

Definite Purpose Contactors

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Vacuum Contactors



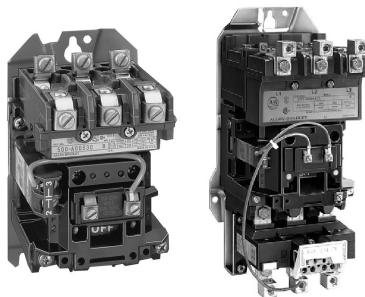
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NOTE: Information for this product line is available on the Industrial Controls Catalog CD-ROM (pub. no. A115-CA002A-EN-C) or on the Industrial Controls Catalog web site www.ab.com/catalogs.

- Bulletin 1104V Reversing Vacuum Contactors Web/CD

NOTE: Information for this product line is available on the Industrial Controls Catalog CD-ROM (pub. no. A115-CA002A-EN-C) or on the Industrial Controls Catalog web site www.ab.com/catalogs.

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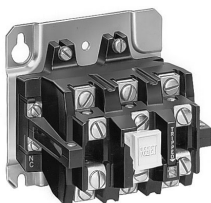
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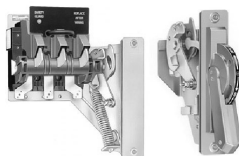


NOTE: Information for this product line is available on the Industrial Controls Catalog CD-ROM (pub. no. A115-CA002A-EN-C) or on the Industrial Controls Catalog web site www.ab.com/catalogs.



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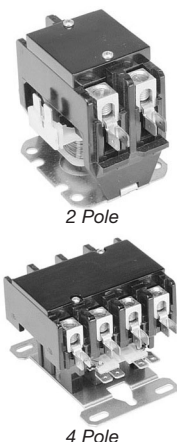
Fuse Blocks

- Bulletin 1491 Fuse Blocks Web/CD

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Definite Purpose Contactors

Product Overview/Catalog Number Explanation



Bulletin 400

- Available in the following ranges:
 1-Pole: 25...30 A, 600V, max
 2-Pole: 25...30 A, 600V max
 3-Pole: 25...90 A, 600V max
 4-Pole: 25 A, 600V max

The Allen-Bradley Bulletin 400 Definite Purpose Contactors are specifically designed for applications such as air-conditioning, refrigeration, resistive heating, data processing and food service equipment, pumps and compressors. Box lugs are standard on 40 A contactors and larger. A maximum of two auxiliary contact blocks (one on each side, four contacts max.) can be field installed.

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- Approximate Dimensions 1-13

Standards Compliance

- UL 508
- UL Recognized (File No. E3125, Guide No. NLDX2)
- CSA C22.2 No. 14

Certifications

- CSA Certified File No. LR1234
- EN/IEC 60947-4-1
- CE Marked
- SEMKO Certified

Your order must include: 1) complete cat. no. of selected contactor, and 2) auxiliary contacts, if required.

Catalog Number Explanation

400 - **DP40** - **N** **A** **3** -
a *b* *c* *d* *e*

a

Current Size	
Code	Size
DP25	25 A
DP30	30 A
DP40	40 A
DP50	50 A
DP60	60 A
DP75	75 A
DP90	90 A

c

Nominal Coil Voltage	
Code	50/60 Hz Frequency
J	24
D	120
A	208/240
F	277
B	480

d

Number of Poles	
Code	Description
1	1-Pole (Not available on 40 A)
2	2-Poles (Not available on 40 A)
3	3-Poles
4	4-Poles (Only available on 25 A)

b

Enclosure Code	
Suffix Code	Enclosure
N	No Enclosure/No exceptions

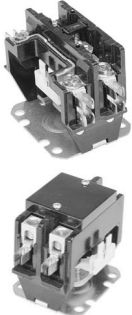



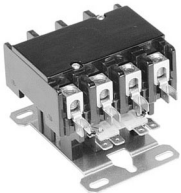






e

Modifications	
Code	Description
B	Box Lug With DP25 or DP30 in 2 nd Position.
D	400-DRA Factory Attached to DP (25...40A)
E	2-Poles With 3-Pole Base
K	6-32 Screw Coil Terminal with DP25, DP30 or DP40 in 2 nd Position
P	International Packaging
R	Ring Terminal For DP40 To DP90
S	10-32 SEMS Terminal
T	Coil Terminals Down
U	Coil Terminals On Load Side (T1/2, T2/4, T3/6) W/O Quick Connect Line/Load Terminals
X	W/O Quick Connect Terminals on Line and Load

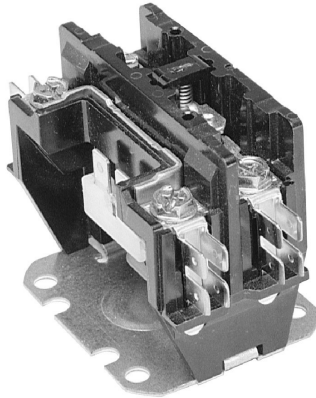
Definite Purpose Contactors

Product Selection

Contactors

	Number of Poles	FLA Rating	Arc Cover	Termination	Certifications	Page Number
	1 & 2	25...30	Optional	1/4 in QC, #10 – 32 Screw	 	1-7
	3	25...30	Standard	1/4 in QC, #10 – 32 Screw or Box Lug Option available to accept ring terminals	 	1-8
	3	40			Standard	Box Lug Option available to accept ring terminals
	4	25	Standard	1/4 in QC, #10 – 32 Screw	 	1-10

25...30 FLA 1 & 2 Pole



1 Pole with Shunt



2 Pole with optional Arc Cover

Full Load Amps	Number of Poles	Line Voltage	Locked Rotor Amps	Resistive Amps Rating	Maximum Horsepower		Cat. No.
					Voltage	Single Phase	
25*	1	240/277	150	30	120	1	400-DP25N \otimes 1
		480	50	30	240	2	
		600	40	30			
25*	2	240/277	150	35	120	2	400-DP25N \otimes 2
		480	125	35	240	3	
		600	100	35			
30*	1	240/277	150	40	120	1	400-DP30N \otimes 1
		480	75	40	240	2	
		600	50	40			
30*	2	240/277	150	40	120	2	400-DP30N \otimes 2
		480	125	40	240	3	
		600	100	40			

\otimes Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 400-DP25N \otimes 1** becomes **Cat. No. 400-DP25NJ1**. For other voltages, consult your local Allen-Bradley distributor.

Voltage Code	1 Pole Contactors					2 Pole Contactors				
	J	D	A	F	B	J	D	A	F	B
Nominal Coil Voltage	24	120	208/240	277	480	24	120	208/240	277	480

Coil Technical Data

Nominal Coil Voltage	1 Pole Contactors					2 Pole Contactors					
	24	120	208/240	277	480	24	120	208/240	277	480	
Maximum Pickup Volts	18	88	177	221	384	18	88	177	221	384	
Drop-Out Volts Range	6...15	20...70	40...140	50...165	150...270	6...15	20...70	40...140	50...165	150...270	
Nominal Inrush VA	50 Hz	22.5	22.5	22.5	22.5	22.5	37	37	37	37	37
	60 Hz	20	20	20	20	20	35	35	35	35	35
Nominal Sealed VA	50 Hz	7	7	7	7	7	8	8	8	8	8
	60 Hz	5.25	5.25	5.25	5.25	5.25	7	7	7	7	7
Nominal DC Resistance (Ohms)	16.5	420	1850	2650	3050	11	250	1000	1600	3050	

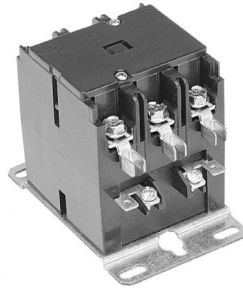
Arc Cover

Description	Cat. No.
1-Pole	400-C1
2-Pole	400-C2

* Coil Terminal screws are not available on 1- and 2-pole contactors.

Bulletin 400
Definite Purpose Contactors
 Product Selection, Continued

25...40 FLA 3 Pole



30 FLA 3 Pole with optional Coil Terminal Screws

Full Load Amps	Number of Poles	Line Voltage	Locked Rotor Amps	Resistive Amps Rating	Maximum Horsepower			Cat. No.
					Voltage	Single Phase	Three Phase	
25	3	240/277 480 600	150 125 100	35 35 35	110/120	2	—	400-DP25N [⊗] 3
					200/208	—	7.5	
					240/277	5	10	
					480	—	15	
					600	—	20	
30	3	240/277 480 600	180 150 120	40 40 40	110/120	2	—	400-DP30N [⊗] 3
					200/208	—	10	
					240/277	5	10	
					480	—	15	
					600	—	20	
40*	3	240/277 480 600	240 200 160	50 50 50	110/120	3	—	400-DP40N [⊗] 3
					200/208	—	10	
					240/277	7.5	10	
					480	—	20	
					600	—	25	

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 400-DP25N[⊗]3** becomes **Cat. No. 400-DP25NJ3**. For other voltages, consult your local Allen-Bradley Sales Office.

Voltage Code	J	D	A	F	B
Nominal Coil Voltage	24	120	208/240	277	480

Coil Technical Data

Nominal Coil Voltage		24	120	208/240	277	480
Maximum Pickup Volts		18	88	177	220	384
Drop-Out Volts Range		6...15	20...70	40...140	65...185	150...270
Nominal Inrush VA	50 Hz	60	60	60	60	65
	60 Hz	53	53	53	53	53
Nominal Sealed VA	50 Hz	6.0	6.0	6.0	6.0	6.0
	60 Hz	5	5	5	5	5
Nominal DC Resistance (Ohms)		7	180	720	950	3100

Auxiliary Contacts

Description	Cat. No.
1 NO/1 NC w/QCs†	400-AB1
SPDT w/QCs‡	400-A1
2 SPDT w/QCs†	400-A2

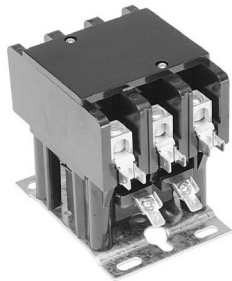
* To use ring terminals on 40 FLA and larger power connections add the suffix "R" to the catalog number. Example: **Cat. No. 400-DP40N[⊗]3** becomes **Cat. No. 400-DP40NR[⊗]3-R**.

† Contact rating single circuit NO or NC:

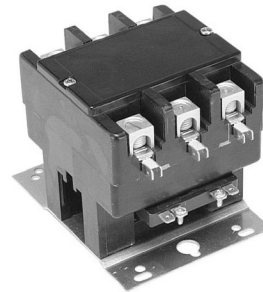
Voltage Rating		120	240	480	600
Amperes	Break	3.0	1.5	0.75	0.6
	Make	30	15	7.5	6
	Continuous	10	10	10	10

‡ Contact rating SPDT:
 10 A, 1/3 Hp, 125 or 250V AC;
 1/2 A, 125V DC;
 1/4 A, 250V DC;
 4 A 120V AC on Lamp Load

50...90 FLA 3 Pole



50 & 60 FLA 3 Pole



75 FLA 3 Pole

Full Load Amps	No. of Poles	Line Voltage	Locked Rotor Amps	Resistive Amps Rating	Maximum Horsepower			Cat. No.
					Voltage	Single Phase	Three Phase	
50*	3	240 480 600	300 250 200	65 65 65	110/120	3	—	400-DP50N \otimes 3
					200/208	7.5	15	
					220...240	10	15	
					480	—	25	
					600	—	25	
60*	3	240 480 600	360 300 240	75 75 75	110/120	5	—	400-DP60N \otimes 3
					200/208	7.5	25	
					220...240	10	25	
					480	—	30	
					600	—	30	
75*	3	240 480 600	450 375 300	93 93 93	110/120	5	—	400-DP75N \otimes 3
					200/208	10	20	
					240	15	25	
					480	—	40	
					600	—	40	
90*	3	240 480 600	540 450 360	120 120 120	110/120	7.5	—	400-DP90N \otimes 3
					200/208	15	25	
					240	20	30	
					480	—	50	
					600	—	50	

\otimes Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 400-DP50N \otimes 3** becomes **Cat. No. 400-DP50NJ3**. For other voltages, consult your local Allen-Bradley Sales Office.

Voltage Code	J	D	A	F	B
Nominal Coil Voltage	24	120	208/240	277	480

Coil Technical Data

Nominal Coil Voltage	24		120		208/240		277		480		
	50 & 60 Amp	75 & 90 Amp	50 & 60 Amp	75 & 90 Amp	50 & 60 Amp	75 & 90 Amp	50 & 60 Amp	75 & 90 Amp	50 & 60 Amp	75 & 90 Amp	
Maximum Pickup Volts	18	18	93	88	177	177	235	220	374	384	
Drop-Out Volts Range	6...15	6...15	20...70	20...70	40...135	40...110	50...180	65...185	120...286	150...270	
Nominal Inrush VA	50 Hz	140	285	140	285	140	285	140	285	140	285
	60 Hz	132	240	132	240	132	240	132	240	132	240
Nominal Sealed VA	50 Hz	20	42	20	42	20	42	20	42	20	42
	60 Hz	14	27	14	27	14	27	14	27	14	27
Nominal DC Resistance (Ohms)	2.4	0.63	45	15.6	180	63.5	280	84	852	255	

Auxiliary Contacts

Description	Cat. No.
1 NO/1 NC w/QCs†	400-AB
SPDT w/QCs‡	400-A

* To use ring terminals on 40 FLA and larger power connections add the suffix "R" to the catalog number. Example: **Cat. No. 400-DP60N \otimes 3** becomes **Cat. No. 400-DP60N \otimes 3-R**.

† Contact rating single circuit NO or NC:

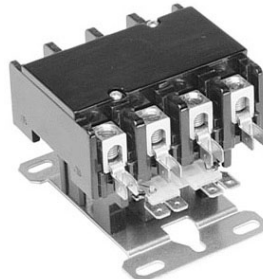
Voltage Rating		120	240	480	600
Amperes	Break	3.0	1.5	0.75	0.6
	Make	30	15	7.5	6
	Continuous	10	10	10	10

‡ Contact rating SPDT:
 10 A, 1/3 Hp, 125 or 250V AC;
 1/2 A, 125V DC;
 1/4 A, 250V DC;
 4 A 120V AC on Lamp Load

Definite Purpose Contactors

Product Selection, Continued

25 FLA 4 Pole



4 Pole

Full Load Amps	Number of Poles	Line Voltage	Locked Rotor Amps	Resistive Amps Rating	Maximum Horsepower			Cat. No.
					Voltage	Single Phase	Three Phase	
25	4	240/277 480 600	150 125 100	35 35 35	110/120	2	—	400-DP25N \otimes 4
					200/208	—	7.5	
					240/277	5	10	
					480	—	15	

\otimes Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 400-DP25N \otimes 4** becomes **Cat. No. 400-DP25NJ4**. For other voltages, consult your local Allen-Bradley distributor.

