or equivalent fuses (13/32" x 1-1/2"); 6 Amperes maximum. The SFR3 and SFR4 will accept Class CC 600 V Bussmann Type KTK-R or equivalent fuses only.

**Table 16.356:**

Description ■	Class 9999	
	Type	\$ Price
Single Fuse Unit	SF3	64.00
Single Fuse Unit for Class CC Fuse	SFR3	64.00
Two Fuse Unit	SF4	86.00
Two Fuse Unit for Class CC Fuses	SFR4	86.00

■ Fuses not included.



Class 9999 Type SF4 Fuse Kit

**Transient Suppression Module**

The transient suppression module is designed to be used where the transient voltage, generated when opening the coil circuit, interferes with the proper operation of nearby integrated or solid state control circuits. The module consists of an RC circuit and is designed to suppress the coil voltage transients to approximately 200% of peak coil supply voltage. The module is wired across the coil for Type S, Sizes 00–5 and is designed for coil voltages of 120 volts only.

**Table 16.357:**

Description	Class 9999	
	Type	\$ Price
For Sizes 00-2	ST1	62.00
For Sizes 3-5	ST2	62.00



Class 9999 Type ST1 Transient Suppression Module

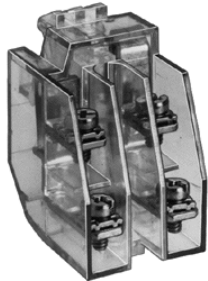
**Table 16.358: How to Order**

To Order Specify:	Catalog Number	
• Class Number	Class	Type
• Type Number	9999	SM1

### Isolated Alarm Contacts For Melting Alloy Overload Relays

Isolated overload relay alarm contacts are available factory installed or in kit form for field installation in Type S, NEMA Size 00-6▲ starters and Class 9065 Types M and S melting alloy overload relays. Type S, NEMA Size 7, utilizes a solid state overload relay which has isolated alarm contacts as a standard feature. The alarm contacts allow the starter to be used in applications which require isolated contacts, such as inputs to a computer.

Class 9999 Types SO4 and SO5 modules are interchangeable with the standard module (Class 9998 Type SO1) and may be installed on starters already in service. The case is made of clear plastic (polycarbonate) to allow for visual inspection of contacts.



Type SO4

**Table 16.359: Contact Unit For Melting Alloy Overload Relays**

Magnetic Starter		Parts Kit Description	Class 9999 Type	\$ Price
NEMA Size	Type			
00-6▲	SA-SH	N.O. Isolated Alarm Contact Plus Standard N.C. Overload Contact	SO4	116.00
		N.C. Isolated Alarm Contact Plus Standard N.C. Overload Contact	SO5	

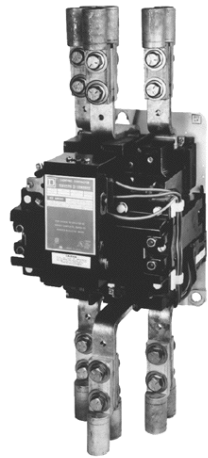
▲ Isolated alarm contacts **cannot** be added in the field to the Type S Size 5 starter. Current transformers and a Size 1 overload block must be used. For factory installation specify **Form Y342**.

### Compression Lugs

A Class 9999 Type AL hardware kit is required to install Square D Versa-Crimp® compression lugs on Class 8903 Type S, 100-800 A lighting contactors. The lugs are suitable for both copper and aluminum wire.

One VCEL lug is required for each line or load terminal. Each Class 9999 Type AL hardware kit includes mounting hardware for 3 terminals, line or load side.

EXAMPLE: To install compression lugs on a 300 A 3-Pole device, line and load sides, order six VCEL06012H1 lugs and two Class 9999 Type AL11 hardware kits.



Class 8903  
With Compression  
Lugs Installed

**Table 16.360:**

For Use With		VERS-CRIMP Catalog Number	Wire Range	Hardware Kit Class 9999 Type	\$ Price
Rating	Class 8903 Type				
100 Amp	SQ	VCEL02114S1	8-1/0 Al/Cu	None Required	—
200 Amp	SV	VCEL022516H1	2-Pole 1-2/0 Al/Cu	AL13—2-pole AL14—3-pole AL15—4-pole	143.00 179.00 215.00
		VCEL024516H1	3-Pole 2/0-4/0 Al/Cu		
		VCEL030516H1	4-Pole 4-300 kcmil Al/Cu		
300 Amp	SX	VCEL05012H1	2/0-500 kcmil Al/Cu	AL11	55.00
		VCEL06012H1	400-600 kcmil Al 400-500 kcmil Cu		
		VCEL07512H1	500-750 kcmil Al 500 kcmil Cu		
400 Amp or 600 Amp	SY or SZ	VCEL06012H2■	400-600 kcmil Al 400-500 kcmil Cu	AL12	107.00
		VCEL07512H2■	500-750 kcmil Al 500 kcmil Cu		

■ One or two lugs may be mounted on each terminal.

### Solid Neutral

The Class 9999 Type SN kit can be used on Class 8903 Type S lighting contactors and other controllers where field addition of a solid neutral is required. Each kit has lugs suitable for both copper and aluminum wire, and mounts with two screws.

**Table 16.361:**

No. of Lugs	Wire Capacity Per Lug (Cu/Al)	Class 9999	
		Type	\$ Price
4	14-2/0	SN1	134.00
3	(1) 4-600 MCM or (2) 1/0-250 MCM	SN2	392.00
3 (Dual)	(2) 2-600 MCM	SN3	624.00
2 (Dual)	(2) 6-350 MCM	SN4	392.00

### Tie Point Terminal Block

The tie point terminal block provides easy wiring of a Hand-Off-Auto selector switch or Start-Stop push buttons with separate control. The T7 terminal block requires no panel space. It simply snaps on Type S Sizes 00-4 contactors and starters by two tabs and is secured to the left hand coil terminal.



Tie Point Terminal Block

**Table 16.362:**

Magnetic Contactor or Starter		Class 9999 Type	\$ Price
NEMA Size	Type		
00-4	SA-SF	T7	33.30

**Table 16.363: How to Order**

To Order Specify:	Catalog Number	
• Class Number	Class	Type
• Type Number	9999	SO4

**Mechanical Interlock**

**General:** Type S contactors or starters can be mechanically interlocked so that only one device is energized at a time. The mechanical interlock is an interference (non-jamming) type, locking at the beginning of the stroke of any starter or contactor.



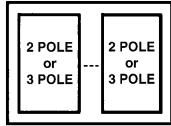
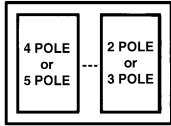
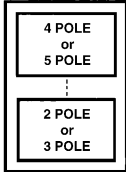
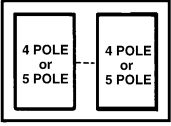
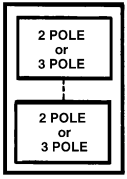
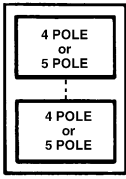
Type SM1

**Type S Sizes 00, 0, 1 and 2**—The mechanical interlock is mounted on the underside of the reversing baseplate. Two pins extend from the mechanical interlock through openings in the baseplate and engage the contact carrier of each contactor. Two styles of mechanical interlocks are used: one version for three pole contactors, a different version for four or five pole contactors. **When adding a power pole to the left-hand side of an existing Size 0, 1, or 2 three-pole reversing contactor, a new mechanical interlock must also be installed. When added to the right-hand side only, the power pole will not be mechanically interlocked with the left-hand contactor.**

**Type S Sizes 3 and 4**—The mechanical interlock is separate from the mounting pan on Sizes 3 and 4. Cams on the mechanical interlocks are operated by the contact carrier of each contactor. The mechanical interlock is attached to the underside of the two contactor baseplates on Sizes 3 and 4.

**Table 16.364: Mechanical Interlock for Two Contactors**

The following mechanical interlock kits can be used to interlock 2–5 pole contactors. Mechanical interlocks for horizontal and vertical arrangement are listed in Various pole arrangements.

	Contactor NEMA Size	Class 9999 Type	\$ Price
 <p>Horizontal Type SM1 for Size 00–1 Type SM6 for Size 2 Type SM12 for Sizes 3 &amp; 4</p>	00, 0, 1	SM1	116.00
	0, 1	SM2	116.00
	0, 1	SM3	116.00
	0, 1	SM4	116.00
	0, 1	SM5	116.00
 <p>Horizontal Type SM2 for Size 0 or 1▲ Type SM7 for Size 2 Type SM12 for Sizes 3 &amp; 4</p>			
 <p>Vertical Type SM2 for Size 0 or 1▲ Type SM10 for Size 2 Type SM11 for Size 3 Type SM13 for Size 4</p>			
 <p>Horizontal Type SM3 for Size 0 or 1 Type SM8 for Size 2 Type SM12 for Sizes 3 &amp; 4</p>	2	SM6	257.00
	2	SM7	257.00
	2	SM8	257.00
	2	SM9	257.00
	2	SM10	257.00
 <p>Vertical Type SM4 for Size 0 or 1 Type SM9 for Size 2 Type SM11 for Size 3 Type SM13 for Size 4</p>	3	SM11	257.00
	3, 4	SM12	257.00
	4	SM13	257.00
 <p>Vertical Type SM5 for Size 0 or 1 Type SM11 for Size 3 Type SM13 for Size 4</p>			

▲ The Type SM2 interlock is factory assembled for horizontal mounting, but can easily be converted to vertical mounting. Conversion instructions are included.



Overload Relay Mounting Bracket

**Table 16.365: Overload Relay Mounting Bracket**

Mechanical interlock Types SM1 through SM10 for Sizes 00-2 devices use overload relay mounting brackets to support the overload relay portion of the starter.

Kit Description	Class 9999 Type	\$ Price
Bracket for one overload relay used with horizontal mechanical interlocks, Types SM1 through SM10	SO11	14.30
Bracket for two overload relays used with vertical mechanical interlocks, Types SM2, SM4, SM5, SM9 and SM10	SO12	42.80

**Table 16.366: How to Order**

To Order Specify:	Catalog Number	
	Class	Type
• Class Number	9999	
• Type Number		SM1



Type SM12

Class 8538 (Series D and newer), Class 8738 (Series E and newer), and Class 8903 (Series C and newer) Type S non-fusible combination starters and lighting contactors (sizes 0–2, 30 to 60 amps) can be converted to the fusible type by installing a Class 9422 Fuse Clip Kit. Both fusible and non-fusible combination devices have the same size enclosure in NEMAs 1, 4, and 12 construction, which permits this conversion. The 9422 Fuse Clip Kits contain line and load fuse clips, load base, and fuse pullers.

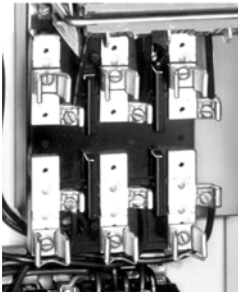


Class 9422 TC33 Fuse Block

Table 16.367: Class 9422 Replacement Fuse Clip Kits

Device Used on	Disconnect Ampere Rating	NEMA Class H, K, J, R Fuses			\$ Price	Class R Fuse Clip Kits	\$ Price
		Fuse Clip Ratings—Amperes		Class & Type			
		250 V Max.	600 V Max.				
0, 1 & 30 A	30	0–30	—	9422TC30▲	42.80	RFK03■	32.60
0, 1 & 30 A	30	31–60	0–30	9422TC33▲	71.00	RFK06■	34.00
2 & 60 A	60	31–60	0–30	9422TC33	71.00	RFK06■	36.50
2 & 60 A	60	—	31–60	9422TD63	99.00	RFK06H■	34.00

▲ When using with a 9422FTCN or FTCF disconnect switch in 8538 or 8738 combination starters, remove and discard metal base plate.  
■ No Class Number required Discount Schedule DE1.



Class 9999 Type S2 Interchangeable Fuse Clips

Table 16.368: Class 9999 Replacement Fuse Clip Kits (8538 Pre-Series D, 8738 Pre-Series E)

Device Used on	Disconnect Ampere Rating	NEMA Class H Fuses				NEMA Class R Fuses				NEMA Class J Fuses			
		Fuse Clip Ratings—Amperes		Type	\$ Price	Fuse Clip Ratings—Amperes		Type	\$ Price	Fuse Clip Ratings—Amperes 600 V Max.	Type	\$ Price	
		250 V Max.	600 V Max.			250 V Max.	600 V Max.						
0, 1 & 30 A	30	0–30	—	S1	21.50	0–30	—	SR1	35.60	0–30	—	—	—
		—	0–30	S2	35.60	—	0–30	SR2	47.60	—	0–30	SJ2	105.00
		31–60	0–30	S2	35.60	31–60	0–30	SR2	47.60	0–30	—	SJ2	105.00
2 & 60 A	60	31–60	0–30	S2	35.60	31–60	0–30	SR3	47.60	0–30	—	—	—
		—	31–60	S3	50.00	—	31–60	SR3	64.00	31–60	—	—	—
		31–60	31–60	S3	50.00	31–60	31–60	SR3	64.00	31–60	—	—	—
3 & 100 A	100	61–100	61–100	S4★	144.00	61–100	61–100	SR4♦	47.60	61–100	—	—	—
		101–200	—	S5★	270.00	101–200	—	SR4♦	47.60	—	—	—	—
4 & 200 A	200	101–200	101–200	S5★	270.00	101–200	101–200	SR4♦	47.60	—	—	—	
5 & 300 A	400	—	—	—	—	201–400	201–400	SR5♦	107.00	—	—	—	
6 & 400, 600 A	600	—	—	—	—	401–600	401–600	SR5♦	107.00	—	—	—	

♦ Fuse clips are not provided in the Type SR4 and SR5 kits. On new installations Class 9999 Type S fuse clips must also be purchased. Three non-removable pins are supplied and can be installed only in the latest production devices, which have a hole in the lower fuse clips.  
★ Cannot be used in Series B or newer 8538 devices.

Table 16.369: Class 9999 Auxiliary Contact Kits for Disconnect Switches and Circuit Breakers

Class	Type	SPDT		DPDT		Class	Type	SPDT		DPDT	
		Type	\$ Price	Type	\$ Price			Type	\$ Price	Type	\$ Price
8538, 8738	SB, SC (Series C)	R45	71.00	R46	207.00	Disconnect Switches					
8539, 8739	SB, SC, SD, SE, SF, SG	R26	131.00	R27	243.00	9422	BTCF, BTCN, BTDF, BTEF, BTEN	TC11	120.00	TC21	239.00
8538	SBA, SCA, SBG, SCG (Series D)	TC11	120.00	TC21	239.00	9422	TCF, TCN, TDF, TDN, TEF, TEN	TC10	120.00	TC11	239.00
8738	SBA, SCA, SBG, SCG (Series E)	TC10	120.00	TC20	239.00	9422	TF	R8	87.00	R9	243.00
8538	SB▼, SC▼, SD▼ (Series B)	R6	113.00	R7	221.00	Circuit Breaker Op. Mechs.					
8538	SBAS8, SCAS8, SBGS8, SCGS8, (Series D)	TC10	120.00	TC20	239.00	9421	LF, LK, LL, LM, LN, LP, LR, LT, LW	R47	131.00	R48	221.00
8538, 8738	SD (Series C)	R43	116.00	R44	221.00	9422	RM, RN, RP, RQ, RR, RT	R26	131.00	R27	243.00
8538	SDA, SDA▼, SDG, SDG▼ (Series D)	TC10	120.00	TC20	239.00	9422	CFA, CKA, CLA, CSF, CMP	R26	131.00	R27	243.00
8738	SDA, SDG (Series E)	TC10	120.00	TC20	239.00						
8538, 8738	SE (Series B & C)	R41	131.00	R42	243.00						
8538, 8738	SE, SF (Series A)	R8	131.00	R9	243.00						
8538, 8738	SF (Series B & C)	R39	135.00	R40	243.00						
8538, 8738	SG	R35	435.00	R36	521.00						

▼ Class 8538 type numbers ending in suffix "S8".

**NOTE:** No external auxiliary contacts are available for the following circuit breakers: GJL circuit breaker must use internal Catalog No. AAC. PowerPact™ D, H and J circuit breaker must use internal Catalog No. AAC.

Table 16.370: How to Order

To Order Specify:	Catalog Number	
• Class Number	Class	Type
• Type Number	9999	R6

**General**

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 thermal units are installed in the starter before operating the motor. Each thermal unit shall be installed such that its catalog number is visible. See page 16-129, Figure 1 for complete thermal unit installation instructions. On melting alloy thermal units the ratchet wheel must engage the pawl assembly.

**Selection Procedure**

1. Determine motor data:
  - a. Full load current rating
  - b. Service factor

**Note:** If motor full load current (FLC) is not known, a tentative thermal unit selection could be made, based on horsepower and voltage. Refer to page 16-129.
2. Motor and controller in *same ambient temperature*:
  - a. All starter classes, except Class 8198:
    1. For 1.15 to 1.25 service factor motors use 100% of motor FLC for thermal unit selection.
    2. For 1.0 service factor motors use 90% of motor FLC for thermal unit selection.
  - b. Class 8198 only:
    1. For 1.0 service factor motors use 100% of motor FLC for thermal unit selection.
    2. For 1.15 to 1.25 service factor motors use 110% of motor FLC for thermal unit selection.
3. Motor and controller in *different ambient temperatures*:
  - a. Multiply motor FLC by the multiplier in Table A. Use the resultant full load current for thermal unit selection.
4. Locate proper selection table from index, pages 16-126 and 16-127.
  - a. The proper thermal unit number will be found adjacent, to the right of the range of full load currents in which the motor FLC or resultant full load current falls.
5. See page 16-128 for calculation of trip current rating.

**Slow Trip Thermal Unit Selection**

To select Type SB slow trip thermal units, the selection table for a standard Type B thermal unit may be used with the following modifications: For continuous rated motors having service factors of 1.15 to 1.25, select thermal units from the standard Type B table using 93% (102% for Class 8198) of the full load current shown on the motor nameplate and then substitute an SB for the B in the thermal unit type number.

Example: A motor with a full load current of 12 amps controlled by an 8536SCG3 would require B22 thermal units for standard trip applications and SB19.5 thermal units for slow trip applications. The SB is selected by multiplying 12 amps times 93% for 11.16 amps and using this value to select B19.5. Then add the S prefix to arrive at SB19.5.

For continuous rated motors having a service factor of 1.0, select thermal units in the same manner using 84% (93% for Class 8198) of full load current shown on the motor nameplate.

**NOTE:** SB thermal units are used on Size 0, 1, 2 and only some Size 3 applications. Check thermal unit tables for current ranges.

**Table A: Selection of Thermal Units for Special Applications**

Class of Controller	Continuous Duty Motor Service Factor	Melting Alloy and Non-Compensated Bimetallic Relays			Ambient Temp.-Comp. Relays
		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	Constant 40°C (104°F) or less, for Any Controller Ambient
			Full Load Current Multiplier		
All Classes, Except 8198	1.15 to 1.25	1.0	0.9	1.05	1.0
	1.0	0.9	0.8	.95	0.9
Class 8198	1.15 to 1.25	1.1	1.0	1.15	1.1
	1.0	1.0	0.9	1.05	1.0

**Table 16.382: Thermal Unit Prices**

Melting Alloy			Bimetallic		
Type of Trip	Thermal Unit Type	\$ Price	Type of Trip	Thermal Unit Type	\$ Price
Standard	A	21.50	Standard	AR	21.50
	B	21.50		AF	21.50
	C	21.50		AU	21.50
	CC	21.50		E	21.50
	DD	21.50			
Quick	FB	35.60			
Slow	SB	57.00			

**NOTE:** For thermal unit selection tables for other devices including obsolete devices, consult Square D/Schneider Electric CIC at 1-888-SquareD (1-888-778-2733).

**Table 16.383: Thermal Unit Selection**

Controller					Thermal Unit Selection Table Number				
					Hand Reset Melting Alloy			Bimetallic	
Starter Type	Class	Type	Series▲	Size	Standard Trip (20)	Quick Trip (10)	Slow Trip (30)	Non-Compensated	Compensated
Manual Starters FHP	2510 2512 8908	F	A	FHP	43◇	—	—	—	—
Manual Starters (Small Enclosure)	2510	M, T	A	M-0	1	72	▽	—	—
				M-1	1	72	▽	—	—
				M-1P	1	72	▽	—	—
Manual Starters (Large Enclosure)	2510 2511 2512 8925	M, T	A	M-0	2	73	▽	—	—
				M-1	2	73	▽	—	—
				M-1P	2	73	▽	—	—
DC Magnetic Starters EC & M Crane Control Product	7135 7136 7735 7736	C, D	—	1, 2	65	—	▽	—	—
		E	—	3	9	—	—	—	—
		F	—	4	10	—	—	—	—
		G	—	5	12	—	—	—	—
AC Magnetic Starters (Small Enclosure)	8536 8904■ (Starter In Own Enclosure)	A (8536 only)	B, C	00	17◇	—	—	—	—
				SA	A, B	00	13	—	▽
		8933	A	1	13	74	▽	8	33
				1P	41	—	▽	—	—
		8998 8999 (Model 3 Control Center)	A	2	56	75	▽	62	70
				3	18	76★	134★▽	63	37□
		I-LINE® and QMB Motor Starter Centers	A	4	54	77★	—	142□	—
				5	—	—	—	11	29□
		8998 8999 (Model 4 Control Center)	A	5	49	—	—	38	46
				B*	59	83	—	23	42
	A, B		6	21	—	—	39	47	
			1 Fusible	66	74	—	64	33	
	SD		A	1 Circuit Breaker	15	74	—	—	—
				2 Fusible	67	75	—	57	70
	SE	A	2 Circuit Breaker	58△	75	—	—	—	
			3 Small Enclosure	16	76★	134★▽	51	37□	
	8998 (Model 5 and Model 6 MCCs)	A	3 Large Enclosure	68△	76★	133★▽	—	—	
			3	—	—	—	141□	—	
		SF	A	4	61	77★	—	35	29△
				B	—	—	—	143□	—
	SG	A	5	24	—	—	52	46	
			A	20	—	—	48	47	
	8911	DPSG	A	1	109	—	—	—	97
				1 COMPAC 6	104	—	—	—	—
				2	110	—	—	—	98
				3	111	—	—	—	99□
4				112	—	—	—	100□	
5				113	—	—	—	101	
20-30 A	A	5 CT	103	—	—	—	—		
		6	114	—	—	—	102		
		40 A	145	—	—	—	—		
		50 A	146	—	—	—	—		
60-90 A	149	—	—	—	—	—			

Table continued on the next page; see page 16-127 for Footnotes.

**NOTE:** For thermal unit selection tables for other devices including obsolete devices, consult Square D/Schneider Electric CIC at 1-888-SquareD (1-888-778-2733).

Thermal Unit Prices ..... page 16-125.