Voltage Code	J	D	A	F	B
Nominal Coil Voltage	24	120	208/240	277	480

Coil Technical Data

Nominal Coil Voltage	24	120	208/240	277	480
Maximum Pickup Volts	19.2	93	177	220	384
Drop-Out Volts Range	6...15	20...70	40...140	50...185	150...270
Nominal Inrush VA	50 Hz	68	68	68	48
	60 Hz	60	60	60	52
Nominal Sealed VA	50 Hz	14	14	14	11
	60 Hz	9	9	9.5	9
Nominal DC Resistance (Ohms)	5	148	520	750	2700

Auxiliary Contacts




Description	Cat. No.
1 NO/1 NC w/QCs*	400-AB4
SPDT w/QCs†	400-A4

* Contact rating single circuit NO or NC:

Voltage Rating		120	240	480	600
Amperes	Break	3.0	1.5	0.75	0.6
	Make	30	15	7.5	6
	Continuous	10	10	10	10

† Contact rating SPDT:
 10 A, 1/3 Hp, 125 or 250V AC;
 1/2 A, 125V DC;
 1/4 A, 250V DC;
 4 A 120V AC on Lamp Load

DP Accessories

	Description	For Use With	Cat. No.
	NEMA Type 1 Enclosure	25...50 A 1-...4-pole	598-BA755Z
	Mechanical Interlock Kit	25...40 A 3-pole	400-MK1
	DIN Rail Adapter	25...40 A 1-...4-pole	400-DRA

Definite Purpose Contactors

Specifications

25...30 FLA 1 & 2 Pole

Line and Load Terminals	#10 – 32 screw	
Wire Size AWG Min.-Max.	#10 – 32 Screw	16 – 8 (stranding must be split for #8 wire)
Mechanical Life	1 000 000 operations	
Electrical Life	250 000 operations	
Recommended Tightening Torque	#10 – 32 screw	25 lb•in.
Quick Connects	Coil Terminals	Dual 0.250 QC (2)
	Power Terminals	1 Pole: Quad 0.250 QC 2 Pole: Dual or Quad 0.250 QC
ARC Cover	Optional	
Insulation System	130 °C Class B	
Temperature Range	-40 °C...65 °C (-40 °F...150 °F)	
Mounting Position	Vertical	All Positions
	Horizontal	Base Down Only
Weight	1 Pole	0.5 lb
	2 Pole	0.6 lb

25...40 FLA 3 Pole

Line and Load Terminals	#10 – 32 screw or Box Lug	
Wire Size AWG Min.-Max.	#10 – 32 Screw	16 – 8 (stranding must be split for #8 wire)
	Box Lug	14 – 4 Cu/Al
Mechanical Life	1 000 000 operations	
Electical Life	250 000 operations	
Recommended Tightening Torque	#10 – 32 screw	25 lb•in.
	Box Lug	40 lb•in.
Quick Connects	Power Terminals	Dual 0.250 QC (2)
	Coil Terminals	Quad 0.250 QC
ARC Cover	Standard	
Insulation System	130 °C Class B	
Temperature Range	-40 °C...65 °C (-40 °F...150 °F)	
Mounting Position	Vertical	All Positions
	Horizontal	Base Down Only
Weight	1 lb	

50...60 FLA 3 Pole

Line and Load Terminals	Box Lug	
Wire Size AWG Min.-Max.	14 – 2 Cu/Al	
Mechanical Life	500 000 operations	
Electrical Life	250 000 operations	
Recommended Tightening Torque	50 lb•in.	
Quick Connects	Power Terminals	Dual 0.250 QC (2)
	Coil Terminals	#6 – 32 screw & 0.250 QC (2)
ARC Cover	Standard	
Insulation System	130 °C Class B	
Temperature Range	-40 °C...65 °C (-40 °F...150 °F)	
Mounting Position	Vertical	All Positions
	Horizontal	Base Down Only
Weight	2 lbs	

75...90 FLA 3 Pole

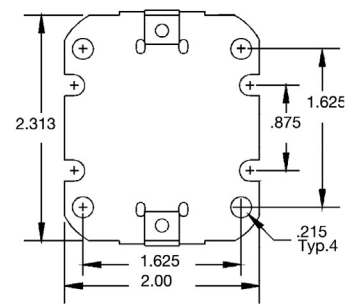
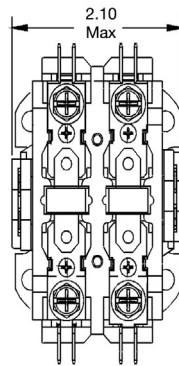
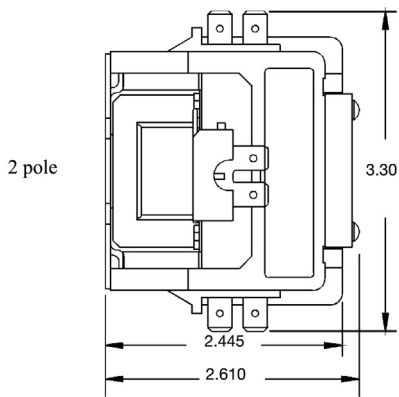
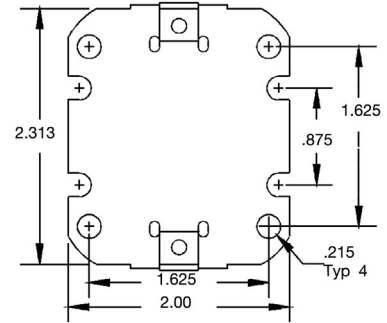
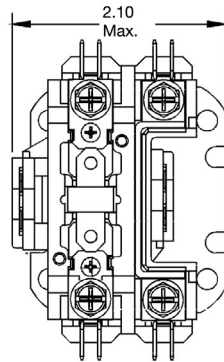
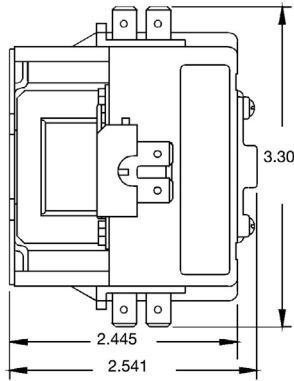
Line and Load Terminals	Box Lug	
Wire Size AWG Min.-Max.	14 – 1/0 Cu/Al	
Mechanical Life	500 000 operations	
Electrical Life	100 000 operations	
Recommended Tightening Torque	50 lb•in.	
Quick Connects	Power Terminals	Dual 0.250 QC
	Coil Terminals	#6 – 32 screw & 0.250 QC (2)
Arc Cover	Standard	
Insulation System	130 °C Class B	
Temperature Range	-40 °C...65 °C (-40 °F...150 °F)	
Mounting Position	Vertical	All Positions
	Horizontal	Base Down Only
Weight	4 lbs	

25 FLA 4 Pole

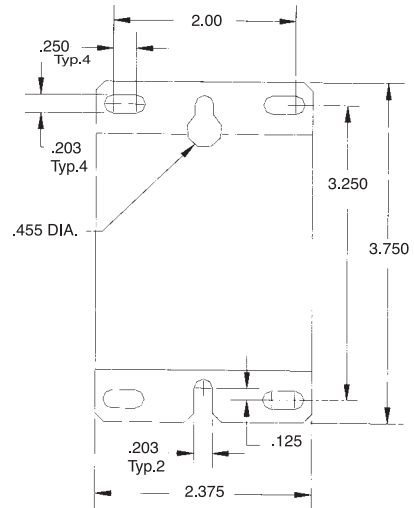
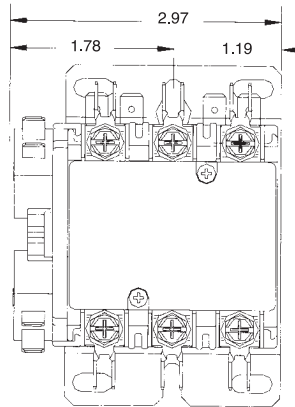
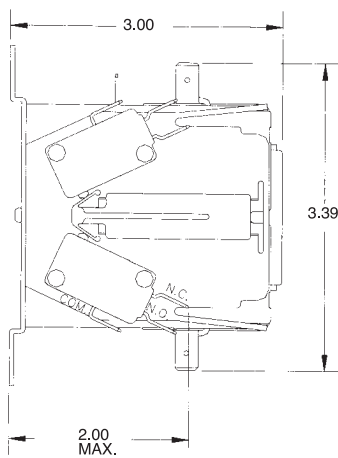
Line and Load Terminals	#10 – 32 screw	
Wire Size AWG Min.-Max.	#10 – 32 screw	16 – 8 (stranding must be split for #8 wire)
	Box Lug	14 – 4 Cu/Al
Mechanical Life	1 000 000 operations	
Electrical Life	250 000 operations	
Recommended Tightening Torque	#10 – 32 screw	25 lb•in.
	Box Lug	40 lb•in.
Quick Connects	Power Terminals	Dual 0.250 QC
	Coil Terminals	Dual 0.250 QC (2)
Arc Cover	Standard	
Insulation System	130 °C Class B	
Temperature Range	-40 °C...65 °C (-40 °F...150 °F)	
Mounting Position	Vertical	All Positions
	Horizontal	Base Down Only
Weight	1.5 lbs	

25...30 FLA 1 & 2 Pole

Dimensions shown in inches. Dimensions are not intended to be used for manufacturing purposes.



25...40 FLA 3 Pole

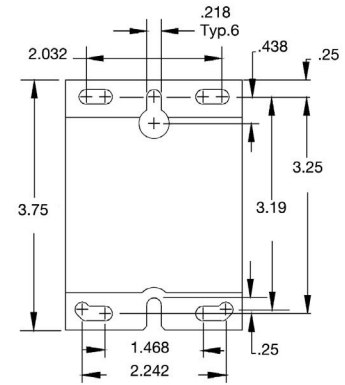
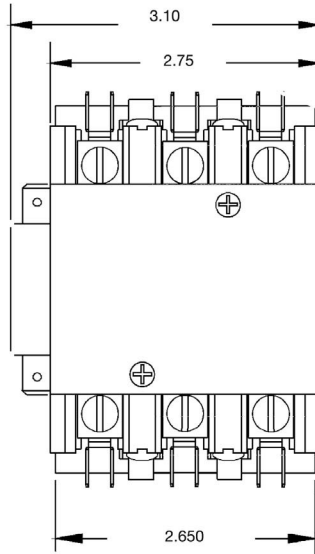
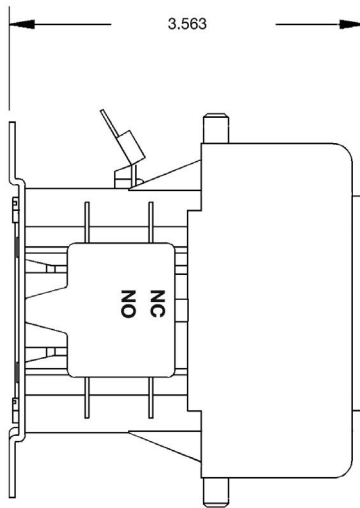


Definite Purpose Contactors

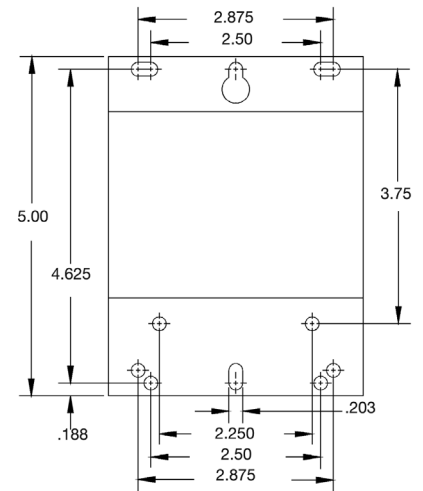
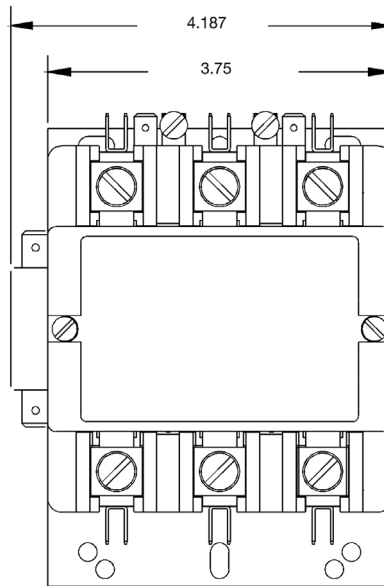
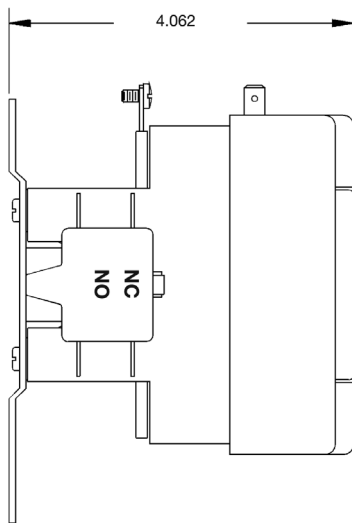
Approximate Dimensions, Continued

50 & 60 FLA 3 Pole

Dimensions shown in inches. Dimensions are not intended to be used for manufacturing purposes.



75 & 90 FLA 3 Pole

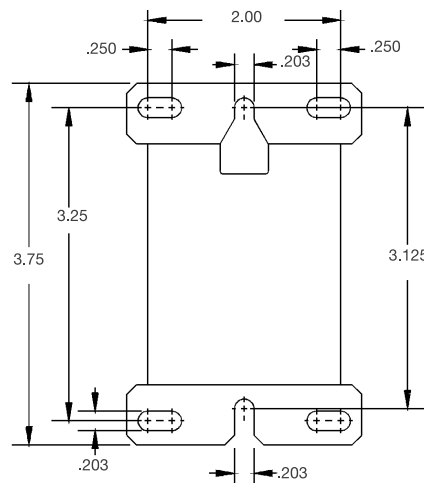
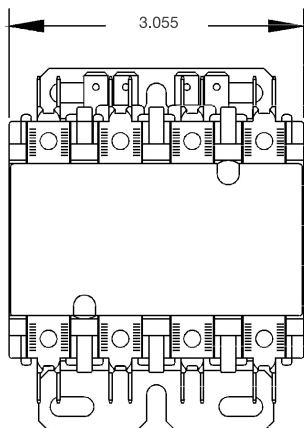
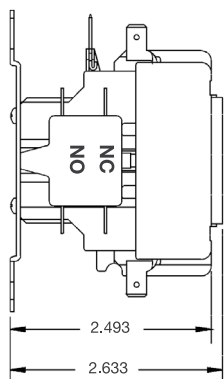


Definite Purpose Contactors

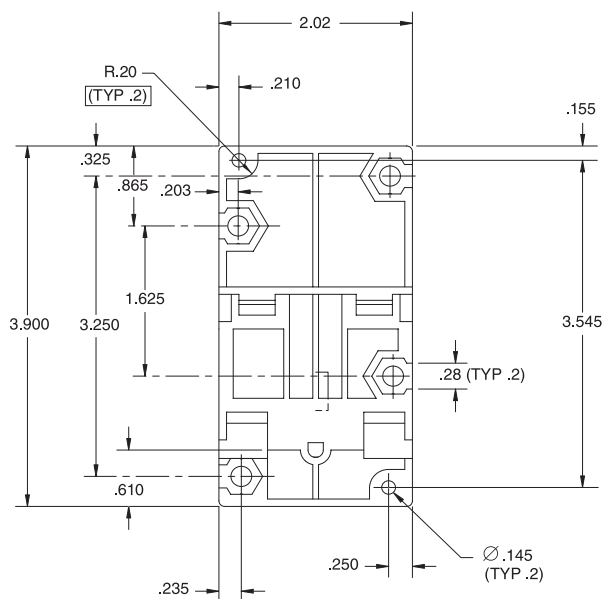
Approximate Dimensions, Continued

25 FLA 4 Pole

Dimensions shown in inches. Dimensions are not intended to be used for manufacturing purposes.



DIN Rail Adaptors



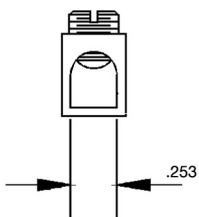
Terminations:



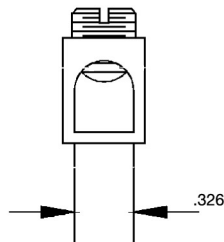
Std. on
25 and 30 FLA



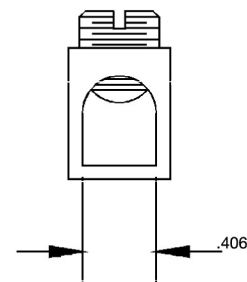
#10 - 32 Combination
Phillips, Slotted &
5/16 Hex Head
#12 washer



40 FLA Lug
14 - 4 Cu/Al
AWG



50 and 60 FLA Lug
14 - 2 Cu/Al
AWG



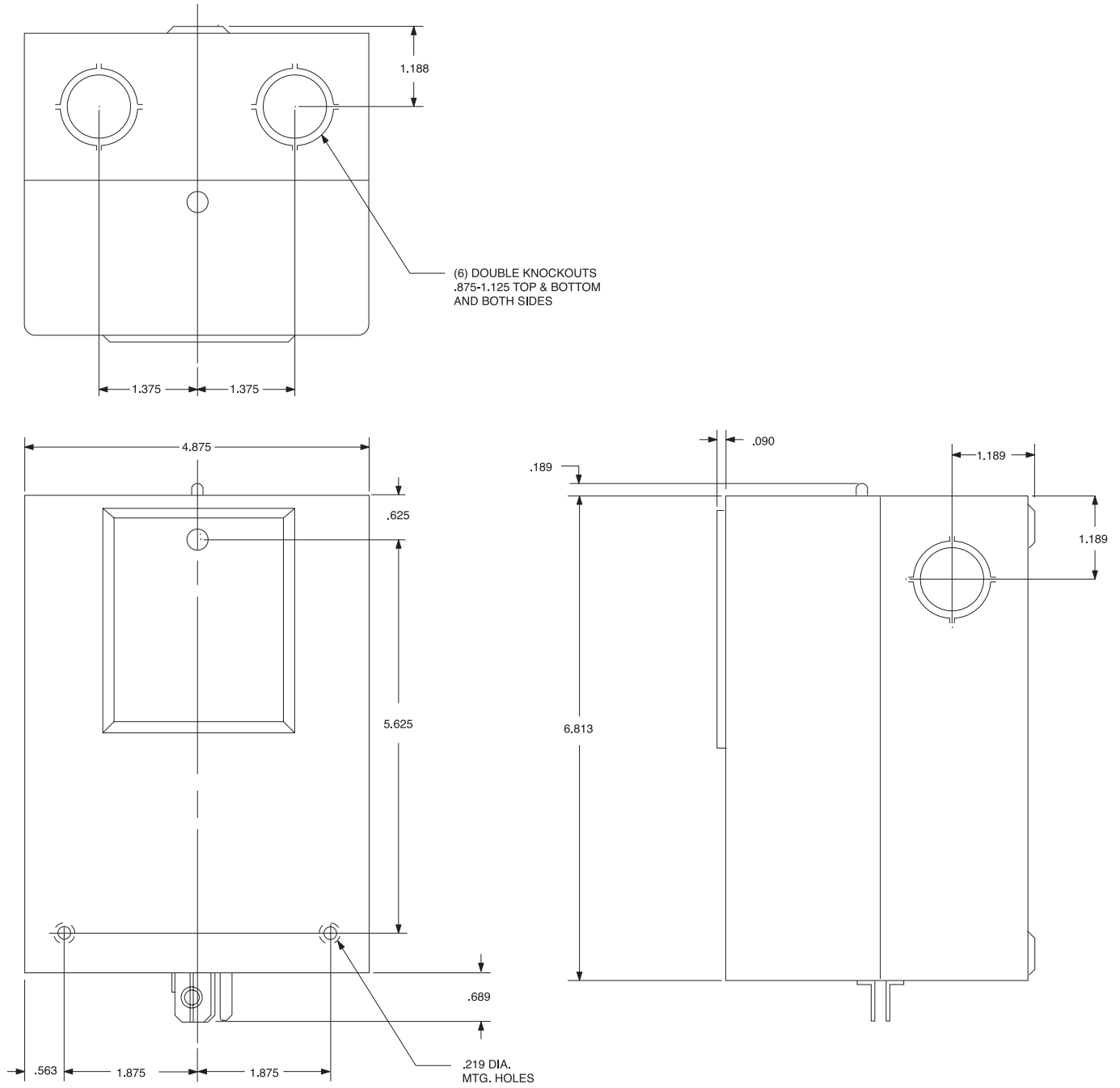
75 and 90 FLA Lug
14 - 1/0 Cu/Al
AWG

Definite Purpose Contactors

Approximate Dimensions, Continued

NEMA Type 1 Enclosure

Dimensions shown in inches. Dimensions are not intended to be used for manufacturing purposes.