**Table 16.384: Thermal Unit Selection**

Controller					Thermal Unit Selection Table Number						
Starter Type	Class	Type	Series▲	Size	Hand Reset Melting Alloy			Bimetallic			
					Standard Trip	Quick Trip (10)	Slow Trip (30)	Non-Compensated	Compensated		
AC Magnetic Starters (Large Enclosure)	8198	G, S	—	—	5	—	▽	—	6		
		A (8536 only)	B, C	00	14◇	—	—	—	—		
		SA	A, B	00	53	—	▽	55	25		
		SB, NB	A	0	15	78	▽	64	33		
		SC, NC	A	1	15	78	▽	64	33		
		SD, ND	A	2	58	79	▽	57	70		
		SE, NE	A	3	16	80★	133★▽	51	37□		
			B	3	—	—	—	—	141□	—	
			A	4	61	81★	—	—	35	29□	
			B	4	—	—	—	—	143□	—	
			A	5	24	—	—	—	52	46	
			B★	5	59	83	—	—	23	42	
			A, B	6	20	—	—	▽	48	47	
			A	0	15	78	—	▽	64	33	
		8810 8811 8812	CB, DB, SB, UB	A	0	15	78	—	▽	64	33
	CC, DC, SC, UC		A	1	15	78	—	▽	64	33	
	CD, DD, SD, UD		A	2	58	79	—	▽	57	70	
	CE, DE, SE, UE		A	3	16	80★	133★▽	51	37□		
	CF, DF, SF, UF		A	4	61	81★	—	—	35	29□	
	SE		B	3	—	—	—	—	141□	—	
	SF		B	4	—	—	—	—	143□	—	
			A	5	24	—	—	—	52	46	
			B★	5	59	83	—	—	23	42	
			A	6	20	—	—	▽	48	47	
	8940 WELL-GUARD® Control		WC, XC	A	1	13	78	—	—	—	33
			WD, XD, MD, RD	A	2	56	79	—	—	—	70
			WE, XE, ME, RE	A	3	18	80★	—	—	—	37□
			WF, WF, XF, MF, RF	A	4	54	81★	—	—	—	29□
			XSG, NSG, MG, RG, VG◇	A	5	—	—	—	—	—	46
			B★	5	—	—	—	—	—	42	
		XSH, VH	A	6	—	—	—	—	—	47	
	8911	DPSO	A	20–30 A	136	—	—	—	—		
				40 A	147	—	—	—	—		
				50 A	148	—	—	—	—		
				60–90 A	150	—	—	—	—		
	AC Magnetic Part-Winding	8998 (Model 5 and Model 6 MCCs)	SC○	A	1	127	—	—	—	121	
			SD○	A	2	128	—	—	—	122	
			SE○	A	3	129	—	—	—	123□	
			SF	A	4	105	—	—	—	117□	
			SG	A	5	115	—	—	—	118	
				B★	5 CT	116	—	—	—	—	
	Separately Mounted Overload Relays	9065	AF	B	4(133 A)	—	—	—	30	—	
			AG	A	5(266 A)	—	—	—	36	—	
			AR	A	1(25 A)	—	—	—	32	—	
			AT	A	2(45 A)	—	—	—	60	—	
AU			—	3(86 A)	—	—	—	50	—		
DA2			A	1(25 A)	—	—	—	—	140□		
GA2			A	2(60 A)	—	—	—	—	139□		
HA2			A	3(100 A)	—	—	—	—	138□		
JA2			A	4(180 A)	—	—	—	—	137□		
C			A	1(25 A)	44	82	▽	—	—		
F			B	4(133 A)	19	85★	—	—	—		
G			A	5(266 A)	22	—	—	—	—		
MEO			A	(32 A)	86	—	—	—	—		
				1(26 A)	59	83	▽	23	42		
			A	2(45 A)	69	84	▽	27	71		
				3(86 A)	34	—	—	—	—		
				4(133 A)	28	—	—	—	—		
T			A	2(45 A)	31	—	—	—	—		
U			—	3(86 A)	40	—	—	—	—		

- ▲ Series letters listed refer to the marking on the nameplate of the basic open type starter. When the starter is supplied in a controller containing other devices, the controller may have a different series letter marked on the enclosure nameplate.
- Small enclosure tables apply for **Class 8904** non-combination and non-reversing starters. For combination and reversing **Class 8904** starters refer to the large enclosure selections, index above.
- ◆ For **Class 8630** starters divide the delta connected motor full load current by 1.73, and use this quotient to select thermal units.
- ★ For **Class 8640** and **Class 8940** (MD, PD, ME, PE, MF, PF, MG and PG) starters use the full load current of each motor winding as a basis for thermal unit selection—normally one-half total motor current.
- ▼ Large enclosure tables apply for **Class 8904** combination and reversing starters. For non-combination and non-reversing **Class 8904** starters refer to small enclosure selections, page 16-126.
- △ Use for Autotransformer Starters (Fusible and Circuit Breaker).
- Order Type E thermal units by number from Square D/Schneider Electric, Furnas Electric Company, Batavia, Illinois or a Furnas distributor at \$13.50 each, subject to motor control discounts.
- ◇ Type A thermal units for full load currents lower than those listed in this table are available. For complete information, consult Square D/Schneider Electric CIC at 1-888-SquareD (1-888-778-2733).
- ☆ Form Y81 must be specified to use quick trip (Class 10) or slow trip (Class 30) thermal units on Size 3 starters and quick trip (Class 10) thermal units on Size 4 starters.
- ▽ This device will accept Type SB slow trip (Class 30) thermal units. For selection, see page 16-125.
- Refers to type number of starter in MCC, not actual type number of MCC.
- \* Divide the motor FLC by 60 and use this quotient to select the appropriate thermal units.

### Calculation of Trip Current Rating

**Trip Current Rating**—Trip current rating is a nominal value which approximates the minimum current to trip an overload relay in an ambient temperature, outside of the enclosure, of 40°C (104°F). In all selection tables except Class 8198, the trip current rating is 1.25 times the minimum full load current shown for the thermal unit selected. For Class 8198, the trip current rating is 1.15 times the minimum full load current. This applies to bimetallic overload relays with the trip adjustment set at 100 percent.

#### Calculation Procedure

1. Use the selection table for the specific controller involved.
2. Find the minimum motor full load current listed for the thermal unit in question.
3. Multiply that current by 1.25 (1.15 for Class 8198). The result is the trip current rating.

**Example 1:** Determine the thermal unit selection and trip current rating for thermal units in a Class 8536 Type SCG3 Size 1 magnetic starter used to control a three-phase, 1.15 service factor motor with a full load current of 17.0 Amperes, where the motor and controller are both located in a 40°C (104°F) ambient temperature.

1. From Table 13 the proper selection is B32.
2. The minimum motor full load current is 16.0 Amperes.
3. Trip current rating is 16.0 x 1.25= 20.0 Amperes.

**Protection Level** is the relationship between trip current rating and full load current. Protection level, in percent, is the trip current rating divided by the motor full load current times 100. In Example 1 the protection level for the B32 thermal unit is: 20.0/17.0 x 100=118%.

National Electrical Code, Section 430-32, allows a maximum protection level of 125% for the motor in the above example.

**Minimum Trip Current** (also called ultimate current) may vary from the trip current rating value, since ratings are established under standardized test conditions. Factors which influence variations include: the number of thermal units installed, enclosure size, proximity to heat producing devices, size of conductors installed, ambient (room) temperature, and others.

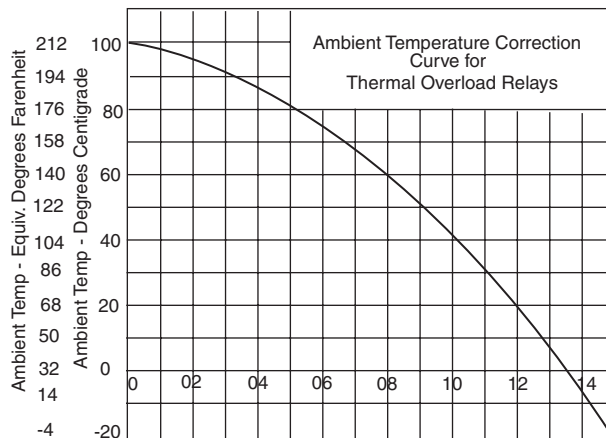
Except for ambient temperature-compensated overload relays, an ambient temperature higher than 40°C would lower the trip current, and a lower temperature would increase it. This variation is not a factor in selecting thermal units for the average application, since most motor ratings are based on an ambient temperature of 40°C, and motor capacity varies with temperature in about the same proportion as the change in trip current. Temperature-compensated relays maintain a nearly constant trip current over a wide range of ambient temperature, and are intended for use where the relay, because of its location, cannot sense changes in the motor ambient temperature.

### Calculation of Trip Current For Ambient Temperatures Other Than 40°C

For a controller ambient temperature other than 40°C (104°F) trip current can be calculated by applying a correction factor from the curve in Figure 1. The approximate trip current for a particular ambient temperature is the product of (1) the multiplier M corresponding to the temperature and (2) the 40°C trip current rating.

**NOTE:** Ambient temperature is the temperature surrounding the starter enclosure. Normal temperature rise inside the enclosure has been taken into account in preparing the thermal unit selection tables.

**Example 2:** Determine the trip current for the motor and controller in Example 1, except the controller is in a 30°C (86°F) ambient temperature. From the curve in Figure 1 the multiplier M is 1.1 at 30°C. Approximate Trip Current is 16.0 x 1.25 x 1.1=22 Amperes





**Approximate Thermal Unit Selection Based On Horsepower and Voltage**

**General**—Thermal units selected using approximate full load currents from the table below will provide a trip current between 101% and 125% of full load current for many 4-pole, single speed, normal torque, 60 Hz motors. Since full load current rating of different makes and types of motors vary so widely, these selections may not be suitable.

Thermal units should be selected on the basis of motor nameplate full load current and service factor. Thermal unit sizes originally selected on an approximate basis should always be rechecked and corrected at the time of installation if required.

**Instructions:**

1. Locate motor horsepower and voltage.
2. Determine approximate full load current from the table below.
3. Use approximate full load current in place of actual nameplate full load current and follow instructions on page 16-125.

**Only Use This Table When Motor Full Load Current Is Not Known**

**Table 16.385:**

Motor Horsepower	Motor Full Load Current					
	Three Ø				Single Ø	
	200 V	230 V	460 V	575 V	115 V	230 V
1/20	0.39	0.34	0.17	0.14	1.30	0.65
1/12	0.55	0.48	0.24	0.19	1.90	0.95
1/8	0.74	0.64	0.32	0.26	2.60	1.30
1/6	0.90	0.78	0.39	0.31	3.24	1.62
1/4	1.22	1.06	0.53	0.42	4.40	2.20
1/3	1.52	1.32	0.66	0.53	5.47	2.74
1/2	2.07	1.80	0.90	0.72	7.45	3.73
3/4	2.88	2.50	1.25	1.00	10.1	5.07
1	3.68	3.20	1.60	1.28	12.6	6.31
1-1/2	5.18	4.50	2.25	1.80	17.2	8.59
2	6.67	5.80	2.90	2.32	21.4	10.7
3	9.66	8.40	4.20	3.36	29.1	14.5
5	15.4	13.4	6.68	5.35	42.9	21.4
7-1/2	22.6	19.6	9.82	7.86	58	29.2
10	29.7	25.8	12.9	10.3	—	36.3
15	43.6	38.0	19.0	15.2	—	49.9
20	57.4	49.9	24.9	20.0	—	—
25	70.9	61.7	30.8	24.7	—	—
30	84.3	73.3	36.7	29.3	—	—
40	111.	96.4	48.2	38.5	—	—
50	137.	119.	59.6	47.6	—	—
60	163.	142.	70.8	56.6	—	—
75	201.	175.	87.6	70.0	—	—
100	265.	230.	115.	92.0	—	—
125	327.	284.	142.	114.	—	—
150	389.	338.	169.	135.	—	—
200	511.	445.	222.	178.	—	—

**NOTE:** These currents should not be used for selection of fuses, circuit breakers or wire sizes. See NEC tables 430-248 through 430-250. For motors rated 208-220 volts, use 230 V column. For motors rated 440 to 550 volts, use 460 and 575 V columns, respectively.

**Mounting Thermal Units**

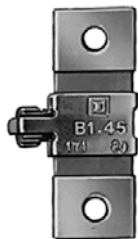


Figure 1

Always be certain the correct thermal units are installed in the starter before operating the motor. Thermal units should always be mounted so that their type designation can be read from the front of the starter (see Figure 1). Melting alloy thermal units should be mounted so that the tooth of the pawl assembly can engage the teeth of the ratchet wheel when the reset button is pushed.

Mounting surfaces of starter and thermal units should be clean and care should be taken to insure that thermal unit mounting screws are fastened securely.

Table 1

Table with columns: Motor FLC (A) (1 T.U., 3 T.U.), Thermal Unit Number. Lists various motor FLC ranges and their corresponding Thermal Unit Numbers (B 0.44 to B 50.0).

Table 2

Table with columns: Motor FLC (A) (1 T.U., 3 T.U.), Thermal Unit Number. Lists various motor FLC ranges and their corresponding Thermal Unit Numbers (B 0.44 to B 45.0).

Table 3

Table with columns: Motor FLC (A) (1 T.U., 3 T.U.), Thermal Unit Number. Lists various motor FLC ranges and their corresponding Thermal Unit Numbers (B 0.44 to B 62.0).

Table 4

Table with columns: Motor FLC (A) (1 T.U., 3 T.U.), Thermal Unit Number. Lists various motor FLC ranges and their corresponding Thermal Unit Numbers (B 0.44 to B 50.0).

Table 5

Table with columns: Current Transformer Ratio (25/5, 50/5, 75/5, 100/5, 150/5, 200/5, 250/5, 300/5, 400/5, 500/5), Thermal Unit Number. Lists Motor FLC ranges and Thermal Unit Numbers (B 3.00 to B 5.50).

Table 6

Table with columns: Current Transformer Ratio (25/5, 50/5, 75/5, 100/5, 150/5, 200/5, 250/5, 300/5, 400/5, 500/5), Thermal Unit Number. Lists Motor FLC ranges and Thermal Unit Numbers (AR 3.62 to AR 6.4).

16 NEMA DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS

**Table 8**

Motor FLC (A)			Thermal Unit Number
2 T.U.1Ø	2 T.U.2Ø	3 T.U.	
0.37–0.39	0.37–0.39	0.30–0.31	AR .45
0.40–0.42	0.40–0.42	0.32–0.34	AR .49
0.43–0.46	0.43–0.46	0.35–0.37	AR .54
0.47–0.50	0.47–0.50	0.38–0.41	AR .59
0.51–0.54	0.51–0.54	0.42–0.45	AR .65
0.55–0.59	0.55–0.59	0.46–0.49	AR .71
0.60–0.65	0.60–0.65	0.50–0.54	AR .78
0.66–0.71	0.66–0.71	0.55–0.56	AR .86
0.72–0.78	0.72–0.78	0.57–0.62	AR .95
0.79–0.86	0.79–0.86	0.63–0.68	AR 1.05
0.87–0.94	0.87–0.94	0.69–0.75	AR 1.15
0.95–1.04	0.95–1.04	0.76–0.82	AR 1.26
1.05–1.14	1.05–1.14	0.83–0.91	AR 1.39
1.15–1.25	1.15–1.25	0.92–1.00	AR 1.53
1.26–1.42	1.26–1.42	1.01–1.18	AR 1.68
1.43–1.62	1.43–1.62	1.19–1.30	AR 1.85
1.63–1.75	1.63–1.75	1.31–1.41	AR 2.04
1.76–1.91	1.76–1.91	1.42–1.53	AR 2.24
1.92–2.07	1.92–2.07	1.54–1.69	AR 2.46
2.08–2.25	2.08–2.25	1.70–1.79	AR 2.71
2.26–2.47	2.26–2.47	1.80–2.02	AR 2.98
2.48–2.73	2.48–2.73	2.03–2.19	AR 3.28
2.74–2.99	2.74–2.99	2.20–2.43	AR 3.62
3.00–3.31	3.00–3.31	2.44–2.81	AR 3.98
3.32–3.71	3.32–3.71	2.82–3.12	AR 4.37
3.72–4.15	3.72–4.15	3.13–3.47	AR 4.80
4.16–4.65	4.16–4.65	3.48–3.89	AR 5.3
4.66–5.11	4.66–5.11	3.90–4.30	AR 5.8
5.12–5.68	5.12–5.68	4.31–4.69	AR 6.4
5.69–6.24	5.69–6.24	4.70–5.19	AR 7.0
6.25–7.15	6.25–7.15	5.20–5.93	AR 7.7
7.16–7.84	7.16–7.84	5.94–6.45	AR 8.5
7.85–8.56	7.85–8.56	6.46–7.08	AR 9.3
8.57–9.40	8.57–9.40	7.09–7.71	AR 10.2
9.41–10.2	9.41–10.2	7.72–8.39	AR 11.2
10.3–10.7	10.3–10.7	8.40–8.64	AR 12.4
10.8–12.2	10.8–12.2	8.65–9.74	AR 13.6
12.3–14.1	—	9.75–11.0	AR 15.4
14.2–15.9	—	11.1–12.0	AR 17.6
16.0–18.0	—	—	AR 20.5
Following Selections for Size 1 Only			
—	10.8–12.2	—	AR 13.6
—	12.3–14.1	—	AR 15.4
—	14.2–15.9	11.1–12.4	AR 17.6
16.0–18.1	16.0–18.1	12.5–13.9	AR 20.5
18.2–20.8	18.2–20.8	14.0–15.9	AR 23.0
20.9–23.6	20.9–23.6	16.0–17.7	AR 27.0
23.7–26.0	23.7–26.0	17.8–20.3	AR 30.0
—	—	20.4–22.8	AR 35.0
—	—	22.9–26.0	AR 40.0

**Table 9**

Motor FLC (A)	Thermal Unit Number
15.3–16.7	C 20.0
16.8–19.8	C 22.0
19.9–22.8	C 26.0
22.9–25.8	C 30.0
25.9–30.4	C 34.0
30.5–31.9	C 40.0
32.0–34.2	C 42.0
34.3–38.8	C 45.0
38.9–44.2	C 51.0
44.3–50.2	C 58.0
50.3–57.1	C 66.0
57.2–63.2	C 75.0
63.3–68.6	C 83.0
68.7–78.6	C 90.0
78.7–86.9	C 103.0
87.0–100.0	C 114.0

**Table 10**

Motor FLC (A)	Thermal Unit Number
43.6–47.3	CC 54.5
47.4–51.3	CC 59.4
51.4–54.6	CC 64.3
54.7–59.7	CC 68.5
59.8–65.1	CC 74.6
65.2–70.1	CC 81.5
70.2–75.1	CC 87.7
75.2–82.2	CC 94.0
82.3–89.2	CC 103.0
89.3–96.5	CC 112.0
96.6–104.	CC 121.0
105.–113.	CC 132.0
114.–123.	CC 143.0
124.–132.	CC 156.0
133.–150.	CC 167.0

**Table 11**

Motor FLC (A)		Thermal Unit Number
2 T.U.	3 T.U.	
33.0–36.1	30.5–33.4	AU 44.0
36.2–40.2	33.5–37.1	AU 50.0
40.3–44.5	37.2–42.0	AU 56.0
45.6–51.3	42.1–47.0	AU 64.0
51.4–58.5	47.1–53.5	AU 72.0
58.6–62.6	53.6–57.5	AU 81.0
62.7–71.3	57.6–64.4	AU 88.0
71.4–77.1	64.5–69.4	AU 99.0
77.2–86.9	69.5–77.4	AU 110.0
87.0–93.3	77.5–83.6	AU 123.0
93.4–102.	83.7–92.9	AU 135.0
103.–107.	93.0–100.	AU 152.0
108.–112.	101.–104.	AU 169.0
113.–121.	105.–115.	AU 183.0
122.–123.	116.–119.	AU 198.0
124.–133.	120.–123.	AU 217.0
—	124.–133.	AU 235.0

**Table 12**

Motor FLC (A)	Thermal Unit Number
92.–100.	DD 112.0
101.–109.	DD 121.0
110.–119.	DD 128.0
120.–131.	DD 140.0
132.–139.	DD 150.0
140.–156.	DD 160.0
157.–166.	DD 185.0
167.–180.	DD 213.0
181.–189.	DD 220.0
190.–209.	DD 230.0
210.–225.	DD 250.0
226.–238.	DD 265.0
239.–263.	DD 280.0
264.–300.	DD 300.0

Table 13

Motor FLC (A)			Thermal Unit Number
1.T.U.	2 T.U.	3 T.U.	
0.29-0.31	0.29-0.31	0.28-0.30	B 0.44
0.32-0.34	0.32-0.34	0.31-0.34	B 0.51
0.35-0.38	0.35-0.38	0.35-0.37	B 0.57
0.39-0.45	0.39-0.45	0.38-0.44	B 0.63
0.46-0.54	0.46-0.54	0.45-0.53	B 0.71
0.55-0.61	0.55-0.61	0.54-0.59	B 0.81
0.62-0.66	0.62-0.66	0.60-0.64	B 0.92
0.67-0.73	0.67-0.73	0.65-0.72	B 1.03
0.74-0.81	0.74-0.81	0.73-0.80	B 1.16
0.82-0.94	0.82-0.94	0.81-0.90	B 1.30
0.95-1.05	0.95-1.05	0.91-1.03	B 1.45
1.06-1.22	1.06-1.22	1.04-1.14	B 1.67
1.23-1.34	1.23-1.34	1.15-1.27	B 1.88
1.35-1.51	1.35-1.51	1.28-1.43	B 2.10
1.52-1.71	1.52-1.71	1.44-1.62	B 2.40
1.72-1.93	1.72-1.93	1.63-1.77	B 2.65
1.94-2.14	1.94-2.14	1.78-1.97	B 3.00
2.15-2.40	2.15-2.40	1.98-2.32	B 3.30
2.41-2.72	2.41-2.72	2.35-2.51	B 3.70
2.73-3.15	2.73-3.15	2.52-2.99	B 4.15
3.16-3.55	3.16-3.55	3.00-3.42	B 4.85
3.56-4.00	3.56-4.00	3.43-3.75	B 5.50
4.01-4.40	4.01-4.40	3.76-3.98	B 6.25
4.41-4.88	4.41-4.88	3.99-4.48	B 6.90
4.89-5.19	4.89-5.19	4.49-4.93	B 7.70
5.20-5.73	5.20-5.73	4.94-5.21	B 8.20
5.74-6.39	5.74-6.39	5.22-5.84	B 9.10
6.40-7.13	6.40-7.13	5.85-6.67	B 10.2
7.14-7.90	7.14-7.90	6.68-7.54	B 11.5
7.91-8.55	7.91-8.55	7.55-8.14	B 12.8
8.56-9.53	8.56-9.53	8.15-8.72	B 14.0
9.54-10.6	9.54-10.6	8.73-9.66	B 15.5
10.7-11.8	10.7-11.8	9.67-10.5	B 17.5
11.9-13.2	11.9-13.2	10.6-11.3	B 19.5
13.3-14.9	—	11.4-12.0	B 22.0
15.0-16.6	—	—	B 25.0
16.7-18.0	—	—	B 28.0

Following Selections for Size 1 Only

—	11.9-13.2	—	B 19.5
—	13.3-14.9	11.4-12.7	B 22.0
—	15.0-16.6	12.8-14.1	B 25.0
16.7-18.9	16.7-18.9	14.2-15.9	B 28.0
19.0-21.2	19.0-21.2	16.0-17.5	B 32.0
21.3-23.0	21.3-23.0	17.6-19.7	B 36.0
23.1-25.5	23.1-25.5	19.8-21.9	B 40.0
25.6-26.0	25.6-26.0	22.0-24.4	B 45.0
—	—	24.5-26.0	B 50.0

Table 15

Motor FLC (A)			Thermal Unit Number
1.T.U.	2 T.U.	3 T.U.	
0.31-0.33	0.31-0.33	0.29-0.31	B 0.44
0.34-0.36	0.34-0.36	0.32-0.36	B 0.51
0.37-0.40	0.37-0.40	0.37-0.38	B 0.57
0.41-0.48	0.41-0.48	0.39-0.46	B 0.63
0.49-0.57	0.49-0.57	0.47-0.55	B 0.71
0.58-0.64	0.58-0.64	0.56-0.61	B 0.81
0.65-0.70	0.65-0.70	0.62-0.66	B 0.92
0.71-0.77	0.71-0.77	0.67-0.75	B 1.03
0.78-0.85	0.78-0.85	0.76-0.83	B 1.16
0.86-0.99	0.86-0.99	0.84-0.93	B 1.30
1.00-1.10	1.00-1.10	0.94-1.06	B 1.45
1.11-1.28	1.11-1.28	1.07-1.18	B 1.67
1.29-1.41	1.29-1.41	1.19-1.31	B 1.88
1.42-1.58	1.42-1.58	1.32-1.47	B 2.10
1.59-1.80	1.59-1.80	1.48-1.67	B 2.40
1.81-2.03	1.81-2.03	1.68-1.83	B 2.65
2.04-2.25	2.04-2.25	1.84-2.04	B 3.00
2.26-2.51	2.26-2.51	2.05-2.38	B 3.30
2.52-2.83	2.52-2.83	2.39-2.60	B 3.70
2.84-3.29	2.84-3.29	2.61-3.13	B 4.15
3.30-3.75	3.30-3.75	3.14-3.59	B 4.85
3.76-4.22	3.76-4.22	3.60-3.94	B 5.50
4.23-4.65	4.23-4.65	3.95-4.19	B 6.25
4.66-5.16	4.66-5.16	4.20-4.72	B 6.90
5.17-5.53	5.17-5.53	4.73-5.21	B 7.70
5.54-6.09	5.54-6.09	5.22-5.51	B 8.20
6.10-6.80	6.10-6.80	5.52-6.17	B 9.10
6.81-7.60	6.81-7.60	6.18-7.07	B 10.2
7.61-8.35	7.61-8.35	7.08-8.05	B 11.5
8.36-9.04	8.36-9.04	8.06-8.69	B 12.8
9.05-9.99	9.05-9.99	8.70-9.32	B 14.0
10.0-11.1	10.0-11.1	9.33-10.2	B 15.5
11.2-12.3	11.2-12.0	10.3-11.3	B 17.5
12.4-13.7	—	11.4-12.0	B 19.5
13.8-15.4	—	—	B 22.0
15.5-18.0	—	—	B 25.0

Following Selections for Size 1 Only

—	11.2-12.3	—	B 17.5
—	12.4-13.7	11.4-12.1	B 19.5
—	13.8-15.4	12.2-13.7	B 22.0
15.5-17.2	15.5-17.2	13.8-15.2	B 25.0
17.3-19.4	17.3-19.4	15.3-17.2	B 28.0
19.5-21.7	19.5-21.7	17.3-18.9	B 32.0
21.8-23.9	21.8-23.9	19.0-21.4	B 36.0
24.0-26.0	24.0-26.0	21.5-23.7	B 40.0
—	—	23.8-26.0	B 45.0

Table 17

Motor FLC (A)			Thermal Unit Number
1.T.U.	2 T.U.	3 T.U.	
0.42-0.46	0.39-0.43	0.38-0.40	A 49
0.47-0.50	0.44-0.47	0.41-0.44	A 54
0.51-0.55	0.48-0.52	0.45-0.49	A 59
0.56-0.62	0.53-0.58	0.50-0.55	A 65
0.63-0.67	0.59-0.64	0.56-0.60	A 71
0.68-0.73	0.65-0.68	0.61-0.65	A 78
0.74-0.81	0.69-0.77	0.66-0.72	A 86
0.82-0.89	0.78-0.84	0.73-0.79	A 95
0.90-0.98	0.85-0.93	0.80-0.88	A 102
0.99-1.12	0.94-1.05	0.89-0.98	A 116
1.13-1.20	1.06-1.13	0.99-1.07	A 125
1.21-1.34	1.14-1.25	1.08-1.17	A 139
1.35-1.41	1.26-1.33	1.18-1.25	A 154
1.42-1.51	1.34-1.42	1.26-1.33	A 163
1.52-1.62	1.43-1.52	1.34-1.44	A 175
1.63-1.73	1.53-1.63	1.45-1.53	A 186
1.74-1.86	1.64-1.75	1.54-1.65	A 199
1.87-2.02	1.76-1.90	1.66-1.79	A 215
2.03-2.25	1.91-2.13	1.80-1.99	A 231
2.26-2.46	2.14-2.33	2.00-2.18	A 257
2.47-2.77	2.34-2.73	2.19-2.45	A 281
2.78-2.99	2.74-2.86	2.46-2.65	A 361
3.00-3.26	2.87-3.14	2.66-2.90	A 395
3.27-3.59	3.15-3.47	2.91-3.19	A 432
3.60-3.99	3.48-3.83	3.20-3.56	A 479
4.00-4.42	3.84-4.16	3.57-3.83	A 530
4.43-4.61	4.17-4.43	3.84-4.08	A 578
4.62-5.23	4.44-5.00	4.09-4.64	A 620
5.24-5.39	5.01-5.16	4.65-5.00	A 699
5.40-5.88	5.17-5.56	5.01-5.36	A 765
5.89-6.56	5.57-6.22	5.37-5.87	A 838
6.57-7.18	6.23-6.89	5.88-6.43	A 925
7.19-7.80	6.90-7.00	6.44-6.79	A 985
7.81-9.00	—	6.80-7.00	A 11.0

Table 18

Motor FLC (A)			Thermal Unit Number
1.T.U.	2 T.U.	3 T.U.	
15.5-16.4	14.4-15.3	13.6-14.5	CC 20.9
16.5-17.6	15.4-16.4	14.6-15.5	CC 22.8
17.7-19.1	16.5-18.4	15.6-17.4	CC 24.6
19.2-20.4	18.5-19.6	17.5-18.5	CC 26.3
20.5-22.1	19.7-21.0	18.6-19.9	CC 28.8
22.2-23.4	21.1-22.7	20.0-21.5	CC 31.0
23.5-25.6	22.8-24.2	21.6-22.9	CC 33.3
25.7-27.3	24.3-25.9	23.0-24.5	CC 36.4
27.4-29.4	26.0-27.8	24.6-26.3	CC 39.6
29.5-31.5	27.9-29.8	26.4-28.2	CC 42.7
31.6-33.7	29.9-31.7	28.3-30.0	CC 46.6
33.8-36.5	31.8-34.2	30.1-32.3	CC 50.1
36.6-39.1	34.3-36.9	32.4-34.9	CC 54.5
39.2-41.7	37.0-39.8	35.0-37.6	CC 59.4
41.8-44.8	39.9-42.3	37.7-40.0	CC 64.3
44.9-48.0	42.4-45.3	40.1-42.8	CC 68.5
48.1-50.7	45.4-47.9	42.9-45.3	CC 74.6
50.8-54.9	48.0-51.9	45.4-49.1	CC 81.5
55.0-59.9	52.0-56.5	49.2-53.4	CC 87.7
60.0-63.3	56.6-60.7	53.5-57.4	CC 94.0
63.4-67.2	60.8-64.8	57.5-61.3	CC 103.0
67.3-72.4	64.9-67.1	61.4-63.5	CC 112.0
72.5-74.9	67.2-70.1	63.6-66.3	CC 121.0
75.0-77.4	70.2-72.9	66.4-69.0	CC 132.0
77.5-80.7	73.0-74.9	69.1-70.9	CC 143.0
80.8-83.1	75.0-77.9	71.0-73.7	CC 156.0
83.2-86.0	78.0-80.9	73.8-76.5	CC 167.0
—	81.0-82.9	76.6-78.4	CC 180.0
—	83.0-86.0	78.5-86.0	CC 196.0

Table 14

Motor FLC (A)			Thermal Unit Number
1.T.U.	2 T.U.	3 T.U.	
0.43-0.47	0.41-0.45	0.40-0.41	A .49
0.48-0.51	0.46-0.50	0.42-0.46	A .54
0.52-0.56	0.51-0.55	0.47-0.51	A .59
0.57-0.64	0.56-0.62	0.52-0.57	A .65
0.65-0.69	0.63-0.67	0.58-0.62	A .71
0.70-0.76	0.68-0.72	0.63-0.67	A .78
0.77-0.84	0.73-0.81	0.68-0.75	A .86
0.85-0.91	0.82-0.88	0.76-0.80	A .95
0.92-1.01	0.89-0.97	0.81-0.89	A 1.02
1.02-1.15	0.98-1.08	0.90-1.02	A 1.16
1.16-1.23	1.09-1.18	1.03-1.09	A 1.25
1.24-1.37	1.19-1.32	1.10-1.21	A 1.39
1.38-1.45	1.33-1.40	1.22-1.29	A 1.54
1.46-1.56	1.41-1.48	1.30-1.37	A 1.63
1.57-1.67	1.49-1.60	1.38-1.48	A 1.75
1.68-1.77	1.61-1.72	1.49-1.58	A 1.86
1.78-1.92	1.73-1.84	1.59-1.72	A 1.99
1.93-2.09	1.85-2.00	1.73-1.85	A 2.15
2.10-2.31	2.01-2.22	1.86-2.05	A 2.31
2.32-2.56	2.23-2.45	2.06-2.29	A 2.57
2.57-2.92	2.46-2.82	2.30-2.62	A 2.81
2.93-3.16	2.83-3.08	2.63-2.84	A 3.61
3.17-3.48	3.09-3.39	2.85-3.10	A 3.95
3.49-3.83	3.40-3.75	3.11-3.46	A 4.32
3.84-4.24	3.76-4.16	3.47-3.85	A 4.79
4.25-4.62	4.17-4.51	3.86-4.16	A 5.30
4.63-4.92	4.52-4.83	4.17-4.46	A 5.78
4.93-5.61	4.84-5.49	4.47-5.08	A 6.20
5.62-5.85	5.50-5.67	5.09-5.35	A 6.99
5.86-6.36	5.68-6.16	5.36-5.82	A 7.65
6.37-6.99	6.17-6.75	5.83-6.34	A 8.38
7.00-7.67	6.76-7.00	6.35-6.95	A 9.25
7.68-8.15	—	6.96-7.00	A 9.85
8.16-9.00	—	—	A 11.0

Table 16

Motor FLC (A)			Thermal Unit Number
1.T.U.	2 T.U.	3 T.U.	
16.2-17.5	15.1-16.2	14.3-15.4	CC 20.9
17.6-18.8	16.3-17.3	15.5-16.4	CC 22.8
18.9-20.5	17.4-19.5	16.5-18.5	CC 24.6
20.6-22.2	19.6-20.7	18.6-19.6	CC 26.3
22.3-23.7	20.8-22.3	19.7-21.1	CC 28.8
23.8-25.4	22.4-24.0	21.2-22.7	CC 31.0
25.5-27.3	24.1-25.7	22.8-24.4	CC 33.3
27.4-29.3	25.8-27.5	24.5-26.1	CC 36.4
29.4-31.5	27.6-29.6	26.2-28.1	CC 39.6
31.6-33.9	29.7-31.7	28.2-30.0	CC 42.7
34.0-36.2	31.8-33.9	30.1-32.1	CC 46.6
36.3-39.3	34.0-36.6	32.2-34.7	CC 50.1
39.4-42.3	36.7-39.3	34.8	

**Table 19**

Motor FLC (A)	Thermal Unit Number
43.6–47.3	CC 54.5
47.4–51.3	CC 59.4
51.4–54.6	CC 64.3
54.7–59.7	CC 68.5
59.8–65.1	CC 74.6
65.2–70.1	CC 81.5
70.2–75.1	CC 87.7
75.2–82.2	CC 94.0
82.3–89.2	CC 103.0
89.3–96.5	CC 112.0
96.6–104.	CC 121.0
105–113.	CC 132.0
114–123.	CC 143.0
124–133.	CC 156.0

**Table 20**

Motor FLC (A)	Thermal Unit Number
133–148.	B 1.30
149–174.	B 1.45
175–195.	B 1.67
196–219.	B 1.88
220–239.	B 2.10
240–271.	B 2.40
272–308.	B 2.65
309–348.	B 3.00
349–397.	B 3.30
398–429.	B 3.70
430–495.	B 4.15
496–520.	B 4.85

**Table 21**

Motor FLC (A)	Thermal Unit Load
128–140.	B 1.30
141–163.	B 1.45
164–179.	B 1.67
180–201.	B 1.88
202–227.	B 2.10
228–251.	B 2.40
252–278.	B 2.65
279–308.	B 3.00
309–346.	B 3.30
347–380.	B 3.70
381–426.	B 4.15
427–454.	B 4.85
455–489.	B 5.50
490–520.	B 6.25

**Table 22**

Motor FLC (A)	Thermal Unit Number
92.0–100.	DD 112.0
101–109.	DD 121.0
110–119.	DD 128.0
120–131.	DD 140.0
132–139.	DD 150.0
140–156.	DD 160.0
157–166.	DD 185.0
167–180.	DD 213.0
181–189.	DD 220.0
190–209.	DD 230.0
210–225.	DD 250.0
226–238.	DD 265.0
239–266.	DD 280.0

**Table 23**

Motor FLC (A) 2 or 3 T.U.		Thermal Unit Number
Large Enclosure	Small Enclosure	
0.31–0.32	0.29–0.30	AR .45
0.33–0.36	0.31–0.33	AR .49
0.37–0.39	0.34–0.37	AR .54
0.40–0.43	0.38–0.41	AR .59
0.44–0.47	0.42–0.45	AR .65
0.48–0.52	0.46–0.50	AR .71
0.53–0.58	0.51–0.55	AR .78
0.59–0.60	0.56–0.57	AR .86
0.61–0.62	0.58–0.60	AR .95
0.63–0.69	0.61–0.66	AR 1.05
0.70–0.76	0.67–0.73	AR 1.15
0.77–0.84	0.74–0.81	AR 1.26
0.85–0.93	0.82–0.90	AR 1.39
0.94–1.03	0.91–0.99	AR 1.53
1.04–1.23	1.00–1.18	AR 1.68
1.24–1.35	1.19–1.30	AR 1.85
1.36–1.47	1.31–1.42	AR 2.04
1.48–1.61	1.43–1.49	AR 2.24
1.62–1.76	1.50–1.69	AR 2.46
1.77–1.93	1.70–1.85	AR 2.71
1.94–2.12	1.86–2.03	AR 2.98
2.13–2.35	2.04–2.25	AR 3.28
2.36–2.61	2.26–2.50	AR 3.62
2.62–2.79	2.51–2.68	AR 3.98
2.80–3.14	2.69–3.01	AR 4.37
3.15–3.48	3.02–3.35	AR 4.80
3.49–3.89	3.36–3.74	AR 5.3
3.90–4.30	3.75–4.14	AR 5.8
4.31–4.73	4.15–4.57	AR 6.4
4.74–5.20	4.58–5.03	AR 7.0
5.21–5.95	5.04–5.76	AR 7.7
5.96–6.49	5.77–6.29	AR 8.5
6.50–7.08	6.30–6.87	AR 9.3
7.09–7.77	6.88–7.54	AR 10.2
7.78–8.48	7.55–8.25	AR 11.2
8.49–9.15	8.26–8.60	AR 12.4
9.16–10.3	8.61–9.63	AR 13.6
10.4–11.9	9.64–11.1	AR 15.4
12.0–13.4	11.2–12.5	AR 17.6
13.5–15.4	12.6–14.3	AR 20.5
15.5–17.5	14.4–16.1	AR 23.0
17.6–19.8	16.2–18.2	AR 27.0
19.9–22.5	18.3–20.6	AR 30.0
22.6–26.0	20.7–23.4	AR 35.0
—	23.5–26.0	AR 40.0

**Table 24**

Motor FLC (A)	Thermal Unit Number
88.2–95.1	DD 112.0
95.2–101.	DD 121.0
102–111.	DD 128.0
112–119.	DD 140.0
120–131.	DD 150.0
132–149.	DD 160.0
150–170.	DD 185.0
171–180.	DD 220.0
181–197.	DD 240.0
198–204.	DD 250.0
205–213.	DD 265.0
214–237.	DD 280.0
238–243.	DD 300.0
244–266.	DD 320.0

**Table 25**

Motor FLC (A)	Thermal Unit Number
0.28–0.30	AR .45
0.31–0.33	AR .49
0.34–0.36	AR .54
0.37–0.39	AR .59
0.40–0.42	AR .65
0.43–0.46	AR .71
0.47–0.50	AR .78
0.51–0.52	AR .86
0.53–0.56	AR .95
0.57–0.60	AR 1.05
0.61–0.66	AR 1.15
0.67–0.73	AR 1.26
0.74–0.81	AR 1.39
0.82–0.90	AR 1.53
0.91–1.05	AR 1.68
1.06–1.15	AR 1.85
1.16–1.25	AR 2.04
1.26–1.35	AR 2.24
1.36–1.47	AR 2.46
1.48–1.58	AR 2.71
1.59–1.74	AR 2.98
1.75–1.94	AR 3.28
1.95–2.20	AR 3.62
2.21–2.47	AR 3.98
2.48–2.76	AR 4.37
2.77–3.07	AR 4.80
3.08–3.45	AR 5.3
3.46–3.81	AR 5.8
3.82–4.20	AR 6.4
4.21–4.65	AR 7.0
4.66–5.29	AR 7.7
5.30–5.84	AR 8.5
5.85–6.27	AR 9.3
6.28–7.00	AR 10.2

**Table 26**

Size 7 Type J	Size 8 Type K	Thermal Unit Number
Current Transformer Ratio		
120/5	2000/5	
Motor FLC		
166–187.	277–312.	B 1.03
188–211.	313–352.	B 1.16
212–232.	353–388.	B 1.30
233–267.	389–445.	B 1.45
268–301.	446–503.	B 1.67
302–336.	504–561.	B 1.88
337–383.	562–640.	B 2.10
384–425.	641–708.	B 2.40
426–466.	709–777.	B 2.65
467–522.	778–870.	B 3.00
523–587.	871–978.	B 3.30
588–656.	979–1093.	B 3.70
657–764.	1094–1215.	B 4.15

**Table 27**

Motor FLC (A)		Thermal Unit Number
2 or 3 T.U.		
Large Enclosure	Small Enclosure	
4.32–4.93	4.14–4.71	AR 8.5
4.94–5.40	4.72–5.18	AR 9.3
5.41–5.95	5.19–5.74	AR 10.2
5.96–6.13	5.75–5.98	AR 11.2
6.14–6.81	5.99–6.47	AR 12.4
6.82–7.84	6.48–7.42	AR 13.6
7.85–8.97	7.43–8.46	AR 15.4
8.98–10.1	8.47–9.56	AR 17.6
10.2–11.6	9.57–10.9	AR 20.5
11.7–13.2	11.0–12.3	AR 23.0
13.3–15.0	12.4–14.0	AR 27.0
15.1–17.1	14.1–15.9	AR 30.0
17.2–19.6	16.0–18.1	AR 35.0
19.7–21.9	18.2–20.3	AR 40.0
22.0–23.8	20.4–22.0	AR 44.0
23.9–25.6	22.1–23.6	AR 47.0
25.7–27.9	23.7–25.5	AR 51.0
28.0–30.5	25.6–27.8	AR 55.0
30.6–33.0	27.9–30.0	AR 60.0
33.1–35.7	30.1–32.4	AR 66.0
35.8–39.5	32.5–35.7	AR 72.0
39.6–41.5	35.8–38.3	AR 79.0
41.6–45.0	38.4–40.9	AR 86.0
—	41.0–45.0	AR 94.0

**Table 28**

Motor FLC (A)		Thermal Unit Number
2 or 3 T.U.		
Large Enclosure	Small Enclosure	
45.3-48.2	40.3-42.8	CC 64.3
48.3-52.4	42.9-46.2	CC 68.5
52.5-56.4	46.3-49.8	CC 74.6
56.5-61.2	49.9-54.9	CC 81.5
61.3-66.1	55.0-57.9	CC 87.7
66.2-71.4	58.0-62.5	CC 94.0
71.5-77.0	62.6-67.3	CC 103.0
77.1-80.7	67.4-73.4	CC 112.0
80.8-87.7	73.5-78.9	CC 121.0
87.8-94.9	79.0-84.9	CC 132.0
95.0-102.	85.0-91.0	CC 143.0
103.-110.	91.1-97.2	CC 156.0
111.-117.	97.3-104.	CC 167.0
118.-133.	105.-121.	CC 180.0
—	122.-133.	CC 196.0

**Table 29**

Motor FLC (A)	Thermal Unit Number
50.0-55.9	E 88
56.0-60.9	E 89
61.0-65.9	E 91
66.0-69.9	E 92
70.0-75.9	E 93
76.0-81.9	E 94
82.0-86.9	E 96
87.0-92.9	E 97
93.0-97.9	E 98
98.0-107.9	E 99
108.0-113.9	E 101
114.0-125.9	E 102

**Table 30**

Motor FLC (A)		Thermal Unit Number
Large Enclosure	Small Enclosure	
39.0-42.9	37.0-40.8	AU 44.0
43.0-48.0	40.9-45.6	AU 50.0
48.1-54.7	45.7-51.8	AU 56.0
54.8-62.2	51.9-58.8	AU 64.0
62.3-71.3	58.9-67.4	AU 72.0
71.4-76.0	67.5-70.4	AU 81.0
76.1-85.5	70.5-79.4	AU 88.0
85.6-92.4	79.5-86.3	AU 99.0
92.5-103.	86.4-96.7	AU 110.0
104.-111.	96.8-105.	AU 123.0
112.-123.	106.-117.	AU 135.0
124.-133.	118.-133.	AU 152.0