Bulletin 1102C

- 1500V AC Maximum
- Typical Industry Applications Include:
 Mining and Metals
 Process Equipment
 Chemical Processing
 Conveyors
 Pumps
 Petroleum
 Hoists
 Mining Equipment

Bulletin 1102C open type contactor is designed for use up to 1500V maximum. Vacuum contactors are particularly well-suited in mining, pumping, and other applications where voltages above 600V are used. Bulletin 1102C Line utilizes vacuum bottles to enclose the power switching contacts within the contactor. The use of vacuum technology results in particularly effective arc extinguishing above the 600V level and allows the design of a very compact, long lasting contactor.

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 Contact Arrangements 1-18
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Standards Compliance
 UL 508
 CSA 22.2 No. 14
 EN60947-4 (1000V)

Your order must include: 1) Cat. No. of vacuum contactor, 2) if required, Cat. No. of any accessories.

Product Selection

3Ø, 1500V Maximum, 60 Hz

Capacitor Switching kVAR*					Transformer Primary Switching kVA†					Continuous Current Rating (A)	Cat. No.‡
240V	440V	575V	1000V	1500V	240V	440V	575V	1000V	1500V		
54	114	156	260	390	55	152	207	346	519	200	1102C-BO®93
124	228	312	520	780	110	304	414	692	1038	400	1102C-CO®93
248	456	624	1040	1560	220	450	620	1384	2076	600	1102C-DO®93

Motor Switching Ratings																						Cat. No.‡
200V		230V		380V / 400V		415V / 440V		460V		500V		575V		690V		800V		1100V		1500V		
Hp	kW	Hp	kW	Hp	kW	Hp	kW	Hp	kW	Hp	kW	Hp	kW	Hp	kW	Hp	kW	Hp	kW	Hp	kW	
50	37	70	59	100	75	125	95	150	110	190	140	200	153	250	185	300	200	375	280	500	370	1102C-BO®93
150	120	175	120	270	200	300	220	325	240	350	260	400	300	500	370	600	475	700	520	850	650	1102C-CO®93
175	150	200	190	350	300	400	330	500	350	550	420	600	470	750	550	800	650	1000	750	1200	900	1102C-DO®93

⊗ **Voltage Suffix Code**

The Cat. No. is incomplete. To complete the Cat. No., select a Voltage Suffix Code from the table below and insert into the Cat. No. Example: **Cat. No. 1102C-BO®93** becomes **Cat. No. 1102C-BOD93**.

Control Voltage‡		120V	125V	240V	250V	380...415V	440...480V
AC	50/60 Hz	D	—	A	—	N	B
DC	—	—	G	—	H	—	—

* Inrush current should be less than 1000% of IEC AC3 operational current.

† For use on transformers having an inrush not more than 20 times the rated full load current **irrespective** of secondary load. Ratings do not apply to transformers used in resistive welder service.

‡ Terminal lugs not included — see Accessories.

Vacuum Contactors

Accessories/Contact Arrangements/Contact Ratings

Accessories

Auxiliary Contacts

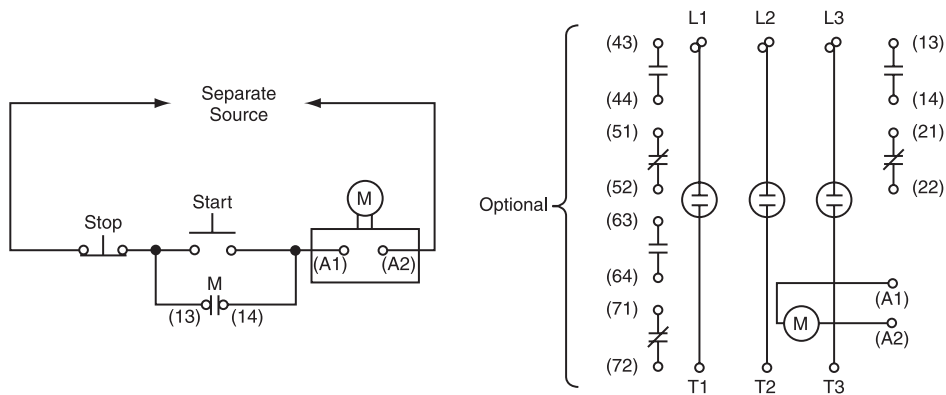
Contactors are supplied with one normally open and one normally closed auxiliary contacts (A600 rating) as standard. Additional auxiliary contacts, two normally open and two normally closed, can be added in the field.

Auxiliary Contact (10A @ 600V)	Cat. No. 1195C-N3
Auxiliary Contact (10mA @ 5V DC)	Cat. No. 1195C-N4

Lug Kit (3 per kit)

Continuous Current Rating (A)	Wire Size	Cat. No.
200	2/0...250 MCM	1195C-LK1
400	(2) #6...300 MCM	1195C-LK2
600	(2) #2...600 MCM	1195C-LK3

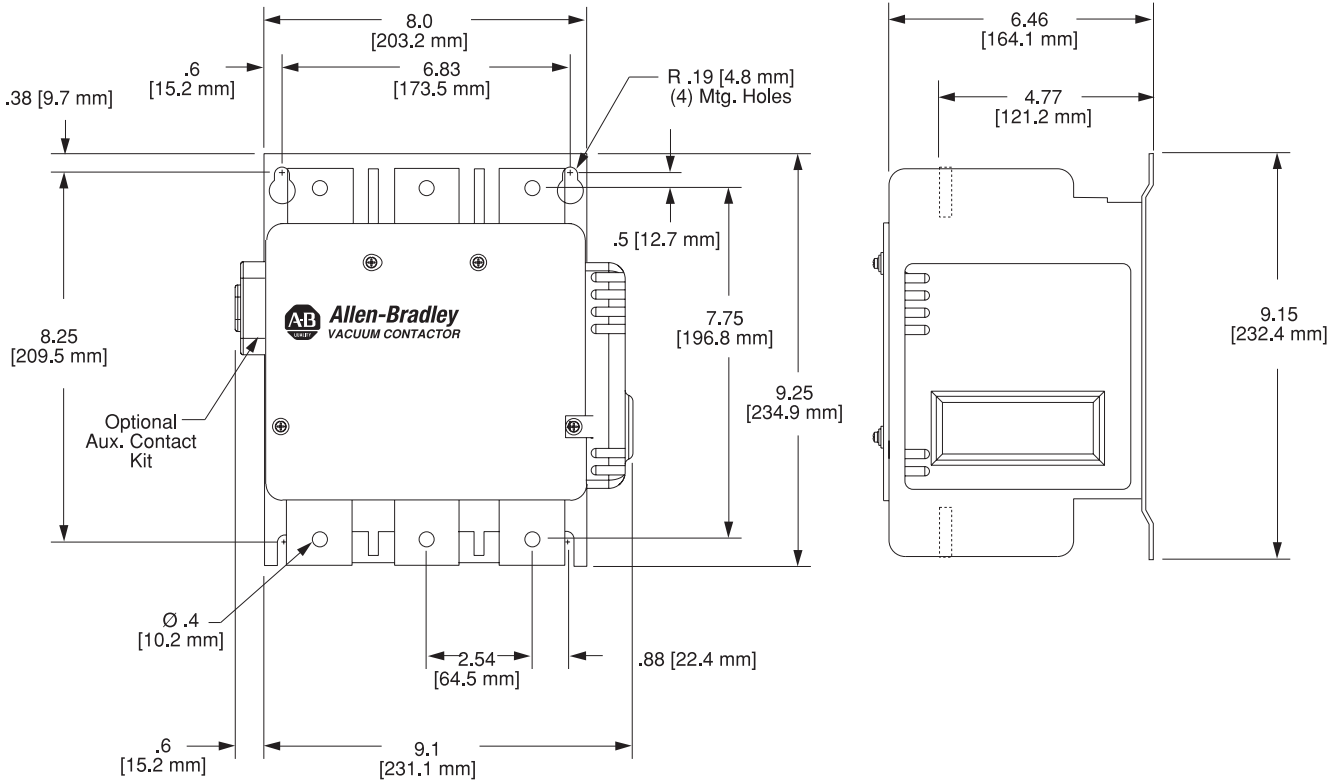
Contact Arrangements



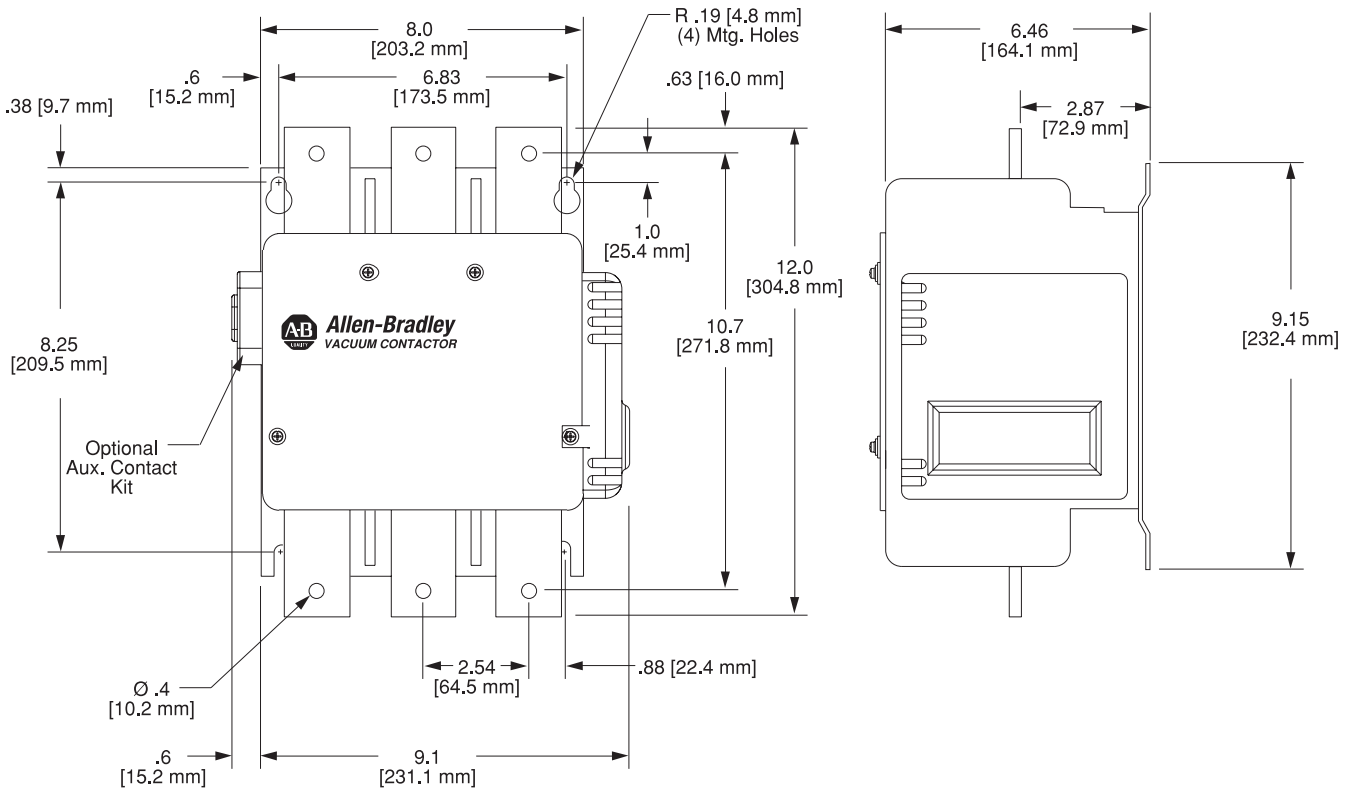
Specifications

Power Ratings	200A	400A	600A
Insul. & Operating Voltage	200-1500V	200-1500V	200-1500V
Rated Frequency	50 - 400 Hz	50 - 400 Hz	50 - 400 Hz
Making Current Capacity	1600 Amps	3200 Amps	4800 Amps
Breaking Current Capacity	1600 Amps	3200 Amps	4800 Amps
Dielectric Strength	6Kv - 1 Min. Interrupter GAP	6Kv - 1 Min. Interrupter GAP	6Kv - 1 Min. Interrupter GAP
Interrupting Current (Max)	2.2 kA	4.6 kA	6 kA
Mechanical Life	Consult Factory	Consult Factory	Consult Factory
Elect. Life AC3 Duty	500000	500000	250000
Switching Frequency (Mechanical)	1000/HR	1000/HR	1000/HR
Withstand current for short time	for 3s kA: 3.2 for 50 ms kA: 10	6.0 18	6.5 30
Chop Current Max.	0.9 A	0.9 A	0.9 A
Control Ratings			
Coil Voltage Operation	-15% +10%	-15% +10%	-15% +10%
Inrush Power VA	800 VA	450 VA	450 VA
Sealed Power VA	12 VA	18 VA	26 VA
Opening Time MS	150...165	95...150	120...195
Closing Time MS	13...18	30...40	30...40
Pick-Up Voltage	80% Cold 85% Hot	80% Cold 85% Hot	80% Cold 85% Hot
Drop-Out Voltage	50% or less	50% or less	50% or less
Application Ratings			
Mounting Installation	All Planes	All Planes	All Planes
Altitude	6600 ft. 2000 Meters	6600 ft. 2000 Meters	6600 ft. 2000 Meters
Ambient Storage	-65 °F (-54 °C) +160 °F (71 °C)	-65 °F (-54 °C) +160 °F (71 °C)	-65 °F (-54 °C) +160 °F (71 °C)
Operating Temperature	-40 °F (-40 °C) +135 °F (57 °C)	-40 °F (-40 °C) +135 °F (57 °C)	-40 °F (-40 °C) +135 °F (57 °C)
Vibration/Shock	40Hz-2G/50G	40Hz-2G/50G	40Hz-2G/50G
Weight	12lbs./5.5kg.	26lbs./11.8kg.	28lbs./12.7kg.

Dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.



400A



600A

NEMA AC Contactors

Top Wiring for Motor Loads



Size 0, 3-Pole,
Open Type without Enclosure
Top Wiring Construction

Bulletin 500

- Top wiring
- For motor loads
- Enclosure ratings: NEMA Type 1, 3R/12, 4/4X (S.S.), glass reinforced polyester and bolted 7 & 9, and 3R, 7 & 9

Bulletin 500 AC Contactors are available in Top Wiring Construction from NEMA Size 00...9. All power connections are at the top of the contactors. Bulletin 500 contactors are used for switching AC motor loads where overload protection is not required or is provided separately.

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Standards Compliance and Certifications

See Below

Standards Compliance and Certifications

- NEMA/EEMAC ICS 2
- UL 508
- CSA C22.2 No.14
- ABS 4/5.115 — American Bureau of Shipping
- UCSG 46 CFR 111.70
- IEEE 45
- EN/IEC 60947-4-1
- CE Marked
- CSA Certified (LR1234)
- UL Listed (File No. E3125, Guide No. NLDX)
- Hazardous Location: UL Listed (File No. E10314) CSA Certified (LR11924)

Example Cat. No.

500
B
A
D
930
1

a
b
c
d
e
f

a

Bulletin No.	
Bulletin No.	Description
500	Combination — Top wired for motor loads
500F	Contactors — Feed-through wiring contactor for motor loads
500FL	Contactors — Feed-through lighting contactor, 3 pole maximum
500L	Contactors — Top wired lighting contactor
505	Starter — Reversing
509	Starter — Non-reversing
520	Starter — Multispeed

b

NEMA Size	
Suffix Code	Description
A	0
B	1
C	2
D	3
E	4
F	5
G	6
H	7
J	8
K	9
T	00

c

NEMA Enclosure Type	
Code	Type
A	Type 1
C	Type 4 (SS)
E	Type 7 & 9 bolted
H	Type 3R, 7 & 9 bolted
J	Type 12
O	No Enclosure
S	Type 4X

d

Nominal Coil Voltage					
Code	Voltage	Freq- uency	Code	Voltage	Freq- uency
A	230... 240V	60 Hz	KN	380... 400V	50 Hz
B	460... 480V	60 Hz	M	500V	50 Hz
C	575... 600V	60 Hz	N	380V	50 Hz
D	115... 120V	60 Hz	P	220... 230V	50 Hz
F	277V	60 Hz	Q	440... 460V	50 Hz
H	200... 208V	60 Hz	R	550V	50 Hz
I	415V	50 Hz	S	110... 115V	50 Hz
J	24V	60 Hz	T	240V	50 Hz
K	24V	50 Hz	U	415V	60 Hz

e

Number of Poles	
Applies to Contactors Only	
Code	Voltage Description
92	Two Poles
920	Two Poles and (1) Auxiliary Contact (N.O.)
93	Three poles
930	Three Poles and (1) Auxiliary Contact (N.O.)
94	Four Poles
940	Four Poles and (1) Auxiliary Contact (N.O.)
95	Five Poles
950	Five Poles and (1) Auxiliary Contact (N.O.)

f

Options
See catalog for detailed information on options.

Note: All enclosed non-combination contactors and starters are supplied with external reset as standard.

Top Wiring For Motor Loads

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"		Open Type Without Enclosure		With One N.O. Auxiliary Contact		
				Without Auxiliary Contact	With One N.O. Auxiliary Contact	Type 1 General Purpose Enclosure	Type 3R/12 Rainproof, Dusttight Industrial Use Enclosure	Type 4/4X Watertight, Corrosion-Resistant Enclosures Stainless Steel*
Motor Voltage		Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.		
1Ø • 2 Power Poles • 600V AC Maximum • 60 Hz								
00	9	1/3	1	500-TO ⁹²	500-TO ⁹² 920	500-TA ⁹² 920	—	—
0	18	1	2	500-AO ⁹²	500-AO ⁹² 920	500-AA ⁹² 920	500-AJ ⁹² 920	500-AC ⁹² 920
1	27	2	3	500-BO ⁹²	500-BO ⁹² 920	500-BA ⁹² 920	500-BJ ⁹² 920	500-BC ⁹² 920
2	45	3	7-1/2	—	500-CO ⁹² 920	500-CA ⁹² 920	500-CJ ⁹² 920	500-CC ⁹² 920
3	90	7-1/2	15	—	500-DO ⁹² 920	500-DA ⁹² 920	500-DJ ⁹² 920	500-DC ⁹² 920
4	135	—	—	—	500-EO ⁹² 920	500-EA ⁹² 920	500-EJ ⁹² 920	500-EC ⁹² 920
5	270	—	—	—	500-FO ⁹² 920	500-FA ⁹² 920	500-FJ ⁹² 920	500-FC ⁹² 920
6	540	—	—	—	—	—	—	—
7 [†]	810	—	—	—	500-HO ⁹² 920	500-HA ⁹² 920	500-HJ ⁹² 920	500-HC ⁹² 920
8 [‡]	1215	—	—	—	500-JO ⁹² 920	500-JA ⁹² 920	—	—
9 [‡]	2250	—	—	—	500-KO ⁹² 920	500-KA ⁹² 920	—	—

NEMA Size	Continuous Ampere Rating (A)					50 Hz				
		200V	230V	380...415V	460...575V					
3Ø • 3 Power Poles • 600V AC Maximum • 60 Hz										
00	9	1-1/2	1-1/2	2	2	500-TO ⁹³	500-TO ⁹³ 930	500-TA ⁹³ 930 ¹¹	—	—
0	18	3	3	5	5	500-AO ⁹³	500-AO ⁹³ 930	500-AA ⁹³ 930 ¹¹	500-AJ ⁹³ 930 ¹¹	500-AC ⁹³ 930 ¹¹
1	27	7-1/2	7-1/2	10	10	500-BO ⁹³	500-BO ⁹³ 930	500-BA ⁹³ 930 ¹¹	500-BJ ⁹³ 930 ¹¹	500-BC ⁹³ 930 ¹¹
2	45	10	15	25	25	—	500-CO ⁹³ 930	500-CA ⁹³ 930	500-CJ ⁹³ 930	500-CC ⁹³ 930
3	90	25	30	50	50	—	500-DO ⁹³ 930	500-DA ⁹³ 930	500-DJ ⁹³ 930	500-DC ⁹³ 930
4	135	40	50	75	100	—	500-EO ⁹³ 930	500-EA ⁹³ 930	500-EJ ⁹³ 930	500-EC ⁹³ 930
5	270	75	100	150	200	—	500-FO ⁹³ 930	500-FA ⁹³ 930	500-FJ ⁹³ 930	500-FC ⁹³ 930
6 [§]	540	150	200	300	400	—	500-GO ⁹³ 930	500-GA ⁹³ 930 [*]	500-GJ ⁹³ 930 [*]	500-GC ⁹³ 930 [*]
7 [‡]	810	—	300	600	600	—	500-HO ⁹³ 930	500-HA ⁹³ 930	500-HJ ⁹³ 930	500-HC ⁹³ 930
8 [‡]	1215	—	450	900	900	—	500-JO ⁹³ 930	500-JA ⁹³ 930	—	—
9 [‡]	2250	—	800	1600	1600	—	500-KO ⁹³ 930	500-KA ⁹³ 930	—	—

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 500-AO⁹²** becomes **Cat. No. 500-AOD⁹²**. Fast Shipment Program codes are printed in italics. For other voltages, consult factory.

Voltage	24V	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
50 Hz	K	S [‡]	—	—	P [‡]	—	T	—	N	KN	I	Q	—	M	R	—
60 Hz	J	—	D [‡]	H	—	A [‡]	—	F	—	—	U	—	B	—	—	C

* Fiberglass-reinforced polyester hubs are included with each starter at no additional charge.

† On Size 7 and larger, the auxiliary contact is located on the interposing relay.

‡ Does not include line and load lugs, see page 1-95 for kits.

§ Size 6 has feed through wiring.

* Price includes control circuit transformer.

➤ Only available on sizes 00...5. When using 24V coils on size 4 or 5, an interposing relay may be required. See coil VA values on page 1-129.

‡ This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.

† This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.

‡ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.

‡ This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

¹¹These devices may be ordered without an auxiliary.

Bulletin 500
NEMA AC Contactors
 Product Selection, Continued

Top Wiring For Motor Loads, Continued

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Open Type Without Enclosure		With One N.O. Auxiliary Contact		
		Motor Voltage				Without Auxiliary Contact	With One N.O. Auxiliary Contact	Type 1 General Purpose Enclosure	Type 3R/12 Rainproof, Dusttight Industrial Use Enclosure	Type 4/4X Watertight, Corrosion-Resistant Enclosures Stainless Steel*
		200V	230V	380...415V	460...575V					
3Ø • 4 Power Poles • 600V AC Maximum • 60 Hz										
00	9	1-1/2	1-1/2	2	2	500-TO®94	—	—	—	—
0	18	3	3	5	5	500-AO®94	500-AO®940	500-AA®940	500-AJ®940	500-AC®940
1	27	7-1/2	7-1/2	10	10	500-BO®94	500-BO®940	500-BA®940	500-BJ®940	500-BC®940
2	45	10	15	25	25	—	500-CO®940	500-CA®940	500-CJ®940	500-CC®940
3	90	25	30	50	50	—	500-DO®940	500-DA®940	500-DJ®940	500-DC®940
4	135	40	50	75	100	—	500-EO®940	500-EA®940	500-EJ®940	500-EC®940
5	270	75	100	150	200	—	500-FO®940	500-FA®940	500-FJ®940	500-FC®940
3Ø • 5 Power Poles • 600V AC Maximum • 60 Hz										
NEMA Size	Continuous Ampere Rating (A)	200V	230V	50 Hz	460...575V					
				380...415V		500-AO®95	500-AO®950	500-AA®950	500-AJ®950	500-AC®950
0	18	3	3	5	5	500-AO®95	500-AO®950	500-AA®950	500-AJ®950	500-AC®950
1	27	7-1/2	7-1/2	10	10	500-BO®95	500-BO®950	500-BA®950	500-BJ®950	500-BC®950
2	45	10	15	25	25	—	500-CO®950	500-CA®950	500-CJ®950	500-CC®950
3	90	25	30	50	50	—	500-DO®950	500-DA®950	500-DJ®950	500-DC®950
4	135	40	50	75	100	—	500-EO®950	500-EA®950	500-EJ®950	500-EC®950

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 500-AO®94** becomes **Cat. No. 500-AOD94**. For other voltages, consult factory.

Voltage	24V§	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
50 Hz	K	S*	—	—	P‡	—	T	—	N	KN	I	Q	—	M	R	—
60 Hz	J	—	D>	H	—	A+	—	F	—	—	U	—	B	—	—	C

* Fiberglass-reinforced polyester hubs are included with each starter.

† On Size 7 and larger, the auxiliary contact is located on the control relay.

§ Only available on sizes 00...5. When using 24V coils on size 4 or 5, an interposing relay may be required. See coil VA values on page 1-129.

* This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.

> This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.

‡ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.

+ This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

- Accessories — page 1-93
- Modifications — page 1-87
- Specifications — page 1-107
- Approximate Dimensions — page 1-113

Top Wiring for Motor Loads, Continued
Special Purpose Enclosures

Description Contactor		Type 4X Watertight Corrosion- Resistant Enclosure Fiberglass-Reinforced Polyester*	Hazardous Locations — Bolted Enclosures*	
Size	Poles		Type 7 & 9 Class I, Groups C & D Class II, Groups E, F, & G — Divisions 1 & 2 —	Type 3R, 7 & 9 Class I, Groups C & D Class II, Groups E, F, & G — Divisions 1 & 2 —
0	1...3	A	A	A
	4...5	A	NA	NA
1	1...3	A	A	A
	4...5	A	NA	NA
2	1...3	NA	A	A
3	1...3	NA	A	A
4	1...3	NA	A	A
5	1...3	NA	A	A

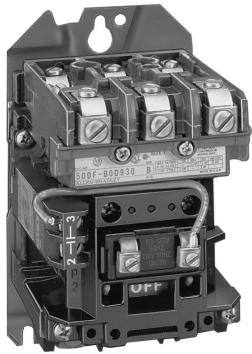
A = Available NA = Not Available

* For Cat. No. information, consult factory.

Accessories — page 1-93
 Modifications — page 1-87
 Specifications — page 1-107
 Approximate Dimensions — page 1-113

NEMA AC Contactors

Feed-Through Wiring for Motor Loads



Size 1, 3-Pole
Open Type without Enclosure
Feed Through Construction
with Auxiliary Contact

Bulletin 500F

- Feed-Through Wiring
- For Motor Loads

Description

The Bulletin 500F AC Contactor (Open Type) is available in Feed-Through Wiring Construction from NEMA Size 0...5. Feed-Through Contactors have the line terminals at the top of the device and load terminals at the bottom. Bulletin 500F contactors are used for switching AC motor loads where overload protection is not required or is provided separately. The contactors may be operated remotely by pilot devices, such as push buttons, selector switches, timers, relays or temperature switches.

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Standards Compliance and Certifications

See Below

Standards Compliance and Certifications

- NEMA/EEMAC ICS 2
- UL 508
- CSA C22.2 No.14
- ABS 4/5.115 — American Bureau of Shipping
- UCSG 46 CFR 111.70
- IEEE 45
- EN/IEC 60947-4-1
- CE Marked
- CSA Certified (LR1234)
- UL Listed (File No. E3125, Guide No. NLDX)

Feed-Through Wiring for Motor Loads

2 Power Poles • 600V AC Maximum • 60 Hz

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"		Open Type Without Enclosure	
		Motor Voltage		Without Auxiliary Contact	With One N.O. Auxiliary Contact
		115V	230V		
		1 Ø		Cat. No.	Cat. No.
0	18	1	2	500F-AO@92	500F-AO@920
1	27	2	3	500F-BO@92	500F-BO@920
2	45	3	7-1/2	—	500F-CO@920
3	90	7-1/2	15	—	500F-DO@920
4	135	—	—	—	500F-EO@920
5	270	—	—	—	500F-FO@920

3 Power Poles • 600V AC Maximum • 60 Hz

NEMA Size	Continuous Ampere Rating (A)	200V	230V	50 Hz			
				380...415V	460...575V		
		3 Ø					
0	18	3	3	5	5	500F-AO@93	500F-AO@930
1	27	7-1/2	7-1/2	10	10	500F-BO@93	500F-BO@930
2	45	10	15	25	25	—	500F-CO@930
3	90	25	30	50	50	—	500F-DO@930
4	135	40	50	75	100	—	500F-EO@930
5	270	75	100	150	200	—	500F-FO@930

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 500F-AO@92** becomes **Cat. No. 500F-AOD92**. For other voltages, consult your local Allen-Bradley distributor.

Voltage	24V*	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
50 Hz	K	S†	—	—	P§	—	T	—	N	KN	I	Q	—	M	R	—
60 Hz	J	—	D‡	H	—	A*	—	F	—	—	U	—	B	—	—	C

* Only available on sizes 00...5. When using 24V coils on size 4 or 5, an interposing relay may be required. See coil VA values on page 1-129.

† This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.

‡ This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.

§ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.

* This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.



100 A, 3-Pole
Open Type without
Enclosure

Bulletin 500L

- Top Wiring
- For Non-Motor Loads
Lighting
Heating
- NEMA Sizes to 2250 A
- Enclosure Ratings: NEMA Type 1, 3R/12, 4/4X (Stainless Steel)
- Special Purpose Enclosures
Type 4X Glass Reinforced Polyester
Bolted — 7 & 9, and 3R, 7 & 9
- 2-, 3-, and 4-Pole Configurations

Description

Bulletin 500L lighting contactors are electrically held contactors designed to switch the current to incandescent filament, fluorescent, mercury arc lamps, capacitors and other non-motor loads. These contactors are not suitable for use on sign flashers.

HOLD-IN CONTACT — If a hold-in contact for 3-wire push button control is required, it must be specified on the order as a modification. A normally open auxiliary contact to be used as a hold-in contact can also be added in the field. See page 1-87 for information.

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Standards Compliance and Certifications

See Below

Standards Compliance and Certifications

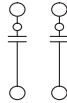
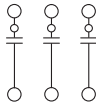
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|---|----------------------|--|
| • NEMA/EEMAC ICS 2 | • UCSG 46 CFR 111.70 | • CSA Certified (LR1234) |
| • UL 508 | • IEEE 45 | • UL Listed (File No. E14843,
Guide No. NRNT) |
| • CSA C22.2 No.14 | • EN/IEC 60947-4-1 | • Hazardous Location:
UL Listed (File No. E91593)
CSA Certified (LR 11924) |
| • ABS 4/5.115 — American Bureau of Shipping | • CE Marked | |

Your order must include 1) Cat. No. of contactor selected, 2) modifications, if any, and 3) for motor loads, use Bulletin 500 contactors listed on page 1-21.

NEMA AC Contactors

Product Selection

Top Wiring for Non-Motor and Lighting Loads

Maximum Continuous Ampere Ratings (A)		Open Type Without Enclosure	Type 1 General Purpose Enclosure	Type 4/4X Watertight, Corrosion-Resistant Enclosure Stainless Steel	Type 3R/12 Rainproof, Dusttight Industrial Use Enclosure
Tungsten Lamp Loads (Maximum 480V Line 277V Load)	General Use				
	Resistive Heating				
	Ballast Lighting (Fluorescent)				
	Discharge Lighting (Mercury Vapor High Pressure Sodium and Metal Halide)				
		Cat. No.	Cat. No.	Cat. No.*	Cat. No.
2 Power Poles • 600V AC Maximum • 60 Hz					
5	10	500L-TO®92	500L-TA®92	—	—
15	20	500L-AO®92	500L-AA®92	500L-AC®92	500L-AJ®92
30	30	500L-BO®92	500L-BA®92	500L-BC®92	500L-BJ®92
60	60	500L-CO®92	500L-CA®92	500L-CC®92	500L-CJ®92
100	100	500L-DO®92	500L-DA®92	500L-DC®92	500L-DJ®92
200	200	500L-EO®92	500L-EA®92	500L-EC®92	500L-EJ®92
300	300	500L-FO®92	500L-FA®92	500L-FC®92	500L-FJ®92
540	540	—	—	—	—
810†	810	500L-HO®92	500L-HA®92	500L-HC®92	500L-HJ®92
1215†	1215	500L-JO®92	500L-JA®92	—	—
2250†	2250	500L-KO®92	500L-KA®92	—	—
3 Power Poles • 600V AC Maximum • 60 Hz					
					
		Cat. No.	Cat. No.	Cat. No.*	Cat. No.
5	10	500L-TO®93	500L-TA®93	—	—
15	20	500L-AO®93	500L-AA®93	500L-AC®93	500L-AJ®93
30	30	500L-BO®93	500L-BA®93	500L-BC®93	500L-BJ®93
60	60	500L-CO®93	500L-CA®93	500L-CC®93	500L-CJ®93
100	100	500L-DO®93	500L-DA®93	500L-DC®93	500L-DJ®93
200	200	500L-EO®93	500L-EA®93	500L-EC®93	500L-EJ®93
300	300	500L-FO®93	500L-FA®93	500L-FC®93	500L-FJ®93
540†‡	540	500L-GO®93	500L-GA®93§	500L-GC®93§	500L-GJ®93§
810†	810	500L-HO®93	500L-HA®93	500L-HC®93	500L-HJ®93
1215†	1215	500L-JO®93	500L-JA®93	—	—
2250†	2250	500L-KO®93	500L-KA®93	—	—

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 500L-AO®92** becomes **Cat. No. 500L-AOD92**. For other voltages, consult your local Allen-Bradley distributor.