**Table 31**

Motor FLC (A)	Thermal Unit Number
0.31-0.35	B 0.44
0.36-0.39	B 0.51
0.40-0.44	B 0.57
0.45-0.50	B 0.63
0.51-0.61	B 0.71
0.62-0.68	B 0.81
0.69-0.73	B 0.92
0.74-0.82	B 1.03
0.83-0.92	B 1.16
0.93-1.03	B 1.30
1.04-1.19	B 1.45
1.20-1.34	B 1.67
1.35-1.50	B 1.88
1.51-1.74	B 2.10
1.75-1.97	B 2.40
1.98-2.14	B 2.65
2.15-2.47	B 3.09
2.48-2.91	B 3.30
2.92-3.31	B 3.70
3.32-3.75	B 4.15
3.76-4.05	B 4.85
4.06-4.94	B 6.25
4.95-5.52	B 6.90
5.53-6.11	B 7.70
6.12-6.52	B 8.20
6.53-7.31	B 9.10
7.32-8.43	B 10.2
8.44-9.83	B 11.5
9.84-10.7	B 12.8
10.8-11.6	B 14.0
11.7-12.9	B 15.5
13.0-14.3	B 17.5
14.4-15.7	B 19.5
15.8-17.8	B 22.0
17.9-20.3	B 25.0
20.4-23.3	B 28.0
23.4-26.6	B 32.0
26.7-30.3	B 36.0
30.4-35.3	B 40.0
35.4-41.5	B 45.0
41.6-45	B 50.0

**Table 32**

Motor FLC (A)	Thermal Unit Number
0.33-0.35	AR 45
0.36-0.39	AR 49
0.40-0.42	AR 54
0.43-0.46	AR 59
0.47-0.51	AR 65
0.52-0.56	AR 71
0.57-0.62	AR 78
0.63-0.68	AR 86
0.69-0.75	AR 95
0.76-0.83	AR 1.05
0.84-0.91	AR 1.15
0.92-1.00	AR 1.26
1.01-1.10	AR 1.39
1.11-1.21	AR 1.53
1.22-1.33	AR 1.68
1.34-1.47	AR 1.85
1.48-1.62	AR 2.04
1.63-1.77	AR 2.24
1.78-1.96	AR 2.46
1.97-2.16	AR 2.71
2.17-2.37	AR 2.98
2.38-2.62	AR 3.28
2.63-2.88	AR 3.62
2.89-3.17	AR 3.98
3.18-3.48	AR 4.37
3.49-3.83	AR 4.80
3.84-4.20	AR 5.3
4.21-4.62	AR 5.8
4.63-5.08	AR 6.4
5.09-5.57	AR 7.0
5.58-6.13	AR 7.7
6.14-6.83	AR 8.5
6.84-7.41	AR 9.3
7.42-8.05	AR 10.2
8.06-8.98	AR 11.2
8.99-9.93	AR 12.4
9.94-10.9	AR 13.6
11.0-12.4	AR 15.4
12.5-14.3	AR 17.6
14.4-15.8	AR 20.5
15.9-17.9	AR 23.0
18.0-20.0	AR 27.0
20.1-22.4	AR 30.0
22.5-25.0	AR 35.0

**Table 33**

Motor FLC (A)	Thermal Unit Number
0.28-0.30	AR 45
0.31-0.33	AR 49
0.34-0.36	AR 54
0.37-0.39	AR 59
0.40-0.42	AR 65
0.43-0.46	AR 71
0.47-0.50	AR 78
0.51-0.52	AR 86
0.53-0.56	AR 95
0.57-0.60	AR 1.05
0.61-0.66	AR 1.15
0.67-0.73	AR 1.26
0.74-0.81	AR 1.39
0.82-0.90	AR 1.53
0.91-1.05	AR 1.68
1.06-1.15	AR 1.85
1.16-1.25	AR 2.04
1.26-1.35	AR 2.24
1.36-1.47	AR 2.46
1.48-1.58	AR 2.71
1.59-1.74	AR 2.98
1.75-1.94	AR 3.28
1.95-2.20	AR 3.62
2.21-2.47	AR 3.98
2.48-2.76	AR 4.37
2.77-3.07	AR 4.80
3.08-3.45	AR 5.3
3.46-3.81	AR 5.8
3.82-4.20	AR 6.4
4.21-4.65	AR 7.0
4.66-5.29	AR 7.7
5.30-5.84	AR 8.5
5.85-6.27	AR 9.3
6.28-6.97	AR 10.2
6.98-7.59	AR 11.2
7.60-7.89	AR 12.4
7.90-8.95	AR 13.6
8.96-10.3	AR 15.4
10.4-11.7	AR 17.6
11.8-12.0	AR 20.5

Following Selections for Size 1 Only

11.8-13.3	AR 20.5
13.4-15.2	AR 23.0
15.3-17.2	AR 27.0
17.3-19.7	AR 30.0
19.8-22.4	AR 35.0
22.5-26.0	AR 40.0

**Table 34**

Motor FLC (A)	Thermal Unit Number
15.1-16.2	CC 20.9
16.3-17.5	CC 22.8
17.6-19.1	CC 24.6
19.2-20.7	CC 26.3
20.8-22.2	CC 28.8
22.3-24.0	CC 31.0
24.1-25.7	CC 33.3
25.8-27.8	CC 36.4
27.9-30.1	CC 39.6
30.2-32.5	CC 42.7
32.6-35.1	CC 46.6
35.2-38.0	CC 50.1
38.1-41.1	CC 54.5
41.2-44.0	CC 59.4
44.1-47.2	CC 64.3
47.3-51.1	CC 68.5
51.2-55.8	CC 74.6
55.9-59.5	CC 81.5
59.6-64.5	CC 87.7
64.6-69.5	CC 94.0
69.6-75.0	CC 103.0
75.1-78.1	CC 112.0
78.2-82.3	CC 121.0
82.4-86.0	CC 132.0

**Table 35**

Motor FLC (A)		Thermal Unit Number
2 T.U.	3 T.U.	
36.3-39.9	34.7-37.1	AU 44.0
40.0-44.1	37.2-41.5	AU 50.0
44.2-50.0	41.6-47.1	AU 56.0
50.1-56.4	47.2-53.4	AU 64.0
56.5-64.4	53.5-60.7	AU 72.0
64.5-68.4	60.8-64.9	AU 81.0
68.5-77.7	65.0-73.4	AU 88.0
77.8-84.2	73.5-79.5	AU 99.0
84.3-94.8	79.6-89.0	AU 110.0
94.9-101.	89.1-96.9	AU 123.0
102.-115.	97.0-108.	AU 135.0
116.-122.	109.-115.	AU 152.0
123.-133.	116.-120.	AU 169.0
—	121.-133.	AU 183.0

**Table 36**

Motor FLC (A)	Thermal Unit Number
90.6-97.4	AF 110.0
97.5-111.	AF 123.0
112.-129.	AF 135.0
130.-149.	AF 150.0
150.-163.	AF 159.0
164.-189.	AF 168.0
190.-213.	AF 188.0
214.-240.	AF 205.0
241.-266.	AF 220.0

**Table 37**

Motor FLC (A)	Thermal Unit Number
27.1-30.0	E 67
30.1-33.2	E 69
33.3-35.7	E 70
35.8-39.4	E 71
39.5-43.4	E 72
43.5-46.9	E 73
47.0-51.5	E 74
51.6-57.0	E 76
57.1-62.8	E 77
62.9-69.1	E 78
69.2-75.0	E 79
75.1-83.3	E 80

**Table 38**

Motor FLC (A)	Thermal Unit Number
85.0-95.9	AF 123.0
96.0-108.	AF 135.0
109.-127.	AF 150.0
128.-136.	AF 159.0
137.-147.	AF 168.0
148.-162.	AF 188.0
163.-185.	AF 205.0
186.-202.	AF 220.0
203.-219.	AF 240.0
220.-233.	AF 260.0
234.-266.	AF 308.0

**Table 39**

Motor FLC (A)	Thermal Unit Number
148.-173.	AR 1.68
174.-189.	AR 1.85
190.-205.	AR 2.04
206.-222.	AR 2.24
223.-243.	AR 2.46
244.-261.	AR 2.71
262.-289.	AR 2.98
290.-324.	AR 3.28
325.-367.	AR 3.62
368.-389.	AR 3.98
390.-404.	AR 4.37
405.-451.	AR 4.80
452.-495.	AR 5.3
496.-520.	AR 5.8

**Table 40**

Motor FLC (A)	Thermal Unit Number
15.3-16.7	C 20.0
16.8-19.8	C 22.0
19.9-22.8	C 26.0
22.9-25.8	C 30.0
25.9-30.4	C 34.0
30.5-31.9	C 40.0
32.0-34.2	C 42.0
34.3-38.8	C 45.0
38.9-44.2	C 51.0
44.3-50.2	C 58.0
50.3-57.1	C 66.0
57.2-63.2	C 75.0
63.3-68.6	C 83.0
68.7-78.6	C 90.0
78.7-86.0	C 103.0

**Table 41**

Motor FLC (A)	Thermal Unit Number
0.81-0.92	B 1.16
0.93-1.07	B 1.30
1.08-1.14	B 1.45
1.15-1.26	B 1.67
1.27-1.49	B 1.88
1.50-1.73	B 2.10
1.74-1.89	B 2.40
1.90-2.16	B 2.65
2.17-2.37	B 3.00
2.38-2.66	B 3.30
2.67-2.99	B 3.70
3.00-3.40	B 4.15
3.41-3.94	B 4.85
3.95-4.15	B 5.50
4.16-4.49	B 6.25
4.50-5.15	B 6.90
5.16-5.77	B 7.70
5.78-6.61	B 8.20
6.62-7.14	B 9.10
7.15-7.97	B 10.2
7.98-8.15	B 11.5
8.16-9.32	B 12.8
9.33-9.97	B 14.0
9.98-10.7	B 15.5
10.8-12.0	B 17.5
12.1-13.9	B 19.5
14.0-15.7	B 22.0
15.8-18.4	B 25.0
18.5-21.6	B 28.0
21.7-24.0	B 32.0
24.1-28.6	B 36.0
28.7-30.7	B 40.0
30.8-33.5	B 45.0
33.6-36.0	B 50.0

**Table 42**

Motor FLC (A)	Thermal Unit Number
0.28-0.30	AR 45
0.31-0.33	AR 49
0.34-0.36	AR 54
0.37-0.39	AR 59
0.40-0.42	AR 65
0.43-0.46	AR 71
0.47-0.50	AR 78
0.51-0.52	AR 86
0.53-0.56	AR 95
0.57-0.60	AR 1.05
0.61-0.66	AR 1.15
0.67-0.73	AR 1.26
0.74-0.81	AR 1.39
0.82-0.90	AR 1.53
0.91-1.05	AR 1.68
1.06-1.15	AR 1.85
1.16-1.25	AR 2.04
1.26-1.35	AR 2.24
1.36-1.47	AR 2.46
1.48-1.58	AR 2.71
1.59-1.74	AR 2.98
1.75-1.94	AR 3.28
1.95-2.20	AR 3.62
2.21-2.47	AR 3.98
2.48-2.76	AR 4.37
2.77-3.07	AR 4.80
3.08-3.45	

**Table 43**

Motor FLC (A)	Thermal Unit Number
0.41-0.44	A .49
0.45-0.49	A .54
0.50-0.53	A .59
0.54-0.58	A .65
0.59-0.65	A .71
0.66-0.71	A .78
0.72-0.78	A .86
0.79-0.85	A .95
0.86-0.96	A 1.02
0.97-1.04	A 1.16
1.05-1.16	A 1.25
1.17-1.29	A 1.39
1.30-1.37	A 1.54
1.38-1.47	A 1.63
1.48-1.56	A 1.75
1.57-1.65	A 1.86
1.66-1.79	A 1.99
1.80-1.95	A 2.15
1.96-2.15	A 2.31
2.16-2.38	A 2.57
2.39-2.78	A 2.81
2.76-2.84	A 3.61
2.85-3.06	A 3.95
3.07-3.45	A 4.32
3.46-3.70	A 4.79
3.71-4.07	A 5.30
4.08-4.32	A 5.78
4.33-4.90	A 6.20
4.91-5.35	A 6.99
5.36-5.85	A 7.65
5.86-6.41	A 8.38
6.42-6.79	A 9.25
6.80-7.57	A 9.85
7.58-8.15	A 11.0
8.16-8.98	A 11.9
8.99-9.67	A 13.2
9.68-9.95	A 14.1
9.96-10.8	A 14.8
10.9-12.1	A 16.2
12.2-13.1	A 17.9
13.2-13.9	A 19.8
14.0-15.0	A 21.3
15.1-16.0	A 25.2

**Table 44**

Motor FLC (A)	Thermal Unit Number
0.34-0.38	B 0.44
0.39-0.43	B 0.51
0.44-0.48	B 0.57
0.49-0.53	B 0.65
0.54-0.62	B 0.71
0.63-0.69	B 0.81
0.70-0.78	B 0.92
0.79-0.88	B 1.03
0.89-0.99	B 1.16
1.00-1.10	B 1.30
1.11-1.26	B 1.45
1.27-1.43	B 1.67
1.44-1.59	B 1.88
1.60-1.81	B 2.10
1.82-2.00	B 2.40
2.01-2.28	B 2.65
2.29-2.52	B 3.00
2.53-2.87	B 3.30
2.88-3.28	B 3.70
3.29-3.75	B 4.15
3.76-4.27	B 4.85
4.28-4.77	B 5.50
4.78-5.27	B 6.25
5.28-5.91	B 6.90
5.92-6.25	B 7.70
6.26-6.83	B 8.20
6.84-7.65	B 9.10
7.66-8.55	B 10.2
8.56-9.56	B 11.5
9.57-10.3	B 12.8
10.4-11.3	B 14.0
11.4-12.4	B 15.5
12.5-14.1	B 17.5
14.2-15.7	B 19.5
15.8-17.9	B 22.0
18.0-20.1	B 25.0
20.2-22.5	B 28.0
22.6-25.0	B 32.0

**Table 45**

Size 7	Size 8	Thermal Unit Number
Type J	Type K	
<b>Current Transformer Ratio</b>		
1200/5	2000/5	
<b>Motor FLC (A)</b>		
<b>Non-Compensated</b>		
136-150.	227-251.	AR 1.05
151-165.	252-276.	AR 1.15
166-183.	277-305.	AR 1.26
184-202.	306-337.	AR 1.39
203-224.	338-373.	AR 1.53
225-267.	374-445.	AR 1.68
268-293.	446-489.	AR 1.85
294-319.	490-532.	AR 2.04
320-349.	533-582.	AR 2.24
350-381.	583-636.	AR 2.46
382-418.	637-697.	AR 2.71
419-459.	698-766.	AR 2.98
460-509.	767-849.	AR 3.28
510-565.	850-942.	AR 3.62
566-604.	943-1007.	AR 3.98
605-697.	1008-1133.	AR 4.37
698-753.	—	AR 4.80
<b>Compensated</b>		
161-177.	268-295.	AR 1.26
178-196.	296-327.	AR 1.39
197-217.	328-363.	AR 1.53
218-253.	364-423.	AR 1.68
254-277.	424-463.	AR 1.85
278-301.	464-503.	AR 2.04
302-325.	504-543.	AR 2.24
326-354.	544-592.	AR 2.46
355-381.	592-635.	AR 2.71
382-419.	636-699.	AR 2.98
420-467.	700-779.	AR 3.28
468-529.	780-883.	AR 3.62
530-594.	884-991.	AR 3.98
595-664.	992-1107.	AR 4.37
665-738.	1108-1231.	AR 4.80
739-829.	—	AR 5.3

**Table 46**

Motor FLC (A)	Thermal Unit Number
105-116.	AR 3.28
117-132.	AR 3.62
133-148.	AR 3.98
149-165.	AR 4.37
166-184.	AR 4.80
185-207.	AR 5.3
208-229.	AR 5.8
230-266.	AR 6.4

**Table 47**

Motor FLC (A)	Thermal Unit Number
146-169.	AR 1.68
170-185.	AR 1.85
186-201.	AR 2.04
202-217.	AR 2.24
218-236.	AR 2.46
237-253.	AR 2.71
254-279.	AR 2.98
280-311.	AR 3.28
312-353.	AR 3.62
354-396.	AR 3.98
397-442.	AR 4.37
443-492.	AR 4.80
493-520.	AR 5.3

**Table 48**

Motor FLC (A)	Thermal Unit Number
158-187.	AR 1.68
188-206.	AR 1.85
207-224.	AR 2.04
225-244.	AR 2.24
245-267.	AR 2.46
268-289.	AR 2.71
290-324.	AR 2.98
325-361.	AR 3.28
362-406.	AR 3.62
407-445.	AR 3.98
446-463.	AR 4.37
464-520.	AR 4.80

**Table 49**

Motor FLC (A)	Thermal Unit Number
82.5-88.2	DD 112.0
88.3-95.9	DD 121.0
96.0-102.	DD 128.0
103-109.	DD 140.0
110-121.	DD 150.0
122-139.	DD 160.0
140-154.	DD 185.0
155-163.	DD 220.0
164-175.	DD 240.0
176-184.	DD 250.0
185-195.	DD 265.0
196-215.	DD 300.0
216-224.	DD 320.0
225-243.	DD 300.0
244-266.	DD 340.0

**Table 50**

Motor FLC (A)	Thermal Unit Number
14.4-16.1	AU 20.0
16.2-18.6	AU 23.0
18.7-20.5	AU 26.0
20.6-23.4	AU 29.0
23.5-26.9	AU 33.0
27.0-28.3	AU 38.0
28.4-30.8	AU 40.0
30.9-35.0	AU 44.0
35.1-38.8	AU 50.0
38.9-44.3	AU 56.0
44.4-49.3	AU 64.0
49.4-55.5	AU 72.0
55.6-61.0	AU 81.0
61.1-68.6	AU 88.0
68.7-76.3	AU 99.0
76.4-86.0	AU 110.0

**Table 51**

Motor FLC (A)	Thermal Unit Number
15.7-17.7	AU 20.0
17.8-19.9	AU 23.0
20.0-22.7	AU 26.0
22.8-25.7	AU 29.0
25.8-29.1	AU 33.0
29.2-30.8	AU 38.0
30.9-34.3	AU 40.0
34.4-38.3	AU 44.0
38.4-42.3	AU 50.0
42.4-47.5	AU 56.0
47.6-53.0	AU 64.0
53.1-60.5	AU 72.0
60.6-64.9	AU 81.0
65.0-71.5	AU 88.0
71.6-77.3	AU 99.0
77.4-86.0	AU 110.0

**Table 52**

Motor FLC (A)	Thermal Unit Number
92.0-103.	AF 123.0
104-116.	AF 135.0
117-139.	AF 150.0
140-150.	AF 159.0
151-167.	AF 168.0
168-177.	AF 188.0
178-205.	AF 205.0
206-222.	AF 220.0
223-232.	AF 240.0
233-247.	AF 260.0
248-266.	AF 308.0

**Table 53**

Motor FLC (A)		Thermal Unit Number
1 T. U.	3 T. U.	
0.29-0.33	0.29-0.31	B 0.44
0.34-0.36	0.32-0.36	B 0.51
0.37-0.40	0.37-0.38	B 0.57
0.41-0.48	0.39-0.46	B 0.63
0.49-0.57	0.47-0.55	B 0.71
0.58-0.64	0.56-0.61	B 0.81
0.65-0.70	0.62-0.66	B 0.92
0.71-0.77	0.67-0.75	B 1.03
0.78-0.85	0.76-0.83	B 1.16
0.86-0.99	0.84-0.93	B 1.30
1.00-1.10	0.94-1.06	B 1.45
1.11-1.28	1.07-1.18	B 1.67
1.29-1.41	1.19-1.31	B 1.88
1.42-1.58	1.32-1.47	B 2.10
1.59-1.80	1.48-1.67	B 2.40
1.81-2.03	1.68-1.83	B 2.65
2.04-2.25	1.84-2.04	B 3.00
2.26-2.51	2.05-2.38	B 3.30
2.52-2.83	2.39-2.60	B 3.70
2.84-3.29	2.61-3.13	B 4.15
3.30-3.75	3.14-3.59	B 4.85
3.76-4.22	3.60-3.94	B 5.50
4.23-4.65	3.95-4.19	B 6.25
4.66-5.16	4.20-4.72	B 6.90
5.17-5.53	4.73-5.21	B 7.70
5.54-6.09	5.22-5.51	B 8.20
6.10-6.80	5.52-6.17	B 9.10
6.81-7.60	6.18-7.00	B 10.2
7.61-8.35	—	B 11.5
8.36-9.00	—	B 12.8

**Table 54**

Motor FLC (A)		Thermal Unit Number
2 T. U.	3 T. U.	
43.6-45.5	41.1-43.5	CC 64.3
45.6-49.6	43.6-46.8	CC 68.5
49.7-53.1	46.9-50.0	CC 74.6
53.2-57.6	50.1-54.9	CC 81.5
57.7-62.4	55.0-57.5	CC 87.7
62.5-67.5	57.6-61.8	CC 94.0
67.6-71.1	61.9-66.2	CC 103.0
71.2-75.9	66.3-72.4	CC 112.0
76.0-81.9	72.5-78.1	CC 121.0
82.0-84.6	78.2-80.7	CC 132.0
84.7-90.7	80.8-86.5	CC 143.0
90.8-98.4	86.6-93.9	CC 156.0
98.5-105.	94.0-100.	CC 167.0
106-117.	101-112.	CC 180.0
118-123.	113-117.	CC 196.0
124-133.	118-123.	CC 208.0
—	124-133.	CC 219.0

**Table 55**

Motor FLC (A)		Thermal Unit Number
2 T. U.	3 T. U.	
0.38-0.40	0.31-0.33	AR 45
0.41-0.43	0.34-0.36	AR 49
0.44-0.48	0.37-0.39	AR 54
0.49-0.52	0.40-0.43	AR 59
0.53-0.56	0.44-0.47	AR 65
0.57-0.61	0.48-0.51	AR 71
0.62-0.67	0.52-0.56	AR 78
0.68-0.73	0.57-0.58	AR 86
0.74-0.81	0.59-0.64	AR 95
0.82-0.89	0.65-0.70	AR 1.05
0.90-0.97	0.71-0.77	AR 1.15
0.98-1.07	0.78-0.85	AR 1.26
1.08-1.17	0.86-0.94	AR 1.39
1.18-1.31	0.95-1.03	AR 1.53
1.32-1.49	1.04-1.22	AR 1.68
1.50-1.69	1.23-1.34	AR 1.85
1.70-1.83	1.35-1.46	AR 2.04
1.84-2.00	1.47-1.58	AR 2.24
2.01-2.17	1.59-1.76	AR 2.46
2.18-2.35	1.77-1.85	AR 2.71
2.36-2.60	1.86-2.08	AR 2.98
2.61-2.87	2.09-2.27	AR 3.28
2.88-3.14	2.28-2.51	AR 3.62
3.15-3.47	2.52-2.90	AR 3.98
3.48-3.90	2.91-3.23	AR 4.37
3.91-4.36	3.24-3.58	AR 4.80
4.37-4.88	3.59-4.02	AR 5.3
4.89-5.37	4.03-4.43	AR 5.8
5.38-5.97	4.44-4.86	AR 6.4
5.98-6.55	4.87-5.37	AR 7.0
6.56-7.50	5.38-6.12	AR 7.7
7.51-8.23	6.13-6.65	AR 8.5
8.24-9.00	6.66-7.00	AR 9.3