Voltage	24V*	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
50 Hz	K	S▶	—	—	P+	—	T	—	N	KN	I	Q	—	M	R	—
60 Hz	J	—	D%‡	H	—	A❖	—	F	—	—	U	—	B	—	—	C

* Fiberglass-reinforced polyester hubs are included with each starter.

† Does not include line and load lugs, see page 1-95 for kits.

‡ Feed through wiring only.

§ Price includes control circuit transformers.

* Only available on sizes 00...5. When using 24V coils on size 4 or 5, an interposing relay may be required. See coil VA values on page 1-129.

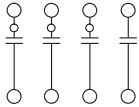
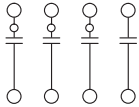
▶ This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.

% This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.

+ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.

❖ This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

Top Wiring for Non-Motor and Lighting Loads, Continued

Maximum Continuous Ampere Ratings (A)		Open Type Without Enclosure	Type 1 General Purpose Enclosure	Type 4/4X Watertight, Corrosion-Resistant Enclosure Stainless Steel	Type 3R/12 Rainproof, Dusttight Industrial Use Enclosure
Tungsten Lamp Loads (Maximum 480V Line 277V Load)	General Use				
	Resistive Heating				
	Ballast Lighting (Fluorescent)				
	Discharge Lighting (Mercury Vapor High Pressure Sodium and Metal Halide)				
		Cat. No.	Cat. No.	Cat. No.*	Cat. No.
4 Power Poles • 600V AC Maximum • 60 Hz					
5	10	500L-TO ⁹⁴	500L-TA ⁹⁴	—	—
15	20	500L-AO ⁹⁴	500L-AA ⁹⁴	500L-AC ⁹⁴	500L-AJ ⁹⁴
30	30	500L-BO ⁹⁴	500L-BA ⁹⁴	500L-BC ⁹⁴	500L-BJ ⁹⁴
60	60	500L-CO ⁹⁴	500L-CA ⁹⁴	500L-CC ⁹⁴	500L-CJ ⁹⁴
100	100	500L-DO ⁹⁴	500L-DA ⁹⁴	500L-DC ⁹⁴	500L-DJ ⁹⁴
200	200	500L-EO ⁹⁴	500L-EA ⁹⁴	500L-EC ⁹⁴	500L-EJ ⁹⁴
300	300	500L-FO ⁹⁴	500L-FA ⁹⁴	500L-FC ⁹⁴	500L-FJ ⁹⁴

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 500L-AO⁹⁴** becomes **Cat. No. 500L-AOD⁹⁴**. For other voltages, consult your local Allen-Bradley distributor.

Voltage	24V†	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
50 Hz	K	S‡	—	—	P*	—	T	—	N	KN	I	Q	—	M	R	—
60 Hz	J	—	D§	H	—	A▶	—	F	—	—	U	—	B	—	—	C

Special Purpose Enclosures

Description		Type 4X Watertight, Corrosion-Resistant Enclosure Fiberglass-Reinforced Polyester*	Hazardous Locations — Bolted Enclosures	
Contactor			Type 7 & 9 Class I, Groups C & D Class II, Groups E, F & G — Divisions 1 & 2 —	Type 3R, 7 & 9 Class I, Groups C & D Class II, Groups E, F & G — Divisions 1 & 2 —
Size	Poles			
0	1...3	A	A	A
	4...5	A	NA	NA
1	1...3	A	A	A
	4...5	A	NA	NA
2	1...3	NA	A	A
3	1...3	NA	A	A
4	1...3	NA	A	A
5	1...3	NA	A	A

A = Available NA = Not Available

* Fiberglass-reinforced polyester hubs are included with each starter.

† Only available on sizes 00...5. When using 24V coils on size 4 or 5, an interposing relay may be required. See coil VA values on page 1-129.

‡ This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.



§ This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.

* This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.

▶ This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

NEMA AC Contactors

Feed-Through Wiring for Non-Motor and Lighting Loads Product Selection

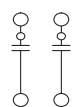
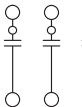
 <p>30 A Open Type without Enclosure</p>  <p>100 A Open Type without Enclosure</p>	<p>Bulletin 500FL</p> <ul style="list-style-type: none"> • Feed-Through Wiring • For Non-Motor Loads Lighting Heating • NEMA Sizes to 300 A • 2- and 3-Pole Configurations <p>Description</p> <p>Bulletin 500FL open type lighting contactors are electrically held contactors designed to switch the current to incandescent filament, fluorescent, mercury arc lamps, capacitors and other non-motor loads. These contactors are not suitable for use on sign flashers.</p> <p>Hold-in Contact — If a hold-in contact for 3-wire push button control is required, it must be specified on the order as a modification. A normally open auxiliary contact to be used as a hold-in contact can also be added in the field. See page 1-95 for information.</p>	<p>Table of Contents</p> <p>Accessories 1-93 Modifications 1-87 Specifications 1-107 Full Load Currents of AC Motors 1-112 Approximate Dimensions 1-113 Coil Data 1-110</p> <p>Standards Compliance and Certifications</p> <p>See Below</p>
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Standards Compliance and Certifications

- NEMA/EEMAC ICS 2
- UL 508
- CSA C22.2 No.14
- ABS 4/5.115 — American Bureau of Shipping
- UCSG 46 CFR 111.70
- IEEE 45
- EN/IEC 60947-4-1
- CE Marked
- CSA Certified (LR1234)
- UL Listed (File No. E14843, Guide No. NRNT)

Your order must include 1) Cat. No. of contactor selected, 2) modifications, if any, and 3) for motor loads, use Bulletin 500F contactors listed on page 1-24.

Feed-Through Wiring for Non-Motor and Lighting Loads

2 Power Poles • 600V AC Maximum • 60 Hz			3 Power Poles • 600V AC Maximum • 60 Hz		
Maximum Continuous Ampere Ratings (A)		Open Type without Enclosure	Maximum Continuous Ampere Ratings (A)		Open Type without Enclosure
Tungsten Lamp Loads (Maximum 480V Line 277V Load)	Non-Motor Loads General Use	 Cat. No.	Tungsten Lamp Loads (Maximum 480V Line 277V Load)	Non-Motor Loads General Use	 Cat. No.
	Resistive Heating			Resistive Heating	
	Ballast Lighting (Fluorescent)			Ballast Lighting (Fluorescent)	
	Discharge Lighting (Mercury Vapor High Pressure Sodium, and Metal Halide)			Discharge Lighting (Mercury Vapor High Pressure Sodium, and Metal Halide)	
15	20	500FL-AO®92	15	20	500FL-AO®93
30	30	500FL-BO®92	30	30	500FL-BO®93
60	60	500FL-CO®92	60	60	500FL-CO®93
100	100	500FL-DO®92	100	100	500FL-DO®93
200	200	500FL-EO®92	200	200	500FL-EO®93
300	300	500FL-FO®92	300	300	500FL-FO®93

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 500FL-AO®92** becomes **Cat. No. 500FL-AOD92**. For other voltages, consult your local Allen-Bradley distributor.

Voltage	24V	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
50 Hz	K	S*	—	—	P†	—	T	—	N	KN	I	Q	—	M	R	—
60 Hz	J	—	D†	H	—	A§	—	F	—	—	U	—	B	—	—	C

- * This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.
- † This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.
- ‡ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.
- § This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.



30 A, 3-Pole
 Open Type without Enclosure

Bulletin 500LP

- Top Wiring Permanent Magnet Latching
- For Non-Motor Loads, Lighting, Heating
- NEMA Sizes to 300 A
- 2-, 3-, and 4-Pole Configurations

Description

Bulletin 500LP open type contactors are permanent magnet latching type contactors designed to switch the current to incandescent filament, fluorescent, mercury arc lamps, capacitors and other non-motor loads.

Certifications

- UL/cUL Listed (File No. E14843, Guide No. NRNT)
- CSA Certified (LR 1234)
- Hazardous Location:
 UL Listed (File No. E91593)
 CSA Certified (LR 11924)

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Standards Compliance
 • NEMA/EEMAC ICS 2
 • UL 508
 • CSA C22.2 No. 14

Your order must include 1) Cat. No. of contactor selected and 2) modifications, if any.

Note: For motor load application, order a Bulletin 500PM. For Bulletin 500PM information, consult your local Allen-Bradley distributor.

Maximum Continuous Ampere Ratings (A)		Open Type Without Enclosure	Type 1 General Purpose Enclosure
Tungsten Lamp Loads (Maximum 480V Line 277V Load)	General Use		
	Resistive Heating		
	Ballast Lighting (Fluorescent)		
	Discharge Lighting (Mercury Vapor High Pressure Sodium, and Metal Halide)		
		Cat. No.	Cat. No.
2 Power Poles • 600V AC Maximum • 60 Hz			
15	20	500LP-AO@92	500LP-AA@92
30	30	500LP-BO@92	500LP-BA@92
60	60	500LP-CO@92	500LP-CA@92
100	100	500LP-DO@92	500LP-DA@92
200	200	500LP-EO@92	500LP-EA@92
300	300	500LP-FO@92	500LP-FA@92
3 Power Poles • 600V AC Maximum • 60 Hz			
15	20	500LP-AO@93	500LP-AA@93
30	30	500LP-BO@93	500LP-BA@93
60	60	500LP-CO@93	500LP-CA@93
100	100	500LP-DO@93	500LP-DA@93
200	200	500LP-EO@93	500LP-EA@93
300	300	500LP-FO@93	500LP-FA@93
4 Power Poles • 600V AC Maximum • 60 Hz			
15	20	500LP-AO@94	500LP-AA@94
30	30	500LP-BO@94	500LP-BA@94
60	60	500LP-CO@94	500LP-CA@94
100	100	500LP-DO@94	500LP-DA@94
200	200	500LP-EO@94	500LP-EA@94
300	300	—	—

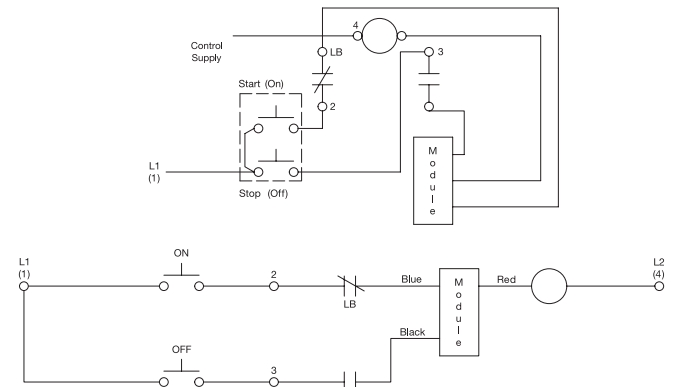
⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 500LP-AO@92** becomes **Cat. No. 500LP-AOD92**. For other voltages, consult your local Allen-Bradley distributor.

Voltage	24V*	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V
50 Hz	K	S†	—	—	P§	—	T	—
60 Hz	J	—	D‡	H	—	A*	—	F
Voltage	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
50 Hz	N	KN	I	Q	—	M	R	—
60 Hz	—	—	U	—	B	—	—	C

- * When using 24V coils on sizes 4 or 5, an interposing relay may be required.
- † This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.
- ‡ This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.
- § This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.
- * This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

Typical Wiring Diagram



NEMA Full Voltage Reversing Starters

Product Overview



*Bulletin 505
Size 2, with Solid-State
Overload
Open Type without Enclosure*

Bulletin 505

- NEMA Sizes 00...9
- Exceptional Electrical Life
- UL Witnessed Type 2 Coordination
- Dependable Coil Operation
- Eutectic Alloy Overload Relays Class 10, 20, or 30
- Solid-State Overload Relays Class 10, 15, 20, or 30
- Vertically Arranged — Bulletin 505V Sizes 0...5
- Enclosure Ratings — NEMA Type 1, 3R/12, 4/4X Stainless, 4/4X Glass Rein. and 7 & 9 Hazardous Location
- 3-Phase and Single-Phase Available
- Reversing Contactors also Available

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Standards Compliance and Certifications

- NEMA/EEMAC ICS 2
- UL 508
- CSA C22.2 No.14
- ABS 4/5.115 — American Bureau of Shipping
- UCSG 46 CFR 111.70
- IEEE 45
- EN/IEC 60947-4-1
- CE Marked
- CSA Certified (LR1234)
- UL Listed (File No. E3125, Guide No. NLDX)
- Hazardous Location:
UL Listed (File No. E10314)
CSA Certified (LR11924)

Description

Bulletin 505 reversing starters are most commonly used for full voltage starting and reversing of polyphase squirrel cage motors. Starters Size 00 through 9 are electrically and mechanically interlocked to avoid both contactors being closed simultaneously. Bulletin 505V vertically arranged starters are available in Sizes 0...5 in the Open Type without Enclosure construction only. Bulletin 505 reversing starters are available with Bulletin 592 eutectic alloy overload relays as standard and Bulletin 592 solid-state overloads are optional for additional flexibility in motor protection.

NEMA Full Voltage Reversing Starters

Product Selection

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements. See page 1-152 for heater element selection tables.

3Ø • 600V AC Maximum • 60 Hz • with 3-Pole Overload Protection

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Open Type Without Enclosure	Type 1 General Purpose Enclosure Surface Mounting	Type 3R/12, Rainproof, Dusttight Industrial Use Enclosure	Type 4/4X Watertight, Corrosion-Resistant Enclosures Stainless Steel	Type 4X Watertight, Corrosion-Resistant Enclosure Fiberglass-Reinforced Polyester
		Motor Voltage								
		200V	230V	50 Hz 380...415V	460...575V					
00	9	1-1/2	1-1/2	2	2	505-TO-Ⓢ	505-TA-Ⓢ	—	—	—
0	18	3	3	5	5	505-AO-Ⓢ	505-AA-Ⓢ	505-AJ-Ⓢ	505-AC-Ⓢ	505-AS-Ⓢ
1	27	7-1/2	7-1/2	10	10	505-BO-Ⓢ	505-BA-Ⓢ	505-BJ-Ⓢ	505-BC-Ⓢ	505-BS-Ⓢ
2	45	10	15	25	25	505-CO-Ⓢ	505-CA-Ⓢ	505-CJ-Ⓢ	505-CC-Ⓢ	505-CS-Ⓢ
3	90	25	30	50	50	505-DO-Ⓢ	505-DA-Ⓢ	505-DJ-Ⓢ	505-DC-Ⓢ	—
4	135	40	50	75	100	505-EO-Ⓢ	505-EA-Ⓢ	505-EJ-Ⓢ	505-EC-Ⓢ	
5	270	75	100	150	200	505-FO-Ⓢ	505-FA-Ⓢ	505-FJ-Ⓢ	505-FC-Ⓢ	
6 [Ⓢ]	540	150	200	300	400	505-GO-Ⓢ	505-GA-Ⓢ	505-GJ-Ⓢ	505-GC-Ⓢ	
7 [Ⓢ]	810	—	300	600	600	505-HO-Ⓢ	505-HA-Ⓢ	505-HJ-Ⓢ	505-HC-Ⓢ	
8 [Ⓢ]	1215	—	450	900	900	505-JO-Ⓢ	505-JA-Ⓢ	505-JJ-Ⓢ	—	
9 [Ⓢ]	2250	—	800	1600	1600	505-KO-Ⓢ	505-KA-Ⓢ	—	—	

Ⓢ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 505-AA-Ⓢ** becomes **Cat. No. 505-AAD-Ⓢ**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		24V [➤]	110V-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
Common Control [Ⓢ]	50 Hz	—	—	—	—	P [Ⓢ]	—	T	—	N	KN	I	Q	—	M	R	—
	60 Hz	—	—	—	H	—	A ¹¹	—	—	—	—	U	—	B	—	—	C
Separate Control (without transformer)	50 Hz	K	S ⁺	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	60 Hz	J	—	D [Ⓢ]	—	—	—	—	F	—	—	—	—	—	—	—	—

Ⓢ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 505-AAD-Ⓢ** becomes **Cat. No. 505-AAD-A2D**.

* **Omission of Overload Relays** — Bulletin 505 reversing starters are available without overload protection. Cat. Nos. for all starters without overload protection will be the listed Cat. No. with the No. "23" added. Example: **Cat. No. 505-AOD-Ⓢ** would be **Cat. No. 505-AOD-23**.

† **Vertically Arranged** — Full Voltage Reversing Starters, Sizes 0...5, Open Type Without Enclosure can be supplied in a vertically arranged construction. To order, change the bulletin number in the listed Cat. No. from **505** to **505V**. Example: **Cat. No. 505V-AOD-A2D** with solid-state overload relay and **Cat. No. 505V-AOD** with eutectic alloy overload relay.

‡ Fiberglass reinforced polyester hubs are included with each starter. Sizes 6 through 8 are painted enclosures.

§ Does not include line and load lugs. See page 1-95 for kits.

Ⓢ Price includes Control Circuit Transformer. This applies to NEMA size 6 Enclosed, only.

➤ Only available on sizes 00...5. When using 24V coils on size 4 or 5, an interposing relay may be required. See coil VA values on page 1-129.

Ⓢ When selecting a factory installed control circuit transformer (see Modifications page 1-88), use the Common Control Voltage Suffix Code to denote the transformer primary voltage. The starter coil and transformer secondary voltage will both be 120V by default. Example: **Cat. No. 505-BAB-6P** will have a transformer with a 480V primary/120V secondary voltage and a 120V starter coil. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil/transformer secondary voltage. Example: **Cat. No. 505-BABJ-6P** will have a transformer with a 480V primary/24V secondary and a 24V starter coil.

+ This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.

Ⓢ This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.

Ⓢ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.

¹¹This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

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Heater Element Selection — page 1-152

NEMA Full Voltage Reversing Starters

Product Selection, Continued

Heater Elements — Starters with eutectic alloy overload relay require 3 heater elements. See page 1-152 for heater element selection tables.

3Ø • 600V AC Maximum • 60 Hz • With 3-Pole Overload Protection

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Hazardous Locations		
		Motor Voltage				Unilock Enclosures	Bolted Enclosures	
		200V	230V	50 Hz 380...415V	460...575V	Type 3R, 7 & 9 Class I, Groups C & D Class II, Groups E, F & G — Divisions 1 & 2 — Cat. No.*†	Type 7 & 9 Class I, Groups C & D Class II, Groups E, F & G — Divisions 1 & 2 — Cat. No.*	Type 3R, 7 & 9 Class I, Groups C & D Class II, Groups E, F & G — Divisions 1 & 2 — Cat. No.*‡
0	18	3	3	5	5	505-AU⊗-⊕	505-AE⊗-⊕	505-AH⊗-⊕
1	27	7-1/2	7-1/2	10	10	505-BU⊗-⊕	505-BE⊗-⊕	505-BH⊗-⊕
2	45	10	15	25	25	—	505-CE⊗-⊕	505-CH⊗-⊕
3	90	25	30	50	50	—	505-DE⊗-⊕	505-DH⊗-⊕
4	135	40	50	75	100	—	505-EE⊗-⊕	505-EH⊗-⊕

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 505-AU⊗-⊕** becomes **Cat. No. 505-AUD-⊕**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		24V§	110V-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
		Common Control*	50 Hz	—	—	—	—	P+	—	T	—	N	KN	I	Q	—	M
	60 Hz	—	—	—	H	—	A*	—	—	—	—	U	—	B	—	—	C
Separate Control (without transformer)	50 Hz	K	S>	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	60 Hz	J	—	D**	—	—	—	—	F	—	—	—	—	—	—	—	—

⊕ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page page 1-140 to complete the Cat. No. Example: **Cat. No. 505-AUD-⊕** becomes **Cat. No. 505-AUD-A2D**.

* **Omission of Overload Relays** — Bulletin 505 reversing starters are available without overload protection. Cat. Nos. for all starters without overload protection will be the listed Cat. No. with the No. "23" added. Example: **Cat. No. 505-AUD-⊕** would be **Cat. No. 505-AUD-23**.

† For NEMA Type 3R application it is **necessary** that a drain or breather and drain be **added**. See Factory Modifications or Accessories.

‡ Includes drain and cover gasket.

§ Only available on sizes 00...5. When using 24V coils on size 4 or 5, an interposing relay may be required. See coil VA values on page 1-129.

* When selecting a factory installed control circuit transformer (see Modifications page 1-87), use the Common Control Voltage Suffix Code to denote the transformer primary voltage. The starter coil and transformer secondary voltage will both be 120V by default. Example: **Cat. No. 505-BUB-6P** will have a transformer with a 480V primary/120V secondary voltage and a 120V starter coil. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil/transformer secondary voltage. Example: **Cat. No. 505-BUBJ-6P** will have a transformer with a 480V primary/24V secondary and a 24V starter coil.

> This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.

** This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.

+ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.

* This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

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NEMA Full Voltage Reversing Starters

Product Selection, Continued

Heater Elements — Starters with eutectic alloy overload relays require 1 heater element. See page page 1-152 for heater element selection tables.

1Ø • 2-Pole • 277V AC Maximum • 60 Hz • With 1-Pole Eutectic Overload Protection

NEMA Size	Continuous Ampere Rating (A)	No. of Poles	Type Of Motor	Maximum Horsepower Rating (Each Motor) Full load current of each motor must not exceed "Continuous Ampere Rating"		Open Type Without Enclosure	Type 1 General Purpose Enclosure	Type 3R/12 Rainproof, Dusttight Industrial Use Enclosure	Type 4/4X Watertight, Corrosion-Resistant Enclosure Stainless Steel	Hazardous Location Enclosures	
				115V	230V					Type 7 & 9 Class I, Groups C & D Class II, Groups E, F & G Division 1 & 2	Type 3R, 7 & 9 Class I, Groups C & D Class II, Groups E, F & G Division 1 & 2
				Cat. No.*†	Cat. No.*†	Cat. No.*†	Cat. No.*†	Cat. No.*†	Cat. No.*†		
00	9	2	3 Lead Repulsion Induction	1/3	1	505-TO⊗-101	505-TA⊗-101	—	Use Size 0 Starter		
			3 Lead Split Phase			505-TO⊗-102	505-TA⊗-102	—			
		3	4 Lead Repulsion Induction			505-TO⊗-103	505-TA⊗-103	—			
			4 Lead Split Phase			505-TO⊗-104	505-TA⊗-104	—			
0	18	2	3 Lead Repulsion Induction	1	2	505-AO⊗-101	505-AA⊗-101	505-AJ⊗-101	505-AC⊗-101	505-AE⊗-101	505-AH⊗-101
			3 Lead Split Phase			505-AO⊗-102	505-AA⊗-102	505-AJ⊗-102	505-AC⊗-102	505-AE⊗-102	505-AH⊗-102
		3	4 Lead Repulsion Induction			505-AO⊗-103	505-AA⊗-103	505-AJ⊗-103	505-AC⊗-103	505-AE⊗-103	505-AH⊗-103
			4 Lead Split Phase			505-AO⊗-104	505-AA⊗-104	505-AJ⊗-104	505-AC⊗-104	505-AE⊗-104	505-AH⊗-104
		4	4 Lead Split Phase (Break all lines)			505-AO⊗-105	505-AA⊗-105	505-AJ⊗-105	505-AC⊗-105	—	—
1	27	2	3 Lead Repulsion Induction	2	3	505-BO⊗-101	505-BA⊗-101	505-BJ⊗-101	505-BC⊗-101	505-BE⊗-101	505-BH⊗-101
			3 Lead Split Phase			505-BO⊗-102	505-BA⊗-102	505-BJ⊗-102	505-BC⊗-102	505-BE⊗-102	505-BH⊗-102
		3	4 Lead Repulsion Induction			505-BO⊗-103	505-BA⊗-103	505-BJ⊗-103	505-BC⊗-103	505-BE⊗-103	505-BH⊗-103
			4 Lead Split Phase			505-BO⊗-104	505-BA⊗-104	505-BJ⊗-104	505-BC⊗-104	505-BE⊗-104	505-BH⊗-104
		4	4 Lead Split Phase (Break all lines)			505-BO⊗-105	505-BA⊗-105	505-BJ⊗-105	505-BC⊗-105	—	—

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 505-AAX⊗-101** becomes **Cat. No. 505-AAXD-101**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		24V‡	110V...115V	115...120V	200...208V	220...230V	230...240V	240V	277V
Common Control§	50 Hz	—	XS*	—	—	XP⊗	—	XT	—
	60 Hz	—	—	XD>	XH	—	XA+	—	XF
Separate Control (without transformer)	50 Hz	—	XWS*	—	—	XWP⊗	—	XWT	—
	60 Hz	XWJ	—	XWD>	XWH	—	XWA+	—	XWF

* **Ordering Information** — All 1Ø reversing starter orders **must be** accompanied with a circuit diagram of the motor.

† **Omission of Overload Relays** — Bulletin 505 reversing starters are available without overload protection. Cat. Nos. for all starters without overload protection will be the listed Cat. No. with the No. "23" added. Example: **Cat. No. 505-AOXD-101** would be **Cat. No. 505-AOXD-23-101**.

‡ Only available on sizes 00...5. When using 24V coils on size 4 or 5, an interposing relay may be required. See coil VA values on page 1-129.

§ When selecting a factory installed control circuit transformer (see Modifications page 1-87), use the Common Control Voltage Suffix Code to denote the transformer primary voltage. The starter coil and transformer secondary voltage will both be 120V by default. Example: **Cat. No. 505-BAXA-6P-101** will have a transformer with a 240V primary/120V secondary voltage and a 120V starter coil. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil/transformer secondary voltage. Example: **Cat. No. 505-BAXAJ-6P-101** will have a transformer with a 240V primary/24V secondary and a 24V starter coil.

* This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.

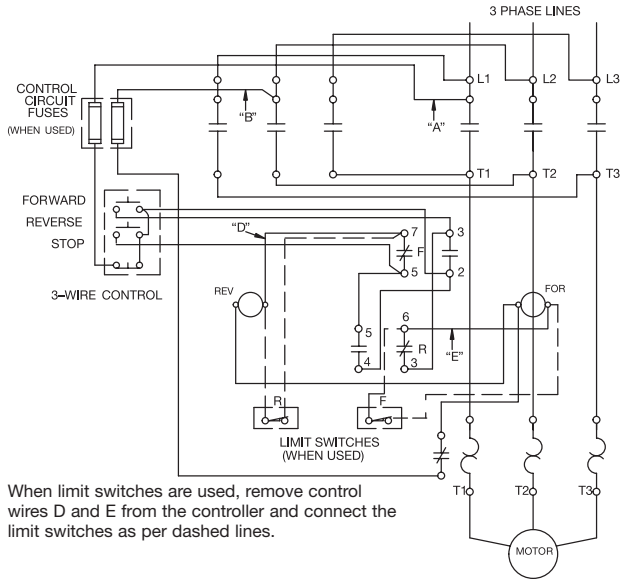
> This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.

⊗ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.

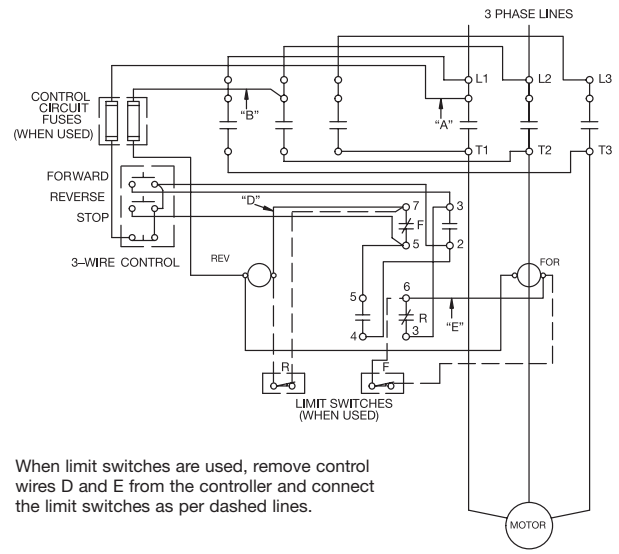
+ This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

NEMA Full Voltage Reversing Starters

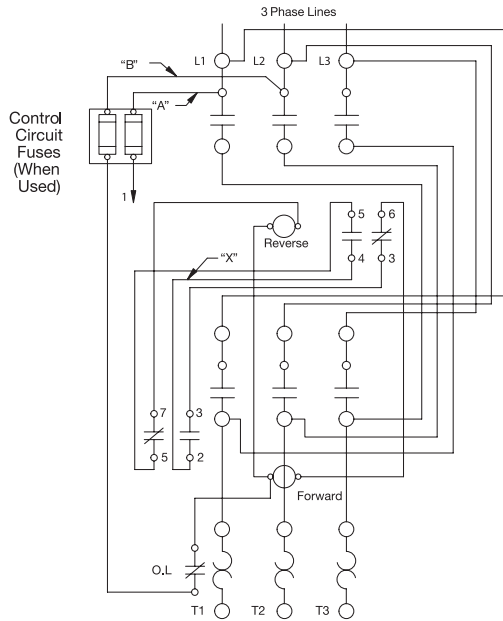
Typical Wiring Diagrams (See Applicable Codes and Laws)



*Bulletin 505
3Ø — 3-Pole
Reversing Starter with Eutectic Alloy Overload Relay
and Solid-State Overload Relays*



*Bulletin 505
3Ø — 3-Pole
Reversing Starter without Overload Relay*

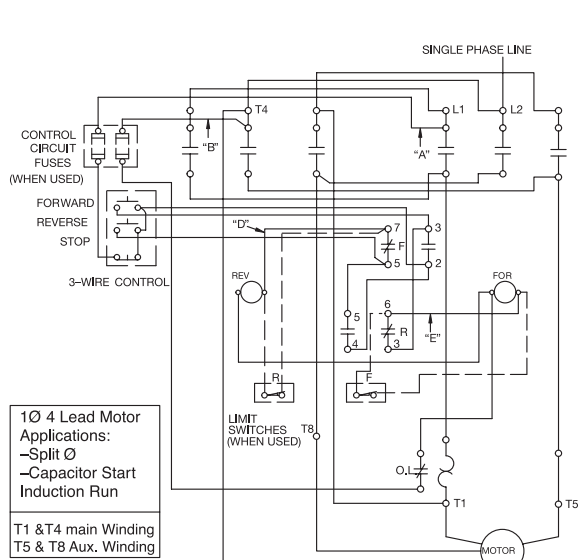


*Bulletin 505V
3Ø — 3-Pole
Vertical Reversing Starter with Eutectic Alloy Overload Relay,
With Solid-State Overload Relays*

Separate Control Circuit — When the controller coils are to operate on a voltage other than line voltage, check coil rating for compatibility and change coils if necessary. Disconnect wires A and B from lines L1 and L2. Connect wires A and B to the separate control source. Refer to local Electrical Code for control circuit disconnection requirements.

NEMA Full Voltage Reversing Starters

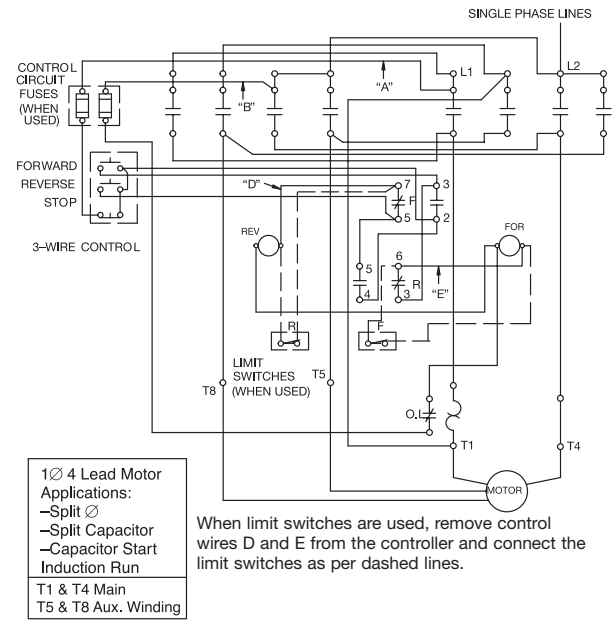
Typical Wiring Diagrams, Continued (See Applicable Codes and Laws)



1Ø 4 Lead Motor
Applications:
-Split Ø
-Capacitor Start
Induction Run
T1 & T4 main Winding
T5 & T8 Aux. Winding

When limit switches are used, remove control wires D and E from the controller and connect the limit switches as per dashed lines.

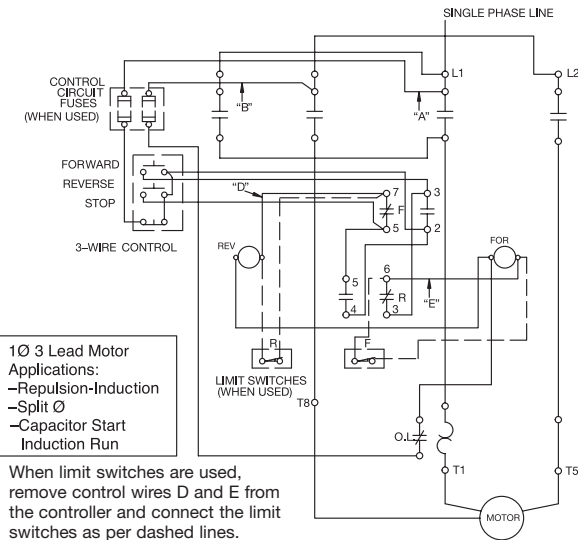
Bulletin 505
1Ø — 3-Pole (Suffix 104)
Reversing Starter with
Eutectic Alloy Overload Relay



1Ø 4 Lead Motor
Applications:
-Split Ø
-Capacitor Start
Induction Run
T1 & T4 Main
T5 & T8 Aux. Winding

When limit switches are used, remove control wires D and E from the controller and connect the limit switches as per dashed lines.