**Table 56**

Motor FLC (A)		Thermal Unit Number
1 or 2 T. U.	3 T. U.	
3.29-3.74	3.18-3.40	B 4.85
3.75-4.23	3.41-3.76	B 5.50
4.24-4.68	3.77-4.00	B 6.25
4.69-5.22	4.01-4.57	B 6.90
5.23-5.67	4.58-5.03	B 7.70
5.68-6.13	5.04-5.32	B 8.20
6.14-6.91	5.33-5.97	B 9.10
6.92-7.70	5.98-6.88	B 10.2
7.71-8.56	6.89-7.82	B 11.5
8.57-9.39	7.83-8.47	B 12.8
9.40-10.4	8.48-	

**Table 59**

Motor FLC (A)		Thermal Unit Number
1 or 2 T. U.	3 T. U.	
0.34–0.38	0.29–0.31	B 0.44
0.39–0.43	0.32–0.35	B 0.51
0.44–0.47	0.36–0.38	B 0.57
0.48–0.53	0.39–0.46	B 0.63
0.54–0.60	0.47–0.55	B 0.71
0.61–0.68	0.56–0.62	B 0.81
0.69–0.76	0.63–0.67	B 0.92
0.77–0.86	0.68–0.75	B 1.03
0.87–0.97	0.76–0.84	B 1.16
0.98–1.07	0.85–0.95	B 1.30
1.08–1.23	0.96–1.09	B 1.45
1.24–1.39	1.10–1.21	B 1.67
1.40–1.55	1.22–1.35	B 1.88
1.56–1.77	1.36–1.53	B 2.10
1.78–1.96	1.54–1.73	B 2.40
1.97–2.15	1.74–1.90	B 2.65
2.16–2.41	1.91–2.14	B 3.00
2.42–2.71	2.15–2.34	B 3.30
2.72–3.03	2.35–2.67	B 3.70
3.04–3.53	2.68–3.22	B 4.15
3.54–4.01	3.23–3.48	B 4.85
4.02–4.56	3.49–3.87	B 5.50
4.57–5.03	3.88–4.14	B 6.25
5.04–5.59	4.15–4.73	B 6.90
5.60–5.95	4.74–5.28	B 7.70
5.96–6.58	5.29–5.64	B 8.20
6.59–7.31	5.65–6.39	B 9.10
7.32–8.15	6.40–7.43	B 10.2
8.16–9.13	7.44–8.55	B 11.5
9.14–9.91	8.56–9.40	B 12.8
9.92–10.7	9.41–10.0	B 14.0
10.8–12.1	10.1–11.2	B 15.5
12.2–13.5	11.3–12.5	B 17.5
13.6–15.1	12.6–13.5	B 19.5
15.2–17.0	13.6–15.4	B 22.0
17.1–18.9	15.5–17.5	B 25.0
19.0–21.5	17.6–19.9	B 28.0
21.6–24.0	20.0–22.2	B 32.0
24.1–26.0	22.3–25.5	B 36.0
—	25.6–26.0	B 40.0

**Table 60**

Motor FLC (A)	Thermal Unit Number
6.84–7.49	AR 9.3
7.50–8.05	AR 10.2
8.06–9.10	AR 11.2
9.11–9.99	AR 12.4
10.0–11.1	AR 13.6
11.2–12.7	AR 15.4
12.8–14.8	AR 17.6
14.9–16.6	AR 20.5
16.7–19.3	AR 23.0
19.4–21.4	AR 27.0
21.5–25.1	AR 30.0
25.2–28.3	AR 35.0
28.4–31.2	AR 40.0
31.3–33.3	AR 44.0
33.4–35.7	AR 47.0
35.8–38.5	AR 51.0
38.6–41.5	AR 55.0
41.6–45.0	AR 60.0

**Table 61**

Motor FLC (A)		Thermal Unit Number
2 T. U.	3 T. U.	
46.8–50.0	45.3–48.2	CC 64.3
50.1–54.2	48.3–52.4	CC 68.5
54.3–58.3	52.5–56.4	CC 74.6
58.4–63.6	56.5–61.2	CC 81.5
63.7–68.5	61.3–66.1	CC 87.7
68.6–74.0	66.2–71.4	CC 94.0
74.1–79.8	71.5–77.0	CC 103.0
79.9–83.0	77.1–79.0	CC 112.0
83.1–88.9	79.1–84.7	CC 121.0
89.0–95.6	84.8–91.1	CC 132.0
95.7–102.	91.2–98.1	CC 143.0
103.–109.	98.2–104.	CC 156.0
110.–119.	105.–113.	CC 167.0
120.–133.	114.–123.	CC 180.0
—	124.–133.	CC 196.0

**Table 62**

Motor FLC (A)		Thermal Unit Number
2 T. U.	3 T. U.	
4.83–5.33	4.90–5.68	AR 8.5
5.34–5.84	5.69–6.19	AR 9.3
5.85–6.43	6.20–6.71	AR 10.2
6.44–7.03	6.72–7.14	AR 11.2
7.04–7.30	7.15–7.49	AR 12.4
7.31–8.29	7.50–8.48	AR 13.6
8.30–9.49	8.49–9.66	AR 15.4
9.50–10.7	9.67–10.8	AR 17.6
10.8–12.3	10.9–12.4	AR 20.5
12.4–14.0	12.5–13.9	AR 23.0
14.1–16.0	14.0–15.7	AR 27.0
16.1–18.4	15.8–18.1	AR 30.0
18.5–21.0	18.2–20.3	AR 35.0
21.1–23.0	20.4–23.0	AR 40.0
23.1–25.5	23.1–25.2	AR 44.0
25.6–26.7	25.3–26.6	AR 47.0
26.8–28.3	26.7–28.2	AR 51.0
28.4–30.3	28.3–30.2	AR 55.0
30.4–32.5	30.3–32.3	AR 60.0
32.6–34.5	32.4–34.3	AR 66.0
34.6–37.6	34.4–36.7	AR 72.0
37.7–39.7	36.8–39.3	AR 79.0
39.8–41.4	39.4–45.0	AR 86.0
41.5–45.0	—	AR 94.0

**Table 63**

Motor FLC (A)	Thermal Unit Number
<b>1 or 2 T. U.</b>	<b>3 T. U.</b>
15.1–17.0	AU 20.0
17.1–19.1	AU 23.0
19.2–21.8	AU 26.0
21.9–24.5	AU 29.0
24.6–27.9	AU 33.0
28.0–29.5	AU 38.0
29.6–32.9	AU 40.0
33.0–36.6	AU 44.0
36.7–40.3	AU 50.0
40.4–45.1	AU 56.0
45.2–50.4	AU 64.0
50.5–57.3	AU 72.0
57.4–62.4	AU 81.0
62.5–68.3	AU 88.0
68.4–73.9	AU 99.0
74.0–80.6	AU 110.0
80.7–86.0	AU 123.0

**Table 64**

Motor FLC (A)			Thermal Unit No.
2 T. U. 1Ø	2 T. U. 2Ø	3 T. U.	
0.38–0.40	0.38–0.40	0.31–0.33	AR 45
0.41–0.43	0.41–0.43	0.34–0.36	AR 49
0.44–0.48	0.44–0.48	0.37–0.39	AR 54
0.49–0.52	0.49–0.52	0.40–0.43	AR 59
0.53–0.56	0.53–0.56	0.44–0.47	AR 65
0.57–0.61	0.57–0.61	0.48–0.51	AR 71
0.62–0.67	0.62–0.67	0.52–0.56	AR 78
0.68–0.73	0.68–0.73	0.57–0.58	AR 86
0.74–0.81	0.74–0.81	0.59–0.64	AR 95
0.82–0.89	0.82–0.89	0.65–0.70	AR 1.05
0.90–0.97	0.90–0.97	0.71–0.77	AR 1.15
0.98–1.07	0.98–1.07	0.78–0.85	AR 1.26
1.08–1.17	1.08–1.17	0.86–0.94	AR 1.39
1.18–1.31	1.18–1.31	0.95–1.03	AR 1.53
1.32–1.49	1.32–1.49	1.04–1.22	AR 1.68
1.50–1.69	1.50–1.69	1.23–1.34	AR 1.85
1.70–1.83	1.70–1.83	1.35–1.46	AR 2.04
1.84–2.00	1.84–2.00	1.47–1.58	AR 2.24
2.01–2.17	2.01–2.17	1.59–1.76	AR 2.46
2.18–2.35	2.18–2.35	1.77–1.85	AR 2.71
2.36–2.60	2.36–2.60	1.86–2.08	AR 2.98
2.61–2.87	2.61–2.87	2.09–2.27	AR 3.28
2.88–3.14	2.88–3.14	2.28–2.51	AR 3.62
3.15–3.47	3.15–3.47	2.52–2.90	AR 3.98
3.48–3.90	3.48–3.90	2.91–3.23	AR 4.37
3.91–4.36	3.91–4.36	3.24–3.58	AR 4.80
4.37–4.88	4.37–4.88	3.59–4.02	AR 5.3
4.89–5.37	4.89–5.37	4.03–4.43	AR 5.8
5.38–5.97	5.38–5.97	4.44–4.86	AR 6.4
5.98–6.55	5.98–6.55	4.87–5.37	AR 7.0
6.56–7.50	6.56–7.50	5.38–6.12	AR 7.7
7.51–8.23	7.51–8.23	6.13–6.65	AR 8.5
8.24–8.99	8.24–8.99	6.66–7.31	AR 9.3
9.00–9.86	9.00–9.86	7.32–7.96	AR 10.2
9.87–10.7	9.87–10.7	7.97–8.69	AR 11.2
10.8–11.2	10.8–11.2	8.70–8.99	AR 12.4
11.3–12.8	11.3–12.0	9.00–10.1	AR 13.6
12.9–14.8	—	10.2–11.5	AR 15.4
14.9–16.7	—	11.6–12.0	AR 17.6
16.8–18.0	—	—	AR 20.5
Following Selections for Size 1 Only.			
—	11.3–12.8	—	AR 13.6
—	12.9–14.8	—	AR 15.4
—	14.9–16.7	11.6–13.0	AR 17.6
16.8–19.0	16.8–19.0	13.1–14.6	AR 20.5
19.1–22.0	19.1–22.0	14.7–16.5	AR 23.0
22.1–24.9	22.1–24.9	16.6–18.5	AR 27.0
25.0–26.0	25.0–26.0	18.6–21.0	AR 30.0
—	—	21.1–23.6	AR 35.0
—	—	23.7–26.0	AR 40.0

**Table 65**

Motor FLC (A)	Thermal Unit Number
0.31–0.35	B 0.44
0.36–0.39	B 0.51
0.40–0.44	B 0.57
0.45–0.50	B 0.63
0.51–0.58	B 0.71
0.59–0.65	B 0.81
0.66–0.73	B 0.92
0.74–0.82	B 1.03
0.83–0.92	B 1.16
0.93–1.03	B 1.30
1.04–1.19	B 1.45
1.20–1.34	B 1.67
1.35–1.50	B 1.88
1.51–1.67	B 2.10
1.68–1.89	B 2.40
1.90–2.14	B 2.65
2.15–2.36	B 3.00
2.37–2.65	B 3.30
2.66–2.97	B 3.70
2.98–3.47	B 4.15
3.48–3.94	B 4.85
3.95–4.44	B 5.50
4.45–4.94	B 6.25
4.95–5.52	B 6.90
5.53–5.88	B 7.70
5.89–6.52	B 8.20
6.53–7.31	B 9.10
7.32–8.21	B 10.2
8.22–9.18	B 11.5
9.19–9.90	B 12.8
10.0–11.0	B 14.0
11.1–12.4	B 15.5
12.5–13.9	B 17.5
14.0–15.7	B 19.5
15.8–17.8	B 22.0
17.9–20.0	B 25.0
20.1–22.9	B 28.0
23.0–25.0	B 32.0
Following Selections for Size 2 Only.	
23.0–25.7	B 32.0
25.8–28.6	B 36.0
28.7–32.2	B 40.0
32.3–35.8	B 45.0
35.9–40.1	B 50.0
40.2–44.4	B 56.0
44.5–50.0	B 62.0

**Table 66**

Motor FLC (A)	Thermal Unit Number
0.31–0.32	B 0.44
0.33–0.36	B 0.51
0.37–0.41	B 0.57
0.42–0.49	B 0.63
0.50–0.54	B 0.71
0.55–0.61	B 0.81
0.62–0.67	B 0.92
0.68–0.76	B 1.03
0.77–0.87	B 1.16
0.88–0.98	B 1.30
0.99–1.05	B 1.45
1.06–1.25	B 1.67
1.26–1.33	B 1.88
1.34–1.56	B 2.10
1.57–1.71	B 2.40
1.72–1.97	B 2.65
1.98–2.15	B 3.00
2.16–2.42	B 3.30
2.43–2.78	B 3.70
2.79–3.28	B 4.15
3.29–3.88	B 4.85
3.89–4.13	B 5.5
4.14–4.43	B 6.25
4.44–4.96	B 6.90
4.97–5.35	B 7.70
5.36–5.91	B 8.20
5.92–6.79	B 9.10
6.80–7.56	B 10.2
7.57–7.83	B 11.5
7.84–8.09	B 12.8
8.10–9.51	B 14.0
9.52–10.1	B 15.5
10.2–11.3	B 17.5
11.4–13.1	B 19.5
13.2–14.9	B 22.0
15.0–16.1	B 25.0
16.2–17.8	B 28.0
17.9–19.1	B 32.0
19.2–22.4	B 36.0
22.5–23.5	B 40.0
23.6–26.0	B 45.0



**Table 67**

Motor FLC (A)	Thermal Unit Number
3.79-4.14	B 5.50
4.15-4.44	B 6.25
4.45-5.22	B 6.90
5.23-5.29	B 7.70
5.30-5.99	B 8.20
6.00-6.82	B 9.10
6.83-7.68	B 10.2
7.69-7.92	B 11.5
7.93-8.47	B 12.8
8.48-9.99	B 14.0
10.0-10.8	B 15.5
10.9-12.3	B 17.5
12.4-12.9	B 19.5
13.0-15.1	B 22.0
15.2-16.7	B 25.0
16.8-17.9	B 28.0
18.0-20.1	B 32.0
20.2-23.8	B 36.0
23.9-25.8	B 40.0
25.9-28.3	B 45.0
28.4-29.6	B 50.0
29.7-32.1	B 56.0
32.2-34.4	B 62.0
34.5-38.3	B 70.0
38.4-39.9	B 79.0
40.0-45.0	B 88.0

**Table 70**

Motor FLC (A)	Thermal Unit Number
4.24-4.62	AR 8.5
4.63-5.05	AR 9.3
5.06-5.54	AR 10.2
5.55-6.13	AR 11.2
6.14-6.44	AR 12.4
6.45-7.48	AR 13.6
7.49-8.55	AR 15.4
8.56-9.74	AR 17.6
9.75-11.1	AR 20.5
11.2-12.7	AR 23.0
12.8-14.4	AR 27.0
14.5-16.4	AR 30.0
16.5-18.9	AR 35.0
19.0-21.6	AR 40.0
21.7-23.3	AR 44.0
23.4-24.9	AR 47.0
25.0-26.9	AR 51.0
27.0-29.1	AR 55.0
29.2-31.3	AR 60.0
31.4-33.5	AR 66.0
33.6-36.9	AR 72.0
37.0-39.1	AR 79.0
39.2-40.9	AR 86.0
41.0-45.0	AR 94.0

**Table 71**

Motor FLC (A)	Thermal Unit Number
3.98-4.53	AR 8.5
4.54-5.03	AR 9.3
5.04-5.46	AR 10.2
5.47-6.01	AR 11.2
6.02-6.31	AR 12.4
6.32-7.19	AR 13.6
7.20-8.29	AR 15.4
8.30-9.49	AR 17.6
9.50-11.0	AR 20.5
11.1-12.6	AR 23.0
12.7-14.3	AR 27.0
14.4-16.5	AR 30.0
16.6-19.2	AR 35.0
19.3-21.9	AR 40.0
22.0-23.8	AR 44.0
23.9-25.5	AR 47.0
25.6-27.7	AR 51.0
27.8-30.1	AR 55.0
30.2-32.5	AR 60.0
32.6-34.8	AR 66.0
34.9-38.5	AR 72.0
38.6-41.5	AR 79.0
41.6-45.0	AR 86.0

**Table 68**

Motor FLC (A)	Thermal Unit Number
14.9-16.1	CC 20.9
16.2-17.3	CC 22.8
17.4-19.5	CC 24.6
19.6-20.7	CC 26.3
20.8-22.4	CC 28.8
22.5-23.9	CC 31.0
24.0-25.8	CC 33.3
25.9-27.6	CC 36.4
27.7-29.7	CC 39.6
29.8-31.8	CC 42.7
31.9-34.2	CC 46.6
34.3-37.0	CC 50.1
37.1-39.6	CC 54.5
39.7-42.5	CC 59.4
42.6-45.0	CC 64.3
45.1-48.6	CC 68.5
48.7-51.2	CC 74.6
51.3-56.0	CC 81.5
56.1-60.1	CC 87.7
60.2-64.3	CC 94.0
64.4-68.9	CC 103.0
69.0-71.9	CC 112.0
72.0-75.4	CC 121.0
75.5-78.9	CC 132.0
79.0-82.1	CC 143.0
82.2-86.0	CC 156.0

**Table 69**

Motor FLC (A)		Thermal Unit Number
1 or 2 T. U.	3 T. U.	
3.46-3.90	3.38-3.65	B 4.85
3.91-4.44	3.66-4.07	B 5.50
4.45-4.91	4.08-4.36	B 6.25
4.92-5.51	4.37-5.19	B 6.90
5.52-5.84	5.20-5.59	B 7.70
5.85-6.54	5.60-5.98	B 8.20
6.55-7.33	5.99-6.78	B 9.10
7.34-8.31	6.79-7.91	B 10.2
8.32-9.22	7.92-9.12	B 11.5
9.23-10.0	9.13-10.0	B 12.8
10.1-11.2	10.1-10.7	B 14.0
11.3-12.5	10.8-12.0	B 15.5
12.6-14.2	12.1-13.5	B 17.5
14.3-16.1	13.6-14.6	B 19.5
16.2-18.4	14.7-16.7	B 22.0
18.5-20.5	16.8-18.9	B 25.0
20.6-23.2	19.0-21.6	B 28.0
23.3-26.6	21.7-24.1	B 32.0
26.7-29.6	24.2-27.6	B 36.0
29.7-33.5	27.7-31.2	B 40.0
33.6-37.2	31.3-35.5	B 45.0
37.3-41.5	35.6-37.8	B 50.0
41.6-45.0	37.9-41.5	B 56.0
—	41.6-45.0	B 62.0

**Table 72**

Motor FLC (A)		Thermal Unit Number
1 T. U.	3 T. U.	
2.38-2.62	2.38-2.62	FB 3.33
2.63-2.94	2.63-2.94	FB 3.71
2.95-3.31	2.95-3.31	FB 4.1
3.32-3.43	3.32-3.43	FB 4.5
3.44-3.81	3.44-3.81	FB 4.75
3.82-4.32	3.82-4.32	FB 5.3
4.33-4.75	4.33-4.75	FB 6.1
4.76-5.38	4.76-5.38	FB 6.75
5.39-5.75	5.39-5.75	FB 7.45
5.76-5.97	5.76-5.97	FB 7.8
5.98-6.30	5.98-6.30	FB 8.21
6.31-6.55	6.31-6.55	FB 8.6
6.56-6.89	6.56-6.89	FB 9.0
6.90-7.14	6.90-7.14	FB 9.5
7.15-7.36	7.15-7.36	FB 10.0
7.37-8.30	7.37-8.30	FB 10.6
8.31-8.59	8.31-8.59	FB 11.2
8.60-9.01	8.60-9.01	FB 12.1
9.02-9.68	9.02-9.68	FB 13.1
9.69-9.99	9.69-9.99	FB 13.9
10.0-10.9	10.0-10.9	FB 14.8
11.0-11.3	11.0-11.3	FB 15.6
11.4-12.4	11.4-12.0	FB 16.4
12.5-12.9	—	FB 17.6
13.0-14.0	—	FB 18.4
14.1-14.5	—	FB 19.4
14.6-15.7	—	FB 21.1
15.8-16.6	—	FB 22.6
16.7-18.0	—	FB 23.6
Following Selections for Size M-1 & M-1P Only.		
—	11.4-12.4	FB 16.4
—	12.5-12.9	FB 17.6
—	13.0-14.0	FB 18.4
—	14.1-14.5	FB 19.4
—	14.6-15.7	FB 21.1
—	15.8-16.6	FB 22.6
16.7-17.6	16.7-17.6	FB 23.6
17.7-18.3	17.7-18.3	FB 24.8
18.4-19.4	18.4-19.4	FB 26.7
19.5-20.5	19.5-20.5	FB 28.3
20.6-21.7	20.6-21.7	FB 29.6
21.8-22.8	21.8-22.8	FB 30.5
22.9-24.3	22.9-24.3	FB 32.5
24.4-24.7	24.4-24.7	FB 34.1
24.8-25.4	24.8-25.4	FB 35.0
25.5-26.0	25.5-26.0	FB 36.6
Following Selections for Size M-1P Only.		
26.1-27.7	—	FB 38.3
27.8-28.9	—	FB 40.2
29.0-30.6	—	FB 42.0
30.7-32.5	—	FB 44.0
32.6-36.0	—	FB 46.0