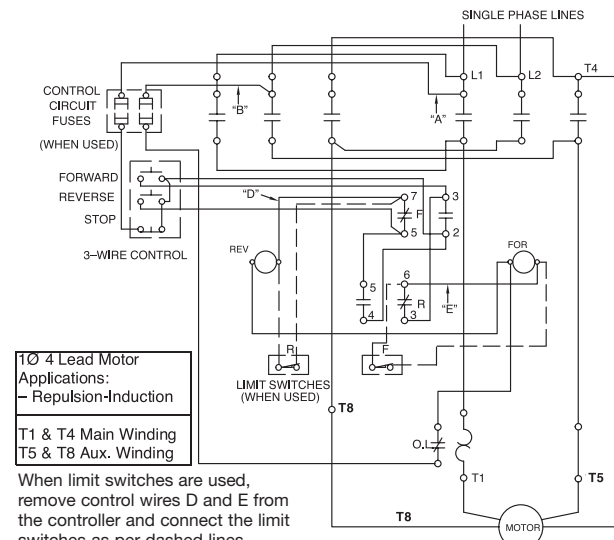
Bulletin 505
1Ø — 4-Pole (Suffix 105)
Reversing Starter with
Eutectic Alloy Overload Relay



1Ø 3 Lead Motor
Applications:
-Repulsion-Induction
-Split Ø
-Capacitor Start
Induction Run

When limit switches are used, remove control wires D and E from the controller and connect the limit switches as per dashed lines.

Bulletin 505
1Ø — 2-Pole (Suffix 101 and 102)
Reversing Starter with
Eutectic Alloy Overload Relay



1Ø 4 Lead Motor
Applications:
- Repulsion-Induction
T1 & T4 Main Winding
T5 & T8 Aux. Winding

When limit switches are used, remove control wires D and E from the controller and connect the limit switches as per dashed lines.

Bulletin 505
1Ø — 3-Pole (Suffix 103)
Reversing Starter with
Eutectic Alloy Overload Relay

Separate Control Circuit — When the controller coils are to operate on a voltage other than line voltage, check coil rating for compatibility and change coils if necessary. Disconnect wires A and B from lines L1 and L2. Connect wires A and B to the separate control source. Refer to local Electrical Code for control circuit disconnection requirements.

NEMA Full Voltage Starters

Product Overview



*Bulletin 509, Size 1
with Eutectic Alloy
Overload Relay
Open Type without Enclosure*

Bulletin 509

- NEMA Sizes 00...9
- Exceptional Electrical Life
- UL Witnessed Type 2 Coordination
- Dependable Coil Operation
- Eutectic Alloy Overload Relays Class 10, 20, or 30
- Solid-State Overload Relays Class 10, 15, 20, and 30

Bulletin 509 starters are designed for full voltage starting of polyphase squirrel cage motors. These starters meet NEMA Standards, are easy to wire and service, simple to select, and offer a broad range of NEMA sizes (00 through 9).

These starters may be operated by remote control with push buttons, float switches, thermostats, pressure switches, snap switches, limit switches, or any other suitable two or three wire pilot device.

All Bulletin 509 Size 00 through 9 starters are available with Bulletin 592 eutectic alloy overload relays as standard and solid-state overloads are optional for additional flexibility in motor protection.

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Standards and Certifications

See below.

Standards and Certifications

- NEMA/EEMAC ICS 2
- UL 508
- CSA C22.2 No.14
- ABS 4/5.115 — American Bureau of Shipping
- UCSG 46 CFR 111.70
- EN/IEC 60947-4-1
- CE Marked
- CSA Certified (LR1234)
- UL Listed (File No. E3125, Guide No. NLDX)
- Hazardous Location:
UL Listed (File No. E10314)
CSA Certified (LR 11924)



Bulletin 509, Size 3 with Eutectic Alloy Overload Relay, Open Type without Enclosure



Bulletin 509, Size 5 with Solid-State Overload Relay, Open Type without Enclosure

Heater Elements — Starters with eutectic alloy overload relay require 3 heater elements. See page page 1-152 for heater element selection tables.

3Ø • 600V AC Maximum • 60 Hz • With 3-Pole Overload Protection

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Open Type Without Enclosure	Type 1 General Purpose Enclosure Surface Mounting	Type 3R/12 Rainproof, Dusttight Industrial Use Enclosure	Type 4/4X Watertight Corrosion-Resistant Enclosures Stainless Steel	Type 4X Watertight Corrosion-Resistant Enclosure Fiberglass-Reinforced Polyester
		Motor Voltage								
		200V	230V	50 Hz 380... 415V	460... 575V					
00	9	1-1/2	1-1/2	2	2	509-TO⊗-⊕	509-TA⊗-⊕	Use Size 0 starter	—	—
0	18	3	3	5	5	509-AO⊗-⊕	509-AA⊗-⊕	509-AJ⊗-⊕	509-AC⊗-⊕	509-AS⊗-⊕
1	27	7-1/2	7-1/2	10	10	509-BO⊗-⊕	509-BA⊗-⊕	509-BJ⊗-⊕	509-BC⊗-⊕	509-BS⊗-⊕
2	45	10	15	25	25	509-CO⊗-⊕	509-CA⊗-⊕	509-CJ⊗-⊕	509-CC⊗-⊕	509-CS⊗-⊕
3	90	25	30	50	50	509-DO⊗-⊕	509-DA⊗-⊕	509-DJ⊗-⊕	509-DC⊗-⊕	—
4	135	40	50	75	100	509-EO⊗-⊕	509-EA⊗-⊕	509-EJ⊗-⊕	509-EC⊗-⊕	
5	270	75	100	150	200	509-FO⊗-⊕	509-FA⊗-⊕	509-FJ⊗-⊕	509-FC⊗-⊕	
6‡	540	150	200	300	400	509-GO⊗-⊕	509-GA⊗-⊕§	509-GJ⊗-⊕§	509-GC⊗-⊕§	
7‡	810	—	300	600	600	509-HO⊗-⊕	509-HA⊗-⊕	509-HJ⊗-⊕	509-HC⊗-⊕	
8‡	1215	—	450	900	900	509-JO⊗-⊕	509-JA⊗-⊕	509-JJ⊗-⊕	509-JC⊗-⊕	
9	2250	—	800	1600	1600	509-KO⊗-⊕	509-KA⊗-⊕	509-KJ⊗-⊕	509-KC⊗-⊕	

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 509-BA⊗-⊕** becomes **Cat. No. 509-BAD⊗-⊕**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		24V*	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
		Common Control▶	50 Hz	—	—	—	—	P⊕	—	T	—	N	KN	I	Q	—	M
	60 Hz	—	—	—	H	—	A⊗	—	—	—	—	U	—	B	—	—	C
Separate Control (without transformer)	50 Hz	K	S⊗	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	60 Hz	J	—	D+	—	—	—	—	F	—	—	—	—	—	—	—	—

⊕ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 509-BAD⊗-⊕** becomes **Cat. No. 509-BAD-A2D**.

- * Sizes 6 through 8 are painted enclosures.
- † Fiberglass reinforced polyester hubs are included with each starter.
- ‡ Does not include line and load lugs, see page 1-95 for kits.
- § Price includes control current transformer.
- ⊕ Only available on sizes 00...5. When using 24V coils on size 4 or 5, an interposing relay may be required. See coil VA values on page 1-129.
- ▶ When selecting a factory-installed control circuit transformer (see Modifications page 1-87), use the Common Control Voltage Suffix Code to denote the transformer primary voltage. The starter coil and transformer secondary voltage will both be 120V by default. Example: **Cat. No. 509-BAB-6P** will have a transformer with a 480V primary/120V secondary voltage and a 120V starter coil. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil/transformer secondary voltage. Example: **Cat. No. 509-BABJ-6P** will have a transformer with a 480V primary/24V secondary and a 24V starter coil.
- ⊗ This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.
- + This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.
- ⊕ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.
- ⊗ This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

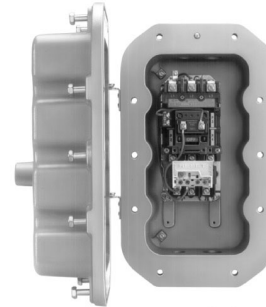
Accessories — page 1-93
 Modifications — page 1-87
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 Approximate Dimensions — page 1-116, page 1-117

NEMA Full Voltage Starters

Product Selection, Continued



Unilock Enclosure



Bulletin 509, Size 1
with Solid-State Overload Relay
Bolted Enclosure (Shown with Cover Open)

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements. See page 1-152 for heater element selection tables.

		3Ø • 600V AC Maximum • 60 Hz • With 3-Pole Overload Protection				Hazardous Locations			
NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Unilock Enclosures		Bolted Enclosures	
		Motor Voltage				Type 3R, 7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –	Type 7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –		
		200V	230V	50 Hz 380... 415V	460... 575V		Type 3R, 7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –		
						Cat. No.*†	Cat. No.	Cat. No.‡	
0	18	3	3	5	5	509-AU⊗-⊕	509-AE⊗-⊕	509-AH⊗-⊕	
1	27	7-1/2	7-1/2	10	10	509-BU⊗-⊕	509-BE⊗-⊕	509-BH⊗-⊕	
2	45	10	15	25	25	509-CU⊗-⊕	509-CE⊗-⊕	509-CH⊗-⊕	
3	90	25	30	50	50	509-DU⊗-⊕	509-DE⊗-⊕	509-DH⊗-⊕	
4	135	40	50	75	100	509-EU⊗-⊕	509-EE⊗-⊕	509-EH⊗-⊕	
5	270§	75	100	150	200	509-FU⊗-⊕	509-FE⊗-⊕	509-FH⊗-⊕	

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 509-BA⊗-⊕** becomes **Cat. No. 509-BAD⊗-⊕**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		24V*	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
Common Control▶	50 Hz	—	—	—	—	P❖	—	T	—	N	KN	I	Q	—	M	R	—
	60 Hz	—	—	—	H	—	A*‡	—	—	—	—	U	—	B	—	—	C
Separate Control (without transformer)	50 Hz	K	S‡	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	60 Hz	J	—	D+	—	—	—	—	F	—	—	—	—	—	—	—	—

⊕ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 509-BUD⊗-⊕** becomes **Cat. No. 509-BUD-A2D**.

- * For NEMA Type 3R application it is **necessary** that a drain or breather and drain be **added**. See Factory modifications or accessories.
- † **Omission of Overload Relays** — Bulletin 509 full voltage starters are available without overload protection. Cat. Nos. for all starters without overload protection will be the Cat. No. with the No. "23" added. Example: **Cat. No. 509-AUD⊗-⊕** would be **Cat. No. 509-AUD-23**.
- ‡ Includes drain and cover gasket.
- § NEMA Size 5 Unilock enclosed starters have a Continuous Ampere Rating of 210 A.
- * Only available on sizes 00...5. When using 24V coils on size 4 or 5, an interposing relay may be required. See coil VA values on page 1-129.
- ▶ When selecting a factory-installed control circuit transformer (see Modifications page page 1-87), use the Common Control Voltage Suffix Code to denote the transformer primary voltage. The starter coil and transformer secondary voltage will both be 120V by default. Example: **Cat. No. 509-BUB-6P** will have a transformer with a 480V primary/120V secondary voltage and a 120V starter coil. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil/transformer secondary voltage. Example: **Cat. No. 509-BUBJ-6P** will have a transformer with a 480V primary/24V secondary and a 24V starter coil.
- ‡ This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.
- + This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.
- ❖ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.
- ⊗ This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

- Accessories — page 1-93
- Modifications — page 1-87
- Specifications — page 1-107
- Approximate Dimensions — page 1-116, page 1-117

Heater Elements — Starters with eutectic alloy overload relays require 1 heater element. See page 1-152 for heater element selection tables.

1Ø • 2-Pole • 277 AC Maximum • 60 Hz • With 1-Pole Overload Protection

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed “Continuous Ampere Rating”		Open Type Without Enclosure Cat. No.	Type 1 General Purpose Surface Mounting Cat. No.	Type 3R/12 Rainproof, Dusttight Industrial Use Enclosure Cat. No.	Type 4/4X Watertight, Corrosion- Resistant Enclosure Stainless Steel Cat. No.	Type 4X Watertight Corrosion- Resistant Enclosure Fiberglass- Reinforced Polyester Cat. No.*
		Motor Voltage						
		115V	230V					
00	9	1/3	1	509-TOⓈ	509-TAⓈ	—	—	—
0	18	1	2	509-AOⓈ	509-AAⓈ	509-AJⓈ	509-ACⓈ	509-ASⓈ
1	27	2	3	509-BOⓈ	509-BAⓈ	509-BJⓈ	509-BCⓈ	509-BSⓈ
1P	36	3	5	509-XOⓈ	509-XAⓈ	509-XJⓈ	509-XCⓈ	509-XSⓈ
2	45	3	7-1/2	509-COⓈ	509-CAⓈ	509-CJⓈ	509-CCⓈ	509-CSⓈ
3	90	7-1/2	15	509-DOⓈ	509-DAⓈ	509-DJⓈ	509-DCⓈ	—

1Ø • 2-Pole • 240V AC Maximum • 60 Hz • With 1-Pole Overload Protection

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed “Continuous Ampere Rating”		Hazardous Location Enclosures	
		Motor Voltage		Type 7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –	Type 3R, 7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –
		115V	230V	Cat. No.	Cat. No.†
0	18	1	2	509-AEⓈ	509-AHⓈ
1	27	2	3	509-BEⓈ	509-BHⓈ
1P	36	3	5	509-XEⓈ	509-XHⓈ
2	45	3	7-1/2	509-CEⓈ	509-CHⓈ

Ⓢ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 509-BAXⓈ** becomes **Cat. No. 509-BAXDⓈ**. For other voltages, consult your local Allen-Bradley distributor.

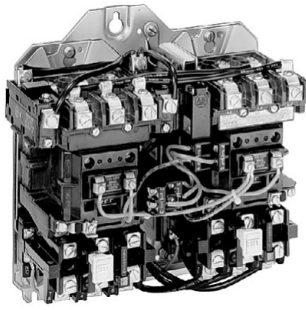
Voltage		24V	110...115V	115...120V	200...208V	220...230V	230...240V	240V	277V
		Common Control‡	50 Hz	—	XS§	—	—	XP▶	—
	60 Hz	—	—	XD♣	XH	—	XAⓈ	—	XF
Separate Control (without transformer)	50 Hz	—	XWS§	—	—	XWP▶	—	XWT	—
	60 Hz	XWJ	—	XWD♣	XWH	—	XWAⓈ	—	XWF

♣ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 509-BAXAⓈ** becomes **Cat. No. 509-BAXA-S2B**.

- * Fiberglass reinforced polyester hubs are included with each starter.
- † Includes drain and cover gasket.
- ‡ When selecting a factory-installed control circuit transformer (see Modifications page 1-87), use the Common Control Voltage Suffix Code to denote the transformer primary voltage. The starter coil and transformer secondary voltage will both be 120V by default. Example: **Cat. No. 509-BAXA-6P** will have a transformer with a 240V primary/120V secondary voltage and a 120V starter coil. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil/transformer secondary voltage. Example: **Cat. No. 509-BAXAJ-6P** will have a transformer with a 240V primary/24V secondary and a 24V starter coil.
- § This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.
- ♣ This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.
- ▶ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.
- Ⓢ This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

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*Bulletin 520F
Size 0, with Eutectic Alloy Overload
Relay
2-Speed, Consequent Pole
Open Type without Enclosure*

Bulletin 520

- NEMA Sizes 0...7
- Exceptional Electrical Life
- UL Witnessed Type 2 Coordination
- Dependable Coil Operation
- Eutectic Alloy Overload Relays Class 10, 20, or 30
- Solid-State Overload Relays Class 10, 15, 20, or 30
- Vertically Arranged — Bulletin 520V Sizes 0...5

Bulletin 520 multi-speed starters are designed for the control of two speed squirrel cage motors of either consequent pole or separate winding types. These starters are available for constant horsepower, constant torque or variable torque, three-phase motors. Multi-speed motor starters are commonly used on machine tools, fans, blowers, refrigeration compressors, and many other types of equipment. All Bulletin 520 multi-speed starters are available with Bulletin 592 eutectic alloy relays as standard and solid-state overloads are optional for additional flexibility in motor protection. Bulletin 520V vertically arranged starters are available in Sizes 0...5, in the Open Type without Enclosure construction only.