**Table 73**

Motor FLC (A)		Thermal Unit Number
1 T. U.	3 T. U.	
2.42-2.67	2.42-2.67	FB 3.33
2.68-3.00	2.68-3.00	FB 3.71
3.01-3.36	3.01-3.36	FB 4.1
3.37-3.53	3.37-3.53	FB 4.5
3.54-3.91	3.54-3.91	FB 4.75
3.92-4.41	3.92-4.41	FB 5.3
4.42-4.83	4.42-4.83	FB 6.1
4.84-5.45	4.84-5.45	FB 6.75
5.46-5.89	5.46-5.89	FB 7.45
5.90-6.04	5.90-6.04	FB 7.8
6.05-6.55	6.05-6.55	FB 8.21
6.56-6.72	6.56-6.72	FB 8.6
6.73-7.00	6.73-7.00	FB 9.0
7.01-7.39	7.01-7.39	FB 9.5
7.40-7.54	7.40-7.54	FB 10.0
7.55-8.41	7.55-8.41	FB 10.6
8.42-8.91	8.42-8.91	FB 11.2
8.92-9.16	8.92-9.16	FB 12.1
9.17-10.0	9.17-10.0	FB 13.1
10.1-10.3	10.1-10.3	FB 13.9
10.4-11.4	10.4-11.4	FB 14.8
11.5-11.8	11.5-11.8	FB 15.6
11.9-12.9	11.9-12.9	FB 16.4
13.0-13.4	—	FB 17.6
13.5-14.2	—	FB 18.4
14.3-15.1	—	FB 19.4
15.2-18.0	—	FB 21.1
Following Selections for Size M-1 & M-1P Only.		
—	11.5-11.8	FB 15.6
—	11.9-12.9	FB 16.4
—	13.0-13.4	FB 17.6
—	13.5-14.2	FB 18.4
—	14.3-15.1	FB 19.4
15.2-17.1	15.2-17.1	FB 21.1
17.2-18.0	17.2-18.0	FB 22.6
18.1-18.9	18.1-18.9	FB 23.6
19.0-19.7	19.0-19.7	FB 24.8
19.8-20.9	19.8-20.9	FB 26.7
21.0-21.9	21.0-21.9	FB 28.3
22.0-23.1	22.0-23.1	FB 29.6
23.2-24.3	23.2-24.3	FB 30.5
24.4-25.5	24.4-25.5	FB 32.6
25.6-26.0	25.6-26.0	FB 34.1
Following Selections for Size M-1P Only.		
26.1-26.8	—	FB 35.0
26.9-27.3	—	FB 36.6
27.4-28.7	—	FB 38.3
28.8-30.2	—	FB 40.2
30.3-31.9	—	FB 42.0
32.0-36.0	—	FB 44.0

Table 74

Motor FLC (A)		Thermal Unit Number
1 T. U.	3 T. U.	
2.23–2.47	2.23–2.47	FB 3.33
2.48–2.76	2.48–2.76	FB 3.71
2.77–3.04	2.77–3.04	FB 4.1
3.05–3.24	3.05–3.24	FB 4.5
3.25–3.61	3.25–3.61	FB 4.75
3.62–4.19	3.62–4.19	FB 5.3
4.20–4.62	4.20–4.62	FB 6.1
4.63–5.14	4.63–5.14	FB 6.75
5.15–5.39	5.15–5.39	FB 7.45
5.40–5.69	5.40–5.69	FB 7.8
5.70–5.99	5.70–5.99	FB 8.21
6.00–6.29	6.00–6.29	FB 8.6
6.30–6.64	6.30–6.64	FB 9.0
6.65–6.99	6.65–6.99	FB 9.5
7.00–7.39	7.00–7.39	FB 10.0
7.40–7.79	7.40–7.79	FB 10.6
7.80–7.94	7.80–7.94	FB 11.2
7.95–8.49	7.95–8.49	FB 12.1
8.50–8.99	8.50–8.99	FB 13.1
9.00–9.59	9.00–9.59	FB 13.9
9.60–10.1	9.60–10.1	FB 14.8
10.2–10.6	10.2–10.6	FB 15.6
10.7–11.3	10.7–11.3	FB 16.4
11.4–12.0	11.4–12.0	FB 17.6
12.0–12.6	—	FB 18.4
12.7–13.8	—	FB 19.4
13.9–14.7	—	FB 21.1
14.8–15.2	—	FB 22.6
15.3–16.2	—	FB 23.6
16.3–18.0	—	FB 24.8
Following Selections for Size 1 Only.		
—	12.0–12.6	FB 18.4
—	12.7–13.8	FB 19.4
13.9–14.7	13.9–14.7	FB 21.1
14.8–15.2	14.8–15.2	FB 22.6
15.3–16.2	15.3–16.2	FB 23.6
16.3–17.4	16.3–17.4	FB 24.8
17.5–18.5	17.5–18.5	FB 26.7
18.6–19.6	18.6–19.6	FB 28.3
19.7–20.2	19.7–20.2	FB 29.6
20.3–21.5	20.3–21.5	FB 30.5
21.6–22.4	21.6–22.4	FB 32.6
22.5–23.2	22.5–23.2	FB 34.1
23.3–24.3	23.3–24.3	FB 35.0
24.4–25.4	24.4–25.4	FB 36.6
25.5–26.0	25.5–26.0	FB 38.3

Table 75

Motor FLC (A)	Thermal Unit Number
3.22–3.57	FB 4.75
3.58–4.14	FB 5.3
4.15–4.56	FB 6.1
4.57–5.10	FB 6.75
5.11–5.39	FB 7.45
5.40–5.64	FB 7.8
5.65–5.96	FB 8.21
5.97–6.25	FB 8.6
6.26–6.58	FB 9.0
6.59–6.91	FB 9.5
6.92–7.41	FB 10.0
7.42–7.82	FB 10.6
7.83–8.32	FB 11.2
8.33–8.89	FB 12.1
8.90–9.47	FB 13.1
9.48–10.0	FB 13.9
10.1–10.5	FB 14.8
10.6–11.1	FB 15.6
11.2–12.0	FB 16.4
12.1–12.7	FB 17.6
12.8–13.5	FB 18.4
13.6–14.6	FB 19.4
14.7–15.7	FB 21.1
15.8–16.5	FB 22.6
16.6–17.4	FB 23.6
17.5–18.8	FB 24.8
18.9–20.1	FB 26.7
20.2–21.0	FB 28.3
21.1–21.6	FB 29.6
21.7–23.3	FB 30.5
23.4–24.3	FB 32.6
24.4–25.0	FB 34.1
25.1–26.3	FB 35.0
26.4–27.6	FB 36.6
27.7–29.1	FB 38.3
29.2–30.4	FB 40.2
30.5–32.0	FB 42.0
32.1–33.3	FB 44.0
33.4–35.2	FB 46.0
35.3–37.0	FB 48.0
37.1–38.5	FB 50.5
38.6–40.7	FB 52.5
40.8–45.0	FB 55.5

Table 76

Motor FLC (A)	Thermal Unit Number
19.9–20.8	FB 26.7
20.9–22.2	FB 28.3
22.3–23.8	FB 29.6
23.9–25.4	FB 30.5
25.5–27.2	FB 32.6
27.3–29.2	FB 34.1
29.3–31.9	FB 38.3
32.0–33.8	FB 40.2
33.9–36.1	FB 42.0
36.2–38.5	FB 44.0
38.6–41.4	FB 46.0
41.5–43.6	FB 48.0
43.7–45.9	FB 50.5
46.0–48.2	FB 52.5
48.3–50.7	FB 55.5
50.8–53.9	FB 58.0
54.0–56.7	FB 60.0
56.8–60.8	FB 63.5
60.9–67.6	FB 69.0
67.7–73.6	FB 77.0
73.7–82.9	FB 84.0
83.0–86.0	FB 92.0

Table 77

Motor FLC (A)	Thermal Unit Number
48.0–50.9	FB 50.5
51.0–53.7	FB 52.5
53.8–57.0	FB 55.5
57.1–60.4	FB 58.0
60.5–64.0	FB 60.0
64.1–71.9	FB 63.5
72.0–83.9	FB 69.0
84.0–93.1	FB 77.0
93.2–104	FB 84.0
105–109	FB 92.0
110–123	FB 105.0
124–133	FB 115.0

Table 78

Motor FLC (A)		Thermal Unit Number
1 T. U.	2 T. U. or 3 T. U.	
2.26–2.51	2.26–2.51	FB 3.33
2.52–2.82	2.52–2.82	FB 3.71
2.83–3.09	2.83–3.09	FB 4.1
3.10–3.30	3.10–3.30	FB 4.5
3.31–3.69	3.31–3.69	FB 4.75
3.70–4.27	3.70–4.27	FB 5.3
4.28–4.72	4.28–4.72	FB 6.1
4.73–5.25	4.73–5.25	FB 6.75
5.26–5.53	5.26–5.53	FB 7.45
5.54–5.81	5.54–5.81	FB 7.8
5.82–6.14	5.82–6.14	FB 8.21
6.15–6.44	6.15–6.44	FB 8.6
6.45–6.81	6.45–6.81	FB 9.0
6.82–7.19	6.82–7.19	FB 9.5
7.20–7.59	7.20–7.59	FB 10.0
7.60–7.99	7.60–7.99	FB 10.6
8.00–8.17	8.00–8.17	FB 11.2
8.18–8.74	8.18–8.74	FB 12.1
8.75–9.31	8.75–9.31	FB 13.1
9.32–9.94	9.32–9.94	FB 13.9
9.95–10.5	9.95–10.5	FB 14.8
10.6–11.1	10.6–11.1	FB 15.6
11.2–11.9	11.2–12.0	FB 16.4
12.0–12.4	—	FB 17.6
12.5–13.1	—	FB 18.4
13.2–14.3	—	FB 19.4
14.4–15.3	—	FB 21.1
15.4–15.9	—	FB 22.6
16.0–18.0	—	FB 23.6
Following Selections for Size 1 Only.		
—	12.0–12.4	FB 17.6
—	12.5–13.1	FB 18.4
—	13.2–14.3	FB 19.4
14.4–15.3	14.4–15.3	FB 21.1
15.4–15.9	15.4–15.9	FB 22.6
16.0–16.9	16.0–16.9	FB 23.6
17.0–18.3	17.0–18.3	FB 24.8
18.4–19.5	18.4–19.5	FB 26.7
19.6–20.5	19.6–20.5	FB 28.3
20.6–21.1	20.6–21.1	FB 29.6
21.2–22.6	21.2–22.6	FB 30.5
22.7–23.7	22.7–23.7	FB 32.6
23.8–24.3	23.8–24.3	FB 34.1
24.4–26.0	24.4–26.0	FB 35.0

Table 79

Motor FLC (A)	Thermal Unit Number
3.31–3.67	FB 4.75
3.68–4.23	FB 5.3
4.24–4.69	FB 6.1
4.70–5.21	FB 6.75
5.22–5.49	FB 7.45
5.50–5.74	FB 7.8
5.75–6.07	FB 8.21
6.08–6.35	FB 8.6
6.36–6.71	FB 9.0
6.72–7.03	FB 9.5
7.04–7.53	FB 10.0
7.54–7.91	FB 10.6
7.92–8.53	FB 11.2
8.54–9.14	FB 12.1
9.15–9.71	FB 13.1
9.72–10.2	FB 13.9
10.3–10.8	FB 14.8
10.9–11.5	FB 15.6
11.6–12.3	FB 16.4
12.4–13.0	FB 17.6
13.1–13.9	FB 18.4
14.0–15.1	FB 19.4
15.2–16.1	FB 21.1
16.2–16.9	FB 22.6
17.0–17.9	FB 23.6
18.0–19.4	FB 24.8
19.5–20.7	FB 26.7
20.8–21.7	FB 28.3
21.8–22.3	FB 29.6
22.4–23.9	FB 30.5
24.0–25.1	FB 32.6
25.2–25.9	FB 34.1
26.0–27.1	FB 35.0
27.2–28.6	FB 36.6
28.7–30.1	FB 38.3
30.2–31.7	FB 40.2
31.8–33.3	FB 42.0
33.4–34.5	FB 44.0
34.6–36.5	FB 46.0
36.6–38.5	FB 48.0
38.6–39.9	FB 50.5
40.0–45.0	FB 52.5

Table 80

Motor FLC (A)	Thermal Unit Number
20.5–21.7	FB 26.7
21.8–23.1	FB 28.3
23.2–24.8	FB 29.6
24.9–26.5	FB 30.5
26.6–28.4	FB 32.6
28.5–30.4	FB 34.1
30.5–32.8	FB 38.3
32.9–34.9	FB 40.2
35.0–37.3	FB 42.0
37.4–39.8	FB 44.0
39.9–42.5	FB 46.0
42.6–45.8	FB 48.0
45.9–48.2	FB 50.5
48.3–50.6	FB 52.5
50.7–53.1	FB 55.5
53.2–56.5	FB 58.0
56.6–59.4	FB 60.0
59.5–63.4	FB 63.5
63.5–71.0	FB 69.0
71.1–78.8	FB 77.0
78.9–86.0	FB 84.0

Table 81

Motor FLC (A)	Thermal Unit Number
52.2–55.6	FB 50.5
55.7–58.8	FB 52.5
58.9–62.5	FB 55.5
62.6–66.0	FB 58.0
66.1–70.1	FB 60.0
70.2–78.6	FB 63.5
78.7–92.0	FB 69.0
92.1–102	FB 77.0
103–114	FB 84.0
115–123	FB 92.0
124–133	FB 105.0

Table 82

Motor FLC (A)	Thermal Unit Number
2.36–2.63	FB 3.33
2.64–2.96	FB 3.71
2.97–3.23	FB 4.1
3.24–3.45	FB 4.5
3.46–3.86	FB 4.75
3.87–4.44	FB 5.3
4.45–4.95	FB 6.1
4.96–5.47	FB 6.75
5.48–5.75	FB 7.45
5.76–6.09	FB 7.8
6.10–6.42	FB 8.21
6.43–6.75	FB 8.6
6.76–7.16	FB 9.0
7.17–7.43	FB 9.5
7.44–7.99	FB 10.0
8.00–8.46	FB 10.6
8.47–9.19	FB 11.2
9.20–9.74	FB 12.1
9.75–10.3	FB 13.1
10.4–10.8	FB 13.9
10.9–11.6	FB 14.8
11.7–12.2	FB 15.6
12.3–13.1	FB 16.4
13.2–13.7	FB 17.6
13.8–14.3	FB 18.4
14.4–15.5	FB 19.4
15.6–16.7	FB 21.1
16.8–17.6	FB 22.6
17.7–18.6	FB 23.6
18.7–19.9	FB 24.8
20.0–21.1	FB 26.7
21.2–25.0	FB 28.3

Table 83

Motor FLC (A)	Thermal Unit Number
2.30–2.60	FB 3.33
2.61–2.87	FB 3.71
2.88–3.17	FB 4.1
3.18–3.37	FB 4.5
3.38–3.76	FB 4.75
3.77–4.29	FB 5.3
4.30–4.75	FB 6.1
4.76–5.26	FB 6.75
5.27–5.51	FB 7.45
5.52–5.78	FB 7.8
5.79–6.13	FB 8.21
6.14–6.41	FB 8.6
6.42–6.75	FB 9.0
6.76–7.09	FB 9.5
7.10–7.57	FB 10.0
7.58–7.90	FB 10.6
7.91–8.81	FB 11.2
8.82–9.47	FB 12.1
9.48–10.0	FB 13.1
10.1–10.7	FB 13.9
10.8–11.4	FB 14.8
11.5–12.1	FB 15.6
12.2–13.1	FB 16.4
13.2–13.7	FB 17.6
13.8–14.7	FB 18.4
14.8–16.0	FB 19.4
16.1–17.3	FB 21.1
17.4–18.2	FB 22.6
18.3–19.4	FB 23.6
19.5–20.7	FB 24.8
20.8–22.3	FB 26.7
22.4–23.5	FB 28.3
23.6–24.2	FB 29.6
24.3–26.0	FB 30.5

16 NEMA DEFINITE PURPOSE TYPE CONTACTORS AND STARTERS

**Table 84**

Motor FLC (A)	Thermal Unit Number
3.38-3.78	FB 4.75
3.79-4.37	FB 5.3
4.38-4.87	FB 6.1
4.88-5.51	FB 6.75
5.52-5.73	FB 7.45
5.74-6.09	FB 7.8
6.10-6.44	FB 8.21
6.45-6.75	FB 8.6
6.76-7.15	FB 9.0
7.16-7.57	FB 9.5
7.58-8.07	FB 10.0
8.08-8.47	FB 10.6
8.48-8.81	FB 11.2
8.82-9.46	FB 12.1
9.47-10.1	FB 13.1
10.2-10.8	FB 13.9
10.9-11.4	FB 14.8
11.5-12.1	FB 15.6
12.2-13.1	FB 16.4
13.2-13.8	FB 17.6
13.9-14.8	FB 18.4
14.9-16.1	FB 19.4
16.2-17.4	FB 21.1
17.5-18.3	FB 22.6
18.4-19.5	FB 23.6
19.6-21.0	FB 24.8
21.1-22.5	FB 26.7
22.6-23.7	FB 28.3
23.8-24.5	FB 29.6
24.6-26.4	FB 30.5
26.5-27.7	FB 32.6
27.8-28.7	FB 34.1
28.8-29.9	FB 35.0
30.0-31.8	FB 36.6
31.9-33.5	FB 38.3
33.6-35.1	FB 40.2
35.2-37.1	FB 42.0
37.2-38.8	FB 44.0
38.9-41.1	FB 46.0
41.2-45.0	FB 48.0

**Table 85**

Motor FLC (A)	Thermal Unit Number
42.9-45.4	FB 44.0
45.6-48.3	FB 46.0
48.4-52.4	FB 48.0
52.5-55.9	FB 50.5
56.0-59.8	FB 52.5
59.9-63.8	FB 55.5
63.9-67.9	FB 58.0
68.0-72.6	FB 60.0
72.7-83.2	FB 63.5
83.3-94.7	FB 69.0
94.8-105	FB 77.0
106-116	FB 84.0
117-121	FB 92.0
122-133	FB 105.0

**Table 86**

Motor FLC (A)	Thermal Unit Number
0.43-0.44	A .49
0.45-0.47	A .54
0.48-0.53	A .59
0.54-0.61	A .65
0.62-0.65	A .71
0.66-0.71	A .78
0.72-0.79	A .86
0.80-0.86	A .95
0.87-0.96	A 1.02
0.97-1.04	A 1.16
1.05-1.17	A 1.25
1.18-1.31	A 1.39
1.32-1.38	A 1.54
1.39-1.47	A 1.63
1.48-1.57	A 1.75
1.58-1.65	A 1.86
1.66-1.77	A 1.99
1.78-1.93	A 2.15
1.94-2.18	A 2.31
2.19-2.46	A 2.57
2.47-2.68	A 2.81
2.69-2.87	A 3.61
2.88-3.07	A 3.95
3.08-3.59	A 4.32
3.60-3.79	A 4.79
3.80-4.27	A 5.30
4.28-4.59	A 5.78
4.60-4.90	A 6.20
4.91-5.06	A 6.99
5.07-5.44	A 7.65
5.45-6.24	A 8.38
6.25-7.21	A 9.25
7.22-7.69	A 9.85
7.70-8.24	A 11.0
8.25-8.81	A 11.9
8.82-9.32	A 132
9.33-9.99	A 14.1
10.0-10.5	A 14.8
10.6-11.5	A 16.2
11.6-12.2	A 17.9
12.3-13.3	A 21.3
13.4-15.8	A 25.2
15.9-18.4	A 27.1
18.5-20.5	A 29.5
20.6-21.5	A 31.9
21.6-23.9	A 33.8
24.0-26.8	A 35.9
26.9-28.2	A 40.0
28.3-29.8	A 42.3
29.9-32.0	A 44.7

**Table 87**

Motor FLC (A)	Thermal Unit Number
0.40-0.41	A .49
0.42-0.45	A .54
0.46-0.51	A .59
0.52-0.58	A .65
0.59-0.63	A .71
0.64-0.68	A .78
0.69-0.76	A .86
0.77-0.83	A .95
0.84-0.93	A 1.02
0.94-1.01	A 1.16
1.02-1.14	A 1.25
1.15-1.28	A 1.39
1.29-1.34	A 1.54
1.35-1.44	A 1.63
1.45-1.55	A 1.75
1.56-1.61	A 1.86
1.62-1.71	A 1.99
1.72-1.85	A 2.15
1.86-2.04	A 2.31
2.05-2.38	A 2.57
2.39-2.60	A 2.81
2.61-2.77	A 3.61
2.78-2.98	A 3.95
2.99-3.40	A 4.32
3.41-3.64	A 4.79
3.65-4.08	A 5.30
4.09-4.38	A 5.78
4.39-4.68	A 6.20
4.69-4.79	A 6.99
4.80-5.11	A 7.65
5.12-5.84	A 8.38
5.85-6.70	A 9.25
6.71-7.18	A 9.85
7.19-7.70	A 11.0
7.71-8.14	A 11.9
8.15-8.56	A 13.2
8.57-9.15	A 14.1
9.16-9.80	A 14.8
9.81-10.6	A 16.2
10.7-11.0	A 17.9

**Table 88**

Motor FLC (A)	Thermal Unit Number
0.39-0.40	A .49
0.41-0.44	A .54
0.45-0.49	A .59
0.50-0.57	A .65
0.58-0.61	A .71
0.62-0.66	A .78
0.67-0.73	A .86
0.74-0.80	A .95
0.81-0.90	A 1.02
0.91-0.97	A 1.16
0.98-1.09	A 1.25
1.10-1.23	A 1.39
1.24-1.57	A 1.86
1.58-1.66	A 1.99
1.67-1.79	A 2.15
1.80-1.99	A 2.31
2.00-2.31	A 2.57
2.32-2.50	A 2.81
2.51-2.66	A 3.61
2.67-2.85	A 3.95
2.86-3.26	A 4.32
3.27-3.49	A 4.79
3.50-3.92	A 5.30
3.93-4.20	A 5.78
4.21-4.49	A 6.20
4.50-4.64	A 6.99
4.65-4.94	A 7.65
4.95-5.62	A 8.38
5.63-6.39	A 9.25
6.40-6.82	A 9.85
6.83-7.27	A 11.0
7.28-7.71	A 11.9
7.72-8.13	A 13.2
8.14-8.64	A 14.1
8.65-9.15	A 14.8
9.16-9.97	A 16.2
9.98-11.0	A 17.9

**Table 89**

Motor FLC (A)	Thermal Unit Number
10.0-11.1	B 17.5
11.2-12.0	B 19.5
12.1-13.3	B 22.0
13.4-15.1	B 25.0
15.2-17.1	B 28.0
17.2-18.6	B 32.0
18.7-21.4	B 36.0
21.5-25.7	B 40.0
25.8-28.2	B 45.0
28.3-29.7	B 50.0
29.8-31.2	B 56.0
31.3-32.1	B 62.0
32.2-35.7	B 70.0
35.8-40.7	B 79.0
40.8-48.0	B 88.0

**Table 90**

Motor FLC (A)	Thermal Unit Number
4.88-5.13	A 7.65
5.14-5.85	A 8.38
5.86-6.67	A 9.25
6.68-7.09	A 9.85
7.10-7.62	A 11.0
7.63-8.04	A 11.9
8.05-8.46	A 13.2
8.47-9.11	A 14.1
9.12-9.69	A 14.8
9.70-10.5	A 16.2
10.6-11.6	A 17.9
11.7-12.3	A 21.3
12.4-14.6	A 25.2
14.7-16.8	A 27.1
16.9-17.9	A 29.5
18.0-18.7	A 31.9
18.8-19.8	A 33.8
19.9-21.4	A 35.9
21.5-22.8	A 40.0
22.9-23.8	A 42.3
23.9-26.0	A 44.7

**Table 91**

Motor FLC (A)	Thermal Unit Number
4.80-5.07	A 7.65
5.08-5.73	A 8.38
5.74-6.48	A 9.25
6.49-6.90	A 9.85
6.91-7.25	A 11.0
7.26-7.81	A 11.9
7.82-8.29	A 13.2
8.30-8.81	A 14.1
8.82-9.40	A 14.8
9.41-10.0	A 16.2
10.1-11.1	A 17.9
11.2-11.7	A 21.3
11.8-13.7	A 25.2
13.8-16.0	A 27.1
16.1-16.9	A 29.5
17.0-17.7	A 31.9
17.8-18.7	A 33.8
18.8-20.2	A 35.9
20.3-21.4	A 40.0
21.5-22.5	A 42.3
22.6-23.8	A 44.7
23.9-26.0	A 48.0

**Table 92**

Motor FLC (A)	Thermal Unit Number
10.5-11.7	B 17.5
11.8-12.5	B 19.5
12.6-14.0	B 22.0
14.1-15.8	B 25.0
15.9-18.0	B 28.0
18.1-19.6	B 32.0
19.7-23.5	B 36.0
23.6-27.4	B 40.0
27.5-30.5	B 45.0
30.6-32.2	B 50.0
32.3-34.0	B 56.0
34.1-35.2	B 62.0
35.3-39.5	B 70.0
39.6-43.9	B 79.0
44.0-48.0	B 88.0

**Table 93**

Motor FLC (A)	Thermal Unit Number
23.8-25.2	CC 36.4
25.3-26.8	CC 39.6
26.9-28.4	CC 42.7
28.5-30.3	CC 46.6
30.4-32.1	CC 50.1
32.2-34.2	CC 54.5
34.3-36.3	CC 59.4
36.4-40.2	CC 64.3
40.3-43.1	CC 68.5
43.2-45.9	CC 74.6
46.0-49.2	CC 81.5
49.3-51.6	CC 87.7
51.7-54.2	CC 94.0
54.3-55.7	CC 103.0
55.8-60.3	CC 112.0
60.4-63.5	CC 121.0
63.6-67.1	CC 132.0
67.2-70.3	CC 143.0
70.4-74.1	CC 156.0
74.2-78.3	CC 167.0
78.4-83.3	CC 180.0
83.4-86.0	CC 196.0

Table 94

Motor FLC (A)	Thermal Unit Number
25.8–27.5	CC 36.4
27.6–29.4	CC 39.6
29.5–31.4	CC 42.7
31.5–33.2	CC 46.6
33.3–36.2	CC 50.1
36.3–38.8	CC 54.5
38.9–41.6	CC 59.4
41.7–44.7	CC 64.3
44.8–47.9	CC 68.5
48.0–50.9	CC 74.6
51.0–54.4	CC 81.5
54.5–57.4	CC 87.7
57.5–60.6	CC 94.0
60.7–63.9	CC 103.0
64.0–68.4	CC 112.0
68.5–73.4	CC 121.0
73.5–78.7	CC 132.0
78.8–83.8	CC 143.0
83.9–86.0	CC 156.0

Table 95

Motor FLC (A)	Thermal Unit Number
42.5–44.7	CC 64.3
44.8–47.9	CC 68.5
48.0–51.2	CC 74.6
51.3–55.2	CC 81.5
55.3–59.4	CC 87.7
59.5–63.8	CC 94.0
63.9–68.8	CC 103.0
68.9–73.8	CC 112.0
73.9–77.7	CC 121.0
77.8–82.5	CC 132.0
82.6–86.6	CC 143.0
86.7–91.9	CC 156.0
92.0–97.2	CC 167.0
97.3–104	CC 180.0
105–114	CC 196.0
115–123	CC 208.0
124–150	CC 219.0

Table 96

Motor FLC (A)	Thermal Unit Number
49.5–52.0	CC 64.3
52.1–54.8	CC 68.5
54.9–58.7	CC 74.6
58.8–63.3	CC 81.5
63.4–68.3	CC 87.7
68.4–73.6	CC 94.0
73.7–79.4	CC 103.0
79.5–85.5	CC 112.0
85.6–89.7	CC 121.0
89.8–94.8	CC 132.0
94.9–99.9	CC 143.0
100–105	CC 156.0
106–111	CC 167.0
112–126	CC 180.0
127–131	CC 196.0
132–141	CC 208.0
142–150	CC 219.0

Table 97

Motor FLC (A)	Thermal Unit Number
0.57–0.60	AR 1.05
0.61–0.66	AR 1.15
0.67–0.73	AR 1.26
0.74–0.81	AR 1.39
0.82–0.90	AR 1.53
0.91–1.05	AR 1.68
1.06–1.15	AR 1.85
1.16–1.25	AR 2.04
1.26–1.35	AR 2.24
1.36–1.47	AR 2.46
1.48–1.58	AR 2.71
1.59–1.74	AR 2.98
1.75–1.94	AR 3.28
1.95–2.20	AR 3.62
2.21–2.47	AR 3.98
2.48–2.76	AR 4.37
2.77–3.07	AR 4.80
3.08–3.45	AR 5.3
3.46–3.81	AR 5.8
3.82–4.20	AR 6.4
4.21–4.65	AR 7.0
4.66–5.29	AR 7.7
5.30–5.84	AR 8.5
5.85–6.27	AR 9.3
6.28–6.97	AR 10.2
6.98–7.59	AR 11.2
7.60–7.89	AR 12.4
7.90–8.95	AR 13.6
8.96–10.3	AR 15.4
10.4–11.7	AR 17.6
11.8–13.3	AR 20.5
13.4–15.2	AR 23.0
15.3–17.2	AR 27.0
17.3–19.7	AR 30.0
19.8–22.4	AR 35.0
22.5–26.0	AR 40.0

Table 98

Motor FLC (A)	Thermal Unit Number
4.24–4.62	AR 8.5
4.63–5.05	AR 9.3
5.06–5.54	AR 10.2
5.55–6.13	AR 11.2
6.14–6.44	AR 12.4
6.45–7.48	AR 13.6
7.49–8.55	AR 15.4
8.56–9.74	AR 17.6
9.75–11.1	AR 20.5
11.2–12.7	AR 23.0
12.8–14.4	AR 27.0
14.5–16.4	AR 30.0
16.5–18.9	AR 35.0
19.0–21.6	AR 40.0
21.7–23.3	AR 44.0
23.4–24.9	AR 47.0
25.0–26.9	AR 51.0
27.0–29.1	AR 55.0
29.2–31.3	AR 60.0
31.4–33.5	AR 66.0
33.6–36.9	AR 72.0
37.0–39.1	AR 79.0
39.2–40.9	AR 86.0
41.0–45.0	AR 94.0

Table 99

Motor FLC (A)	Thermal Unit Number
27.1–30.0	E 67
30.1–33.2	E 69
33.3–35.7	E 70
35.8–39.4	E 71
39.5–43.4	E 72
43.5–46.9	E 73
47.0–51.5	E 74
51.6–57.0	E 76
57.1–62.8	E 77
62.9–69.1	E 78
69.2–75.0	E 79
75.1–83.3	E 80

Table 100

Motor FLC (A)	Thermal Unit Number
50–55.9	E 88
56–60.9	E 89
61–65.9	E 91
66–69.9	E 92
70–75.9	E 93
76–81.9	E 94
82–86.9	E 96
87–92.9	E 97
93–97.9	E 98
98–107.9	E 99
108–113.9	E 101
114–125.9	E 102

Table 101

Motor FLC (A)	Thermal Unit Number
105–116	AR 3.28
117–132	AR 3.62
133–148	AR 3.98
149–165	AR 4.37
166–184	AR 4.80
185–207	AR 5.3
208–229	AR 5.8
230–266	AR 6.4

Table 102

Motor FLC (A)	Thermal Unit Number
146–169	AR 1.68
170–185	AR 1.85
186–201	AR 2.04
202–217	AR 2.24
218–236	AR 2.46
237–253	AR 2.71
254–279	AR 2.98
280–311	AR 3.28
312–353	AR 3.62
354–396	AR 3.98
397–442	AR 4.37
443–492	AR 4.80
493–520	AR 5.3

**Table 103**

Motor FLC (A)	Thermal Unit Number
40.8-45.5	B 1.03
45.6-49.9	B 1.16
51.0-57.5	B 1.30
57.6-65.9	B 1.45
66.0-73.1	B 1.67
73.2-81.5	B 1.88
81.6-92.3	B 2.10
92.4-104	B 2.40
105-114	B 2.65
115-128	B 3.00
129-140	B 3.30
141-160	B 3.70
161-193	B 4.15
194-209	B 4.85
210-232	B 5.50
233-248	B 6.25
249-266	B 6.90

**Table 104**

Motor FLC (A)	Thermal Unit No.	Max. Fuse Rating (A)	
		600 V Max.	250 V Max.
0.65-0.73	B 1.03	1.50	
0.74-0.82	B 1.16	1.50	
0.93-0.91	B 1.30	1.60	
0.92-1.04	B 1.45	2.00	
1.05-1.16	B 1.67	2.00	
1.17-1.26	B 1.88	2.25	
1.27-1.47	B 2.10	2.60	
1.48-1.65	B 2.40	3.00	
1.66-1.89	B 2.65	3.50	
1.90-2.17	B 3.00	4.00	
2.18-2.49	B 3.30	4.50	
2.50-2.79	B 3.70	5.00	
2.80-3.13	B 4.15	5.60	
3.14-3.36	B 4.85	6.00	
3.37-3.69	B 5.50	7.00	
3.70-3.92	B 6.25	7.00	
3.93-4.42	B 6.90	8.00	
4.43-4.99	B 7.70	9.00	
5.00-5.27	B 8.20	10.0	
5.28-5.84	B 9.10	12.0	
5.85-6.61	B 10.2	12.0	
6.62-7.42	B 11.5	15.0	
7.43-8.02	B 12.8	15.0	
8.03-8.53	B 14.0	15.0	
8.54-9.34	B 15.5	17.5	
9.35-10.1	B 17.5	17.5	
10.2-10.8	B 19.5	20.0	
10.9-12.0	B 22.0	25.0	
12.1-13.0	B 25.0	25.0	
13.1-15.5	B 28.0	30.0	
15.6-17.9	B 32.0	30	30
18.0-21.4	B 36.0	30	40
21.5-25.1	B 40.0	30	40
25.2-27.0	B 45.0	30	40

**Table 105**

Motor FLC (A)	Thermal Unit Number
105-112	CC 74.6
113-122	CC 81.5
123-131	CC 87.7
132-142	CC 94.0
143-153	CC 103.0
154-157	CC 112.0
158-169	CC 121.0
170-181	CC 132.0
182-195	CC 143.0
196-209	CC 156.0
210-227	CC 167.0
228-247	CC 180.0
248-266	CC 196.0

**Table 109**

Motor FLC (A)	Thermal Unit Number
0.56-0.63	B 0.81
0.64-0.68	B 0.92
0.69-0.77	B 1.03
0.78-0.85	B 1.16
0.86-0.97	B 1.30
0.98-1.09	B 1.45
1.10-1.21	B 1.67
1.22-1.33	B 1.88
1.34-1.53	B 2.10
1.54-1.73	B 2.40
1.74-1.89	B 2.65
1.90-2.17	B 3.00
2.18-2.53	B 3.30
2.54-2.87	B 3.70
2.88-3.22	B 4.15
3.23-3.49	B 4.85
3.50-3.85	B 5.50
3.86-4.11	B 6.25
4.12-4.70	B 6.90
4.71-5.21	B 7.70
5.22-5.53	B 8.20
5.54-6.17	B 9.10
6.18-7.02	B 10.2
7.03-7.92	B 11.5
7.93-8.61	B 12.8
8.62-9.17	B 14.0
9.18-10.0	B 15.5
10.1-11.0	B 17.5
11.1-11.8	B 19.5
11.9-13.5	B 22.0
13.6-15.3	B 25.0
15.4-17.4	B 28.0
17.5-19.4	B 32.0
19.5-22.2	B 36.0
22.3-25.1	B 40.0
25.2-27.0	B 45.0

**Table 110**

Motor FLC (A)	Thermal Unit Number
3.94-4.45	B 6.90
4.46-4.97	B 7.70
4.98-5.28	B 8.20
5.29-5.97	B 9.10
5.98-6.89	B 10.2
6.90-7.92	B 11.5
7.93-8.71	B 12.8
8.72-9.27	B 14.0
9.28-10.2	B 15.5
10.3-11.4	B 17.5
11.5-12.3	B 19.5
12.4-13.9	B 22.0
14.0-15.8	B 25.0
15.9-17.9	B 28.0
18.0-19.9	B 32.0
20.0-22.8	B 36.0
22.9-25.4	B 40.0
25.5-28.9	B 45.0
29.0-30.8	B 50.0
30.9-32.5	B 56.0
32.6-34.9	B 62.0
35.0-39.7	B 70.0
39.8-44.7	B 79.0

**Table 111**

Motor FLC (A)	Thermal Unit Number
14.0–14.9	CC 20.9
15.0–16.2	CC 22.8
16.3–17.2	CC 24.6
17.3–18.7	CC 26.3
18.8–20.2	CC 28.8
20.3–21.7	CC 31.0
21.8–23.3	CC 33.3
23.4–25.2	CC 36.4
25.3–27.1	CC 39.6
27.2–29.4	CC 42.7
29.5–31.6	CC 46.6
31.7–34.0	CC 50.1
34.1–36.8	CC 54.5
36.9–39.8	CC 59.4
39.9–42.3	CC 64.3
42.4–45.7	CC 68.5
45.8–49.2	CC 74.6
49.3–52.8	CC 81.5
52.9–56.8	CC 87.7
56.9–61.2	CC 94.0
61.3–66.1	CC 103.0
66.2–71.2	CC 112.0
71.3–76.7	CC 121.0
76.8–82.9	CC 132.0
83.0–90.0	CC 143.0

**Table 112**

Motor FLC (A)	Thermal Unit Number
44.0–46.8	CC 64.3
46.9–50.6	CC 68.5
50.7–54.5	CC 74.6
54.6–58.4	CC 81.5
58.5–62.9	CC 87.7
63.0–67.7	CC 94.0
67.8–72.9	CC 103.0
73.0–78.1	CC 112.0
78.2–83.9	CC 121.0
84.0–91.1	CC 132.0
91.2–97.5	CC 143.0
97.6–104	CC 156.0
105–113	CC 167.0
114–133	CC 180.0

**Table 113**

Motor FLC (A)	Thermal Unit Number
88.2–95.1	DD 112.0
95.2–101	DD 121.0
102–111	DD 128.0
112–119	DD 140.0
120–131	DD 150.0
132–149	DD 160.0
150–170	DD 185.0
171–180	DD 220.0
181–197	DD 240.0
198–204	DD 250.0
205–213	DD 265.0
214–237	DD 280.0
238–243	DD 300.0
244–266	DD 320.0

**Table 114**

Motor FLC (A)	Thermal Unit Number
133–148	B 1.30
149–174	B 1.45
175–195	B 1.67
196–219	B 1.88
220–239	B 2.10
240–271	B 2.40
272–308	B 2.65
309–348	B 3.00
349–397	B 3.30
398–429	B 3.70
430–495	B 4.15
496–520	B 4.85

**Table 115**

Motor FLC (A)	Thermal Unit Number
176–190	DD 112.0
191–203	DD 121.0
203–223	DD 128.0
224–239	DD 140.0
240–253	DD 150.0
254–299	DD 160.0
300–341	DD 185.0
342–361	DD 220.0
362–395	DD 240.0
396–409	DD 250.0
410–427	DD 265.0
428–475	DD 289.0
476–487	DD 300.0
488–532	DD 320.0

**Table 116**

Motor FLC (A)	Thermal Unit Number
81.6–91.1	B 1.03
91.2–101	B 1.16
102–115	B 1.30
116–131	B 1.45
132–146	B 1.67
147–163	B 1.88
164–184	B 2.10
185–209	B 2.40
210–229	B 2.65
230–257	B 3.00
258–281	B 3.30
282–321	B 3.70
322–387	B 4.15
388–419	B 4.35
420–465	B 5.60
466–497	B 6.25
498–532	B 6.90

**Table 117**

Motor FLC (A)	Thermal Unit Number
100-111.9	E 88
112-121.9	E 89
122-131.9	E 91
132-139.9	E 92
140-151.9	E 93
152-163.9	E 94
164-173.9	E 96
174-185.9	E 97
186-195.9	E 98
196-215.9	E 99
216-227.9	E 101
228-251.9	E 102

**Table 118**

Motor FLC (A)	Thermal Unit Number
210-233	AR 3.28
234-265	AR 3.62
266-297	AR 3.98
298-331	AR 4.37
332-369	AR 4.8
370-415	AR 5.3
416-459	AR 5.8
460-532	AR 6.4

**Table 121**

Motor FLC (A)	Thermal Unit Number
1.14-1.21	AR 1.05
1.22-1.33	AR 1.15
1.34-1.47	AR 1.26
1.48-1.63	AR 1.39
1.64-1.81	AR 1.53
1.82-2.11	AR 1.68
2.12-2.31	AR 1.85
2.32-2.51	AR 2.04
2.52-2.71	AR 2.24
2.72-2.95	AR 2.46
2.96-3.17	AR 2.71
3.18-3.49	AR 2.98
3.50-3.89	AR 3.28
3.90-4.41	AR 3.62
4.42-4.95	AR 3.98
4.96-5.53	AR 4.37
5.54-6.15	AR 4.80
6.16-6.91	AR 5.3
6.92-7.63	AR 5.8
7.64-8.41	AR 6.4
8.42-9.31	AR 7.0
9.32-10.59	AR 7.7
10.60-11.69	AR 8.5
11.70-12.55	AR 9.3
12.56-13.95	AR 10.2
13.96-15.19	AR 11.2
15.20-15.79	AR 12.4
15.80-17.91	AR 13.6
17.92-20.7	AR 15.4
20.8-23.5	AR 17.6
23.6-26.7	AR 20.5
26.8-30.5	AR 23.0
30.6-34.5	AR 27.0
34.6-39.5	AR 30.0
39.6-44.9	AR 35.0
45.0-52.0	AR 40.0

**Table 122**

Motor FLC (A)	Thermal Unit Number
8.48-9.25	AR 8.5
9.26-10.11	AR 9.3
10.12-11.09	AR 10.2
11.10-12.27	AR 11.2
12.28-12.89	AR 12.4
12.90-14.97	AR 13.6
14.98-17.11	AR 15.4
17.12-19.49	AR 17.6
19.50-22.3	AR 20.5
22.4-22.5	AR 23.0
22.6-28.9	AR 27.0
29.0-32.9	AR 30.0
33.0-37.9	AR 35.0
38.0-43.3	AR 40.0
43.4-46.7	AR 44.0
46.8-49.9	AR 47.0
50.0-53.9	AR 51.0
54.0-58.3	AR 55.0
58.4-62.7	AR 60.0
62.8-67.1	AR 66.0
67.2-73.8	AR 72.0
74.0-78.3	AR 79.0
78.4-81.9	AR 86.0
82.0-90.0	AR 94.0

**Table 123**

Motor FLC (A)	Thermal Unit Number
54.2-60.1	E 67
60.2-66.5	E 69
66.6-71.5	E 70
71.6-78.9	E 71
79.0-86.9	E 72
87.0-93.9	E 73
94.0-103.1	E 74
103.2-114.1	E 76
114.2-125.7	E 77
125.8-138.3	E 78
138.4-150.1	E 79
150.2-166.6	E 80

**Table 127**

Motor FLC (A)	Thermal Unit Number
1.12-1.27	B 0.81
1.28-1.37	B 0.92
1.38-1.55	B 1.03
1.56-1.71	B 1.16
1.72-1.95	B 1.30
1.96-2.19	B 1.45
2.20-2.43	B 1.67
2.44-2.67	B 1.88
2.68-3.07	B 2.10
3.08-3.47	B 2.40
3.48-3.79	B 2.65
3.80-4.35	B 3.00
4.36-5.07	B 3.30
5.08-5.75	B 3.70
5.76-6.45	B 4.15
6.46-6.99	B 4.85
7.00-7.71	B 5.50
7.72-8.23	B 6.25
8.24-9.41	B 6.90
9.42-10.43	B 7.70
10.44-11.07	B 8.20
11.08-12.35	B 9.10
12.36-14.05	B 10.2
14.06-15.85	B 11.5
15.86-17.23	B 12.8
17.24-18.35	B 14.0
18.36-20.1	B 15.5
20.2-22.1	B 17.5
22.2-23.7	B 19.5
23.8-27.1	B 22.0
27.2-30.7	B 25.0
30.8-34.9	B 28.0
35.0-38.9	B 32.0
39.0-44.5	B 36.0
44.6-50.3	B 40.0
50.4-54.0	B 45.0

**Table 128**

Motor FLC (A)	Thermal Unit Number
7.88–8.91	B 6.90
8.92–9.95	B 7.70
9.96–10.57	B 8.20
10.58–11.95	B 9.10
11.96–13.79	B 10.2
13.80–15.85	B 11.5
15.86–17.43	B 12.8
17.44–18.55	B 14.0
18.56–20.5	B 15.5
20.6–22.9	B 17.5
23.0–24.7	B 19.5
24.8–27.9	B 22.0
28.0–31.7	B 25.0
31.8–35.9	B 28.0
36.0–39.9	B 32.0
40.0–45.7	B 36.0
45.8–50.9	B 40.0
51.0–61.7	B 45.0
61.8–65.1	B 50.0
65.2–69.9	B 56.0
70.0–79.5	B 62.0
79.6–89.4	B 70.0

**Table 129**

Motor FLC (A)	Thermal Unit Number
28.0–29.9	CC 20.9
30.0–32.5	CC 22.8
32.6–34.5	CC 24.6
34.6–37.5	CC 26.3
37.6–40.5	CC 28.8
40.6–43.5	CC 31.0
43.6–46.7	CC 33.3
46.8–50.5	CC 36.4
50.6–54.3	CC 39.6
54.4–58.9	CC 42.7
59.0–63.3	CC 46.6
63.4–68.1	CC 50.1
68.2–73.7	CC 54.5
73.8–79.7	CC 59.4
79.8–84.7	CC 64.5
84.8–91.5	CC 68.5
91.6–98.5	CC 74.6
98.6–105.7	CC 81.5
105.8–113.7	CC 87.7
113.8–122.5	CC 94.0
122.6–132.3	CC 103.0
132.4–142.5	CC 112.0
142.6–153.5	CC 121.0
153.6–165.9	CC 132.0
166.0–180.0	CC 143.0

**Table 133**

Motor FLC (A)	Thermal Unit Number
4.60–5.23	B 6.90
5.24–5.86	B 7.70
5.87–6.25	B 8.20
6.26–7.09	B 9.10
7.10–8.25	B 10.2
8.26–9.49	B 11.5
9.50–10.3	B 12.8
10.4–11.2	B 14.0
11.3–12.5	B 15.5
12.6–13.8	B 17.5
13.9–15.0	B 19.5
15.1–16.9	B 22.0
17.0–19.1	B 25.0
19.2–22.0	B 28.0
22.1–24.4	B 32.0
24.5–28.0	B 36.0
28.1–31.8	B 40.0
31.9–36.0	B 45.0
36.1–38.5	B 50.0
38.6–41.2	B 56.0
41.3–44.4	B 62.0
44.5–50.3	B 70.0
50.4–56.9	B 79.0
57.0–59.0	B 88.0

**Table 134**

Motor FLC (A)	Thermal Unit Number
4.30–4.98	B 6.90
4.99–5.57	B 7.70
5.58–5.94	B 8.20
5.95–6.71	B 9.10
6.72–7.79	B 10.2
7.80–8.93	B 11.5
8.94–9.77	B 12.8
9.78–10.5	B 14.0
10.6–11.7	B 15.5
11.8–13.0	B 17.5
13.1–14.0	B 19.5
14.1–15.0	B 22.0
15.1–17.2	B 25.0
17.3–19.9	B 28.0
20.0–22.3	B 32.0
22.4–26.0	B 36.0
26.1–29.8	B 40.0
29.9–34.0	B 45.0
34.1–36.7	B 50.0
36.8–39.5	B 56.0
39.6–42.1	B 62.0
42.2–46.6	B 70.0
46.7–51.5	B 79.0
51.6–54.0	B 88.0



**Table 135**

Motor FLC (A)		Thermal Unit Number
1 T. U.	3 T. U.	
0.77–0.88	0.85–0.95	B 1.30
0.89–1.02	0.96–1.09	B 1.45
1.03–1.19	1.10–1.21	B 1.67
1.20–1.37	1.22–1.35	B 1.88
1.38–1.62	1.36–1.56	B 2.10
1.63–1.90	1.57–1.76	B 2.40
1.91–2.12	1.77–1.94	B 2.65
2.13–2.46	1.95–2.22	B 3.00
2.47–2.83	2.23–2.57	B 3.30
2.84–3.19	2.58–2.87	B 3.70
3.20–3.61	2.88–3.21	B 4.15
3.62–3.89	3.22–3.50	B 4.85
3.90–4.32	3.51–3.79	B 5.50
4.33–4.57	3.80–4.04	B 6.25
4.58–5.19	4.05–4.53	B 6.90
5.20–5.79	4.54–5.03	B 7.70
5.80–6.16	5.04–5.36	B 8.20
6.17–6.94	5.37–5.97	B 9.10
6.95–7.99	5.98–6.89	B 10.2
7.80–8.99	6.90–7.79	B 11.5
9.00–9.98	7.80–8.53	B 12.8
9.99–10.6	8.54–9.09	B 14.0
10.7–11.6	9.10–9.99	B 15.5
11.7–13.1	10.0–10.9	B 17.5
13.2–14.2	11.0–11.7	B 19.5
14.3–15.4	11.8–13.4	B 22.0
15.5–17.6	13.5–15.4	B 25.0
17.7–20.0	15.5–17.9	B 28.0
–	18.0–20.0	B 32.0
For Type DPSG12 & DPSG13, 20 Ampere Starter. Select Thermal Units from above.		
20.1–22.7	18.0–20.2	B 32.0
22.8–25.0	20.3–23.2	B 36.0
–	23.3–25.0	B 40.0
For Type DPSG22 & DPSG23, 25 Ampere Starter. Select any of the Thermal Units from above.		
22.8–26.1	–	B 36.0
26.2–29.6	23.3–25.8	B 40.0
29.7–30.0	25.9–28.6	B 45.0
–	28.7–29.7	B 50.0
–	29.8–30.0	B 56.0
For Type DPSG32 & DPSG33, 30 Ampere Starter. Select any of the Thermal Units from above.		

**Table 136**

Motor FLC (A)		Thermal Unit Number
1 T. U.	3 T. U.	
0.98–1.09	0.88–0.98	B 1.30
1.10–1.24	0.99–1.13	B 1.45
1.25–1.41	1.14–1.26	B 1.67
1.42–1.59	1.27–1.38	B 1.88
1.60–1.81	1.39–1.62	B 2.10
1.82–2.04	1.63–1.82	B 2.40
2.05–2.19	1.83–2.04	B 2.65
2.20–2.52	2.05–2.36	B 3.00
2.53–2.90	2.37–2.72	B 3.30
2.91–3.29	2.73–3.07	B 3.70
3.30–3.69	3.08–3.44	B 4.15
3.70–3.99	3.45–3.69	B 4.85
4.00–4.42	3.70–4.11	B 5.50
4.43–4.69	4.12–4.34	B 6.25
4.70–5.37	4.35–4.89	B 6.90
5.38–5.94	4.90–5.44	B 7.70
5.95–6.34	5.45–5.80	B 8.20
6.35–7.05	5.81–6.47	B 9.10
7.06–8.14	6.48–7.45	B 10.2
8.15–9.39	7.46–8.49	B 11.5
9.40–10.3	8.50–9.29	B 12.8
10.4–11.1	9.30–9.99	B 14.0
11.2–12.2	10.0–10.8	B 15.5
12.3–13.5	10.9–12.1	B 17.5
13.6–14.7	12.2–13.1	B 19.5
14.8–16.1	13.2–14.6	B 22.0
16.2–18.3	14.7–16.4	B 25.0
18.4–20.0	16.5–18.9	B 28.0
–	19.0–20.0	B 32.0
For Type DPSO12 & DPSO13, 20 Ampere Starter. Select Thermal Units from above.		
18.4–20.9	–	B 28.0
21.0–23.6	19.0–20.9	B 32.0
23.7–25.0	21.0–24.1	B 36.0
–	24.2–25.0	B 40.0
For Type DPSO22 & DPSO23, 25 Ampere Starter. Select any of the Thermal Units from above.		
23.7–27.2	–	B 36.0
27.3–30.0	24.2–27.2	B 40.0
–	27.3–30.0	B 45.0
For Type DPSO32 & DPSO33, 30 Ampere Starter. Select any of the Thermal Units from above.		

**Table 137**

Motor FLC (A)	Thermal Unit Number
50–55.9	E 88
56–60.9	E 89
61–65.9	E 91
66–69.9	E 92
70–75.9	E 93
76–81.9	E 94
82–86.9	E 96
87–92.9	E 97
93–97.9	E 98
98–107	E 99
108–113	E 101
114–125	E 102
126–138	E 103
139–153	E 104
154–163	E 106
164–180	E 107

**Table 138**

Motor FLC (A)	Thermal Unit Number
22.6–25.5	E 62
25.6–26.4	E 65
26.5–28.9	E 66
29.0–31.9	E 67
32.0–34.5	E 69
34.6–36.9	E 70
37.0–40.6	E 71
40.7–44.0	E 72
44.1–47.4	E 73
47.5–53.1	E 74
53.2–58.3	E 76
58.4–63.5	E 77
63.6–69.9	E 78
70.0–77.1	E 79
77.2–83.3	E 80
83.4–86.9	E 86
87.0–92.9	E 97
93.0–100	E 98

**Table 139**

Motor FLC (A)	Thermal Unit Number
13.7–15.2	E 57
15.3–16.8	E 59
16.9–18.7	E 60
18.8–20.0	E 61
20.1–22.5	E 62
22.6–23.3	E 65
23.4–25.5	E 66
25.6–27.9	E 67
28.0–30.8	E 69
30.9–33.2	E 70
33.3–36.6	E 71
36.7–38.9	E 72
39.0–43.1	E 73
43.2–47.4	E 74
47.5–50.0	E 76
50.1–55.2	E 77
55.3–60.0	E 78

Table 140

Motor FLC (A)	Thermal Unit Number
0.34-0.36	E 3
0.37-0.40	E 4
0.41-0.43	E 5
0.44-0.47	E 6
0.48-0.51	E 7
0.52-0.56	E 8
0.57-0.62	E 9
0.63-0.67	E 11
0.68-0.73	E 12
0.74-0.77	E 13
0.78-0.84	E 14
0.85-0.93	E 16
0.94-1.00	E 17
1.01-1.08	E 18
1.09-1.15	E 19
1.16-1.27	E 23
1.28-1.45	E 24
1.46-1.61	E 26
1.62-1.81	E 27
1.82-2.00	E 28
2.01-2.12	E 29
2.13-2.29	E 31
2.30-2.43	E 32
2.44-2.66	E 33
2.67-2.98	E 34
2.99-3.16	E 36
3.17-3.39	E 37
3.40-3.69	E 38
3.70-4.00	E 39
4.01-4.48	E 41
4.49-5.00	E 42
5.01-5.44	E 44
5.45-5.99	E 46
6.00-6.60	E 47
6.61-6.96	E 48
6.97-7.26	E 49
7.27-7.99	E 50
8.00-8.89	E 51
8.90-9.74	E 52
9.75-10.50	E 53
10.6-11.5	E 54
11.6-12.3	E 55
12.4-13.4	E 56
13.5-15.2	E 57
15.3-17.2	E 60
17.3-18.4	E 61
18.5-20.6	E 62
20.7-21.3	E 65
21.4-23.4	E 66
23.5-24.0	E 67

Table 141

Motor FLC (A)	Thermal Unit No.	Max. Fuse Rating (A)	
12.2-14.4	E56	25	
14.5-17.8	E57	30	
17.9-18.8	E60	40	
18.9-21.4	E61	40	
21.5-23.0	E62	45	
23.1-25.7	E65	50	
25.8-28.0	E66	50	
28.1-31.0	E67	60	
31.1-32.7	E69	60	
32.8-35.5	E70	70	
35.6-38.2	E71	80	
38.3-43.3	E73	80	
43.4-46.9	E73A	90	
47.0-50.1	E74	100	
		<b>600 V Max.</b>	<b>250 V Max.</b>
50.2-54.0	E76	100	110
54.1-58.0	E77	100	110
58.1-60.0	E78	100	125
60.1-67.0	E79	100	125
67.1-70.5	E80	100	125
70.6-75.9	E94	100	125
76.0-82.0	E96	100	125
82.1-86.0	E97	100	125

Table 142

Motor FLC (A)	Thermal Unit No.	Max. Fuse Rating (A)	
11.7-13.5	E56	25	
13.6-16.7	E57	30	
16.8-18.1	E60	35	
18.2-20.0	E61	40	
20.1-21.9	E62	40	
22.0-24.2	E65	45	
24.3-26.2	E66	50	
26.3-29.2	E67	50	
29.3-32.0	E69	60	
32.1-34.3	E70	70	
34.4-36.2	E71	70	
36.3-39.9	E73	80	
40.0-43.8	E73A	90	
43.9-46.2	E74	90	
46.3-50.0	E76	100	
		<b>600 V Max.</b>	<b>250 V Max.</b>
50.1-53.9	E77	100	110
54.0-56.0	E78	100	110
56.1-61.0	E79	100	125
61.1-65.9	E80	100	125
66.0-72.0	E94	100	125
72.1-75.9	E96	100	125
76.0-79.9	E98	100	125
80.0-86.0	E101	100	125

Table 143

Motor FLC (A)	Thermal Unit No.	Max. Fuse Rating (A)
18.9-20.0	E60	40
20.1-22.8	E61	45
22.9-24.7	E62	50
24.8-26.9	E65	50
27.0-29.2	E66	60
29.3-32.8	E67	60
32.9-34.9	E69	70
35.0-37.5	E70	70
37.6-39.6	E72	80
39.7-46.1	E73	80
46.2-49.9	E73A	100
50.0-56.3	E74	110
56.4-61.0	E76	125
61.1-64.0	E77	125
64.1-66.0	E78	125
66.1-72.4	E79	125
72.5-78.2	E80	150
78.3-83.9	E94	175
84.0-86.0	E96	175
86.1-92.8	E97	175
92.9-97.9	E98	200
98.0-105.0	E101	200
105.1-117.0	E102	200
117.1-133.0	E103	200

**Table 144**

Motor FLC (A)	Thermal Unit No.	Max. Fuse Rating (A)
18.2-19.1	E60	40
19.2-22.1	E61	40
22.2-23.1	E62	45
23.2-25.7	E65	50
25.8-27.7	E66	50
27.8-31.3	E67	60
31.4-33.3	E69	70
33.4-35.9	E70	70
36.0-38.4	E71	80
38.5-44.2	E73	80
44.3-46.8	E73A	90
46.9-52.6	E74	100
52.7-56.0	E76	110
56.1-58.4	E77	125
58.5-61.9	E78	125
62.0-67.1	E79	125
67.2-72.3	E80	150
72.4-75.9	E94	150
76.0-85.6	E96	150
85.7-91.2	E98	175
91.3-100.0	E101	200
100.1-108.9	E102	200
109.0-119.9	E103	200
120.0-133.0	E104	200

**Table 145**

Motor FLC (A)		Thermal Unit Number
1 T.U.	3 T.U.	
1.00-1.11	0.91-1.02	B1.30
1.12-1.27	1.03-1.15	B1.45
1.28-1.36	1.16-1.27	B1.67
1.37-1.53	1.28-1.39	B1.88
1.54-1.78	1.40-1.61	B2.10
1.79-2.02	1.62-1.84	B2.40
2.03-2.20	1.85-2.03	B2.65
2.21-2.52	2.04-2.34	B3.00
2.53-2.94	2.35-2.69	B3.30
2.95-3.30	2.70-3.02	B3.70
3.31-3.70	3.03-3.39	B4.15
3.71-4.02	3.40-3.65	B4.85
4.03-4.46	3.66-4.04	B5.50
4.47-4.69	4.05-4.28	B6.25
4.70-5.37	4.29-4.85	B6.90
5.38-5.94	4.86-5.38	B7.70
5.95-6.34	5.39-5.71	B8.20
6.35-7.09	5.72-6.39	B9.10
7.10-8.46	6.40-7.53	B10.2
8.47-9.32	7.54-8.34	B11.5
9.33-10.2	8.35-9.14	B12.8
10.3-10.9	9.15-9.74	B14.0
11.0-12.1	9.75-10.7	B15.5
12.2-13.4	10.8-11.8	B17.5
13.5-14.2	11.9-12.2	B19.5
14.3-16.0	12.3-14.4	B22.0
16.1-18.1	14.5-16.4	B25.0
18.2-20.5	16.5-18.9	B28.0
20.6-23.5	19.0-21.3	B32.0
23.6-27.2	21.4-23.3	B36.0
27.3-30.8	23.4-27.9	B40.0
30.9-35.0	28.0-31.4	B45.0
35.1-37.2	31.5-32.5	B50.0
37.3-40.0	32.6-36.5	B56.0
—	36.6-40.0	B62.0

For Type DPSG42 & DPSG43, 40 Ampere Starter.  
Select any of the Thermal Units from above.

**Table 146**

Motor FLC (A)		Thermal Unit Number
1 T.U.	3 T.U.	
3.90-4.22	3.60-3.89	B5.50
4.23-4.49	3.90-4.15	B6.25
4.50-5.14	4.16-4.76	B6.90
5.15-5.78	4.77-5.30	B7.70
5.79-6.23	5.31-5.70	B8.20
6.24-7.03	5.71-6.46	B9.10
7.04-8.23	6.47-7.65	B10.2
8.24-9.31	7.66-8.55	B11.5
9.32-10.1	8.56-9.36	B12.8
10.2-10.7	9.37-9.9	B14.0
10.8-11.9	10.0-10.9	B15.5
12.0-13.1	11.0-12.0	B17.5
13.2-13.9	12.1-12.8	B19.5
14.0-15.9	12.9-14.2	B22.0
16.0-18.0	14.3-16.0	B25.0
18.1-20.8	16.1-18.5	B28.0
20.9-23.1	18.6-21.2	B32.0
23.2-26.9	21.3-24.9	B36.0
27.0-31.4	25.0-28.0	B40.0
31.5-36.0	28.1-31.7	B45.0
36.1-38.8	31.8-34.6	B50.0
38.9-41.7	34.7-37.4	B56.0
41.8-46.3	37.5-40.0	B62.0
46.4-50.0	40.1-46.4	B70.0
—	46.5-50.0	B79.0

For Type DPSG52 & DPSG53, 50 Ampere Starter.  
Select any of the Thermal Units from above.

**Table 147**

Motor FLC (A)		Thermal Unit Number
1 T.U.	3 T.U.	
1.04-1.14	0.93-1.04	B1.30
1.15-1.29	1.05-1.18	B1.45
1.30-1.43	1.19-1.33	B1.67
1.44-1.56	1.34-1.43	B1.88
1.57-1.79	1.44-1.67	B2.10
1.80-2.03	1.68-1.88	B2.40
2.04-2.26	1.89-2.09	B2.65
2.27-2.51	2.10-2.41	B3.00
2.52-3.03	2.42-2.79	B3.30
3.04-3.31	2.80-3.15	B3.70
3.32-3.73	3.16-3.54	B4.15
3.74-4.07	3.55-3.75	B4.85
4.08-4.49	3.76-4.22	B5.50
4.50-4.76	4.23-4.46	B5.25
4.77-5.44	4.47-5.09	B6.90
5.45-6.04	5.10-5.61	B7.70
6.05-6.46	5.62-5.99	B8.20
6.47-7.24	6.00-6.70	B9.10
7.25-8.64	6.71-8.19	B10.20
8.65-9.59	8.20-8.79	B11.5
9.60-10.5	8.80-9.66	B12.8
10.6-11.3	9.67-10.2	B14.0
11.4-12.6	10.3-11.4	B15.5
12.7-13.9	11.5-12.6	B17.5
14.0-14.9	12.7-13.5	B19.5
15.0-16.5	13.6-15.1	B22.0
16.6-18.9	15.2-17.2	B25.0
19.0-22.2	17.3-19.9	B28.0
22.3-24.6	20.0-22.5	B32.0
24.7-28.6	22.6-26.2	B36.0
28.7-32.4	26.3-29.9	B40.0
32.5-37.3	30.0-34.0	B45.0
37.4-39.5	34.1-36.2	B50.0
39.6-40.0	36.3-38.7	B56.0
—	38.8-40.0	B62.0

For Type DPSO42 & DPSO43, 40 Ampere Starter.  
Select any of the Thermal Units from above.

Table 148

Motor FLC (A)		Thermal Unit Number
1 T.U.	3 T.U.	
4.14–4.45	3.70–4.09	B5.50
4.46–4.88	4.10–4.35	B6.25
4.89–5.44	4.36–5.07	B6.90
5.45–6.08	5.08–5.79	B7.70
6.09–6.42	5.80–6.27	B8.20
6.43–7.28	6.28–7.16	B9.10
7.29–8.42	7.17–8.58	B10.2
8.43–9.64	8.59–9.55	B11.5
9.65–10.4	9.56–10.2	B12.8
10.5–11.2	10.3–10.9	B14.0
11.3–12.3	11.0–11.9	B15.5
12.4–13.7	12.0–13.1	B17.5
13.8–14.8	13.2–14.0	B19.5
14.9–16.5	14.1–14.8	B22.0
16.6–18.7	14.9–17.0	B25.0
18.8–21.4	17.1–19.6	B28.0
21.5–24.3	19.7–22.1	B32.0
24.4–28.0	22.2–26.0	B36.0
28.1–33.3	26.1–29.4	B40.0
33.4–37.6	29.5–34.0	B45.0
37.7–41.1	34.1–36.4	B50.0
41.2–44.1	36.5–39.2	B56.0
44.2–47.8	39.3–42.4	B62.0
47.9–50.0	42.5–49.3	B70.0
—	49.4–50.0	B79.0

For Type DPSO52 & DPSO53, 50 Ampere Starter.  
Select any of the Thermal Units from above.

Table 149

Motor FLC (A)	Thermal Unit	Max. Fuse Rating (Amp)
14.6–15.3	CC20.9	30
15.4–16.2	CC22.8	30
16.3–18.0	CC24.6	35
18.1–19.5	CC26.3	40
19.6–21.0	CC28.8	40
21.1–23.0	CC31.0	45
23.1–24.2	CC33.3	50
24.3–26.0	CC36.4	50
26.1–27.9	CC39.6	50
28.0–29.9	CC42.7	60
30.0–32.6	CC46.6	60
32.7–34.6	CC50.1	70
34.7–36.5	CC54.5	70
36.6–40.0	CC59.4	80
40.1–42.4	CC64.3	90
42.5–48.1	CC68.5	90
48.2–48.6	CC74.6	100
48.7–52.6	CC81.5	100
52.7–56.5	CC87.7	100
56.6–59.5	CC94.0	100
59.6–64.4	CC103.0	100
64.5–67.4	CC112.0	100
67.5–69.6	CC121.0	100
69.7–74.2	CC132.0	100
74.3–78.0	CC143.0	100
78.1–82.1	CC156.0	100
82.2–87.5	CC167.0	110
87.6–90.0	CC180.0	110

For Type DPSG60 to 90 Ampere Starter.  
Select any of the Thermal Units from above.

Table 150

Motor FLC (A)	Thermal Unit	Max. Fuse Rating (Amp)
14.6–15.5	CC20.9	30
15.6–16.6	CC22.8	35
16.7–18.5	CC24.6	35
18.6–20.1	CC26.3	40
20.2–21.8	CC28.8	45
21.9–23.6	CC31.0	45
23.7–25.1	CC33.3	50
25.2–27.2	CC36.4	50
27.3–29.2	CC39.6	60
29.3–31.4	CC42.7	60
31.5–33.8	CC46.6	70
33.9–36.5	CC50.1	70
36.6–39.1	CC54.5	80
39.2–42.3	CC59.4	80
42.4–44.9	CC64.3	90
45.0–50.6	CC68.5	100
50.7–51.9	CC74.6	100
52.0–56.1	CC81.5	100
56.2–60.7	CC87.7	100
60.8–64.1	CC94.0	100
64.2–69.5	CC103.0	100
69.6–73.6	CC112.0	100
73.7–76.7	CC121.0	100
76.8–81.6	CC132.0	100
81.7–84.6	CC143.0	100
84.7–88.0	CC156.0	110
88.1–90.0	CC167.0	110

For Type DPSO60 to 90 Ampere Starter.  
Select any of the Thermal Units from above.