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Standards Compliance and Certifications

- NEMA/EEMAC ICS 2
- UL 508
- CSA C22.2 No.14
- CSA Certified (LR1234)
- UL Listed (File No. E3125, Guide No. NLDX)
- Hazardous Location:
UL Listed (File No. E10314)
CSA Certified (LR 11924)

Your order must include: 1) Cat. No. of the starter selected, 2) motor connection diagram, 3) if required, Cat. No. of any accessories, 4) specify whether motor is Constant Torque, Variable Torque, or Constant Horsepower, 5) heater elements for eutectic alloy overload voltages are not included and must be ordered as a separate Cat. No. located on page 1-152, and 6) overload relay code for solid-state overload relays. See page 1-140.

2-Speed Separate Winding, 3-Pole — 3-Pole, Constant or Variable Torque

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements for each speed. See page 1-152 for heater element selection tables.

3Ø • 600V AC Maximum • 60 Hz • With 3-Pole Overload Protection								
NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed “Continuous Ampere Rating”				Open Type Without Enclosure Cat. No.*†	Type 1 General Purpose Enclosure Surface Mounting Cat. No.*	Type 3R/12 Rainproof, Dusttight Industrial Use Enclosure Cat. No.*
		Motor Voltage						
		200V	230V	50 Hz 380...415V	460...575V			
0	18	3	3	5	5	520E-AO⊗-⊕-⊕	520E-AA⊗-⊕-⊕	520E-AJ⊗-⊕-⊕
1	27	7-1/2	7-1/2	10	10	520E-BO⊗-⊕-⊕	520E-BA⊗-⊕-⊕	520E-BJ⊗-⊕-⊕
2	45	10	15	25	25	520E-CO⊗-⊕-⊕	520E-CA⊗-⊕-⊕	520E-CJ⊗-⊕-⊕
3	90	25	30	50	50	520E-DO⊗-⊕-⊕	520E-DA⊗-⊕-⊕	520E-DJ⊗-⊕-⊕
4	135	40	50	75	100	520E-EO⊗-⊕-⊕	520E-EA⊗-⊕-⊕	520E-EJ⊗-⊕-⊕
5	270	75	100	150	200	520E-FO⊗-⊕-⊕	520E-FA⊗-⊕-⊕	520E-FJ⊗-⊕-⊕
6‡	540	150	200	300	400	520E-GO⊗-⊕-⊕	—	—
7‡	810	—	300	600	600	520E-HO⊗-⊕-⊕	—	—

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 520E-AA⊗-⊕-⊕** becomes **Cat. No. 520E-AAD-⊕-⊕**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		24V§	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
Common Control*	50 Hz	—	—	—	—	P†	—	T	—	N	KN	I	Q	—	M	R	—
	60 Hz	—	—	—	H	—	A‡	—	—	—	—	U	—	B	—	—	C
Separate Control (without transformer)	50 Hz	K	S>	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	60 Hz	J	—	D‡	—	—	—	—	F	—	—	—	—	—	—	—	—

⊕-⊕ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select two overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: **Cat. No. 520E-BAD-⊕-⊕** becomes **Cat. No. 520E-BAD-A2D-A2D**.

- * These starters are for wye connected motor windings. They may not be used with open delta connected motor windings. For starters to be used with open delta connected separate winding motors, use consequent pole starter, and furnish complete ordering information, see page 1-45.
- † **Vertically Arranged** — Multi-speed starters, sizes 0...5, Open Type Without Enclosure can be supplied in a vertically arranged construction. To order, change the Bulletin number in the listed Cat. No. from **520E to 520VE**. Example: **Cat. No. 520VE-BOD-A2D-A2D**.
- ‡ Does not include line and load lugs, see page 1-95 for kits.
- § Only available on sizes 00...5. When using 24V coils on size 4 or 5, an interposing relay may be required. See coil VA values on page 1-129.
- * When selecting a factory-installed control circuit transformer (see Modifications page 1-87), use the Common Control Voltage Suffix Code to denote the transformer primary voltage. The starter coil and transformer secondary voltage will both be 120V by default. Example: **Cat. No. 520E-BAB-6P** will have a transformer with a 480V primary/120V secondary voltage and a 120V starter coil. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil/transformer secondary voltage. Example: **Cat. No. 520E-BABJ-6P** will have a transformer with a 480V primary/24V secondary and a 24V starter coil.
- * This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.
- ‡ This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.
- > This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.
- ‡ This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

NEMA Multi-Speed Starters

Product Selection, Continued

2-Speed Separate Winding, 3-Pole — 3-Pole, Constant or Variable Torque, Continued

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements for each speed. See page 1-152 for heater element selection tables.

3Ø • 600V AC Maximum • 60 Hz • With 3-Pole Overload Protection									
NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed “Continuous Ampere Rating”				Type 4/4X Watertight Corrosion-Resistant Enclosures Stainless Steel	Type 4X Watertight Corrosion-Resistant Enclosure Fiberglass-Reinforced Polyester	Hazardous Locations	
		Motor Voltage						Bolted Enclosures	
		200V	230V	50 Hz 380... 415V	460... 575V			Type 7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –	Type 3R, 7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –
						Cat. No.*	Cat. No.*†	Cat. No.*	Cat. No.*‡
0	18	3	3	5	5	520E-AC⊗-⊗-⊗	520E-AS⊗-⊗-⊗	520E-AE⊗-⊗-⊗	520E-AH⊗-⊗-⊗
1	27	7-1/2	7-1/2	10	10	520E-BC⊗-⊗-⊗	520E-BS⊗-⊗-⊗	520E-BE⊗-⊗-⊗	520E-BH⊗-⊗-⊗
2	45	10	15	25	25	520E-CC⊗-⊗-⊗	520E-CS⊗-⊗-⊗	520E-CE⊗-⊗-⊗	520E-CH⊗-⊗-⊗
3	90	25	30	50	50	520E-DC⊗-⊗-⊗	—	520E-DE⊗-⊗-⊗	520E-DH⊗-⊗-⊗
4	135	40	50	75	100	520E-EC⊗-⊗-⊗		520E-EE⊗-⊗-⊗	520E-EH⊗-⊗-⊗
5	270	75	100	150	200	520E-FC⊗-⊗-⊗		—	—

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 520E-AC⊗-⊗-⊗** becomes **Cat. No. 520E-ACD-⊗-⊗**. For other voltages, consult your local Allen-Bradley distributor.

Voltage	24V§	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
		Common Control* 50 Hz	—	—	—	—	P+	—	T	—	N	KN	I	Q	—	M
60 Hz	—	—	—	H	—	A⊗	—	—	—	—	U	—	B	—	—	C
Separate Control (without transformer)	50 Hz	K	S>	—	—	—	—	—	—	—	—	—	—	—	—	—
	60 Hz	J	—	D%	—	—	—	F	—	—	—	—	—	—	—	—

⊗-⊗ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select two overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: **Cat. No. 520E-ACD-⊗-⊗** becomes **Cat. No. 520-ACD-A2D-A2D**.

* These starters are for wye connected motor windings. They may not be used with open delta connected motor windings. For starters to be used with open delta connected separate winding motors, use consequent pole starter, and furnish complete ordering information, page 1-45.

† Fiberglass reinforced polyester hubs are included with each starter.

‡ Includes drain and cover gasket.

§ When using 24V coils on size 4 or 5, an interposing relay may be required.

* When selecting a factory-installed control circuit transformer (see Modifications page 1-87), use the Common Control Voltage Suffix Code to denote the transformer primary voltage. The starter coil and transformer secondary voltage will both be 120V by default. Example: **Cat. No. 520E-BCB-6P** will have a transformer with a 480V primary/120V secondary voltage and a 120V starter coil. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil/transformer secondary voltage. Example: **Cat. No. 520E-BCBJ-6P** will have a transformer with a 480V primary/24V secondary and a 24V starter coil.

> This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.

% This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.

+ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.

⊗ This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

2-Speed Separate Winding, 3-Pole — 3-Pole, Constant Horsepower

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements for each speed. See page 1-152 for heater element selection tables.

3Ø • 600V AC Maximum • 60 Hz • With 3-Pole Overload Protection

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed “Continuous Ampere Rating”				Open Type Without Enclosure	Type 1 General Purpose Enclosure Surface Mounting	Type 3R/12 Rainproof, Dusttight Industrial Use Enclosure	Type 4/4X Watertight Corrosion-Resistant Enclosures Stainless Steel	Type 4X Watertight Corrosion-Resistant Enclosure Fiberglass-Reinforced Polyester
		Motor Voltage								
		200V	230V	50 Hz 380... 415V	460... 575V					
0	18	2	2	3	3	520E-AO-Ⓢ-Ⓢ-Ⓢ	520E-AA-Ⓢ-Ⓢ-Ⓢ	520E-AJ-Ⓢ-Ⓢ-Ⓢ	520E-AC-Ⓢ-Ⓢ-Ⓢ	520E-AS-Ⓢ-Ⓢ-Ⓢ
1	27	5	5	7-1/2	25	520E-BO-Ⓢ-Ⓢ-Ⓢ	520E-BA-Ⓢ-Ⓢ-Ⓢ	520E-BJ-Ⓢ-Ⓢ-Ⓢ	520E-BC-Ⓢ-Ⓢ-Ⓢ	520E-BS-Ⓢ-Ⓢ-Ⓢ
2	45	7-1/2	10	20	20	520E-CO-Ⓢ-Ⓢ-Ⓢ	520E-CA-Ⓢ-Ⓢ-Ⓢ	520E-CJ-Ⓢ-Ⓢ-Ⓢ	520E-CC-Ⓢ-Ⓢ-Ⓢ	520E-CS-Ⓢ-Ⓢ-Ⓢ
3	90	20	25	40	40	520E-DO-Ⓢ-Ⓢ-Ⓢ	520E-DA-Ⓢ-Ⓢ-Ⓢ	520E-DJ-Ⓢ-Ⓢ-Ⓢ	520E-DC-Ⓢ-Ⓢ-Ⓢ	—
4	135	30	40	60	75	520E-EO-Ⓢ-Ⓢ-Ⓢ	520E-EA-Ⓢ-Ⓢ-Ⓢ	520E-EJ-Ⓢ-Ⓢ-Ⓢ	520E-EC-Ⓢ-Ⓢ-Ⓢ	
5	270	60	75	100	150	520E-FO-Ⓢ-Ⓢ-Ⓢ	520E-FA-Ⓢ-Ⓢ-Ⓢ	520E-FJ-Ⓢ-Ⓢ-Ⓢ	520E-FC-Ⓢ-Ⓢ-Ⓢ	
6§	540	100	150	200	300	520E-GO-Ⓢ-Ⓢ-Ⓢ	520E-GA-Ⓢ-Ⓢ-Ⓢ	520E-GJ-Ⓢ-Ⓢ-Ⓢ	—	
7§	810	—	225	—	450	520E-HO-Ⓢ-Ⓢ-Ⓢ	520E-HA-Ⓢ-Ⓢ-Ⓢ	520E-HJ-Ⓢ-Ⓢ-Ⓢ	—	

Ⓢ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 520E-AA-Ⓢ-Ⓢ-Ⓢ** becomes **Cat. No. 520E-AAD-Ⓢ-Ⓢ**, and **Cat. No. 520E-AC-Ⓢ-Ⓢ-Ⓢ** becomes **Cat. No. 520E-ACD-Ⓢ-Ⓢ**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		24V*	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
Common Control ▶	50 Hz	—	—	—	—	P❖	—	T	—	N	KN	I	Q	—	M	R	—
	60 Hz	—	—	—	H	—	A*‡	—	—	—	—	U	—	B	—	—	C
Separate Control (without transformer)	50 Hz	K	S‡	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	60 Hz	J	—	D+	—	—	—	—	F	—	—	—	—	—	—	—	—

Ⓢ-Ⓢ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select two overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: **Cat. No. 520E-AAD-Ⓢ-Ⓢ** becomes **Cat. No. 520E-AAD-A2D-A2B**.

- * These starters are for wye connected motor windings. They may not be used with open delta connected motor windings. For starters to be used with open delta connected separate winding motors, use consequent pole starter prices, and furnish complete ordering information, page 1-45.
- † **Vertically Arranged** — Multi-speed starters, sizes 0...5, Open Type Without Enclosure can be supplied in a vertically arranged construction. To order, change the Bulletin number in the listed **Cat. No. from 520E to 520VE**. Example: **Cat. No. 520VE-AOD-A2B-A2B**.
- ‡ Fiberglass reinforced polyester hubs are included with each starter.
- § Does not include line and load lugs, see page 1-95 for kits.
- * When using 24V coils on size 4 or 5, an interposing relay may be required.
- ▶ When selecting a factory-installed control circuit transformer (see Modifications page 1-87), use the Common Control Voltage Suffix Code to denote the transformer primary voltage. The starter coil and transformer secondary voltage will both be 120V by default. Example: **Cat. No. 520E-BAB-6P**, and **Cat. No. 520E-BCB-6P** and will have transformers with a 480V primary/120V secondary voltage and a 120V starter coil. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil/transformer secondary voltage. Example: **Cat. No. 520E-BABJ-6P**, and **Cat. No. 520E-BCBJ-6P** will have transformers with a 480V primary/24V secondary and a 24V starter coil.
- ‡ This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.
- + This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.
- ❖ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.
- * This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

NEMA Multi-Speed Starters

Product Selection, Continued

2-Speed Separate Winding, 3-Pole — 3-Pole, Constant Horsepower, Continued



Bulletin 520E, Size 1
with Eutectic Alloy Overload Relays
Bolted Enclosure (with Cover Open)
Shown with Optional Modifications



Bulletin 520E, Size 1
with Solid-State Overload Relays
Bolted Enclosure (with Cover Open)
Shown with Optional Modifications

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements for each speed. See page 1-152 for heater element selection tables.

3Ø • 600V AC Maximum • 60 Hz • With 3-Pole Overload Protection							
NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed “Continuous Ampere Rating”				Hazardous Locations	
		Motor Voltage				Bolted Enclosures	
		200V	230V	380...415V	460...575V	Type 7 & 9* Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –	Type 3R, 7 & 9† Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –
0	18	2	2	3	3	520E-AE⊗-⊕-⊕	520E-AH⊗-⊕-⊕
1	27	5	5	7-1/2	7-1/2	520E-BE⊗-⊕-⊕	520E-BH⊗-⊕-⊕
2	45	7-1/2	10	20	20	520E-CE⊗-⊕-⊕	520E-CH⊗-⊕-⊕
3	90	20	25	40	40	520E-DE⊗-⊕-⊕	520E-DH⊗-⊕-⊕
4	135	30	40	60	75	520E-EE⊗-⊕-⊕	520E-EH⊗-⊕-⊕

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 520E-AE⊗-⊕-⊕** becomes **Cat. No. 520E-AED-⊕-⊕**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		24V‡	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
Common Control §	50 Hz	—	—	—	—	P%	—	T	—	N	KN	I	Q	—	M	R	—
	60 Hz	—	—	—	H	—	A+	—	—	—	—	U	—	B	—	—	C
Separate Control (without transformer)	50 Hz	K	S*	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	60 Hz	J	—	D>	—	—	—	—	F	—	—	—	—	—	—	—	—

⊕-⊕ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select two overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: **Cat. No. 520E-AED-⊕-⊕** becomes **Cat. No. 520E-AED-A2D-A2D**.

* These starters are for wye connected motor windings. They may not be used with open delta connected motor windings. For starters to be used with open delta connected separate winding motors, use consequent pole starter prices, and furnish complete ordering information, see page 1-45.

† Includes drain and cover gasket.

‡ When using 24V coils on size 4 or 5, an interposing relay may be required.

§ When selecting a factory-installed control circuit transformer (see Modifications page 1-87), use the Common Control Voltage Suffix Code to denote the transformer primary voltage. The starter coil and transformer secondary voltage will both be 120V by default. Example: **Cat. No. 520E-BEB-6P** will have a transformer with a 480V primary/120V secondary voltage and a 120V starter coil. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil/transformer secondary voltage. Example: **Cat. No. 520E-BEBJ-6P** will have a transformer with a 480V primary/24V secondary and a 24V starter coil.

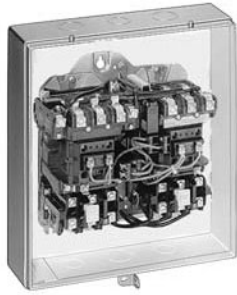
* This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.

> This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.

% This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.

+ This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

2-Speed Consequent Pole, 5-Pole — 3-Pole, Constant or Variable Torque



Bulletin 520F, Size 1
 with Eutectic Alloy Overload Relays
 Type 1, General Purpose Enclosure
 Shown with Cover Removed



Bulletin 520F, Size 1 with
 Solid-State Overload Relays
 Type 1 General Purpose Enclosure
 (with Cover Removed)



Type 4/4X
 Watertight Corrosion-Resistant
 Enclosure Stainless Steel



Type 4X
 Watertight Corrosion-Resistant
 Enclosure Fiberglass-Reinforced
 Polyester Shown with Optional
 Pilot Lights and Push Buttons

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements for each speed. See page 1-152 for heater element selection tables.

3Ø • 600V AC Maximum • 60 Hz • With 3-Pole Overload Protection

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed “Continuous Ampere Rating”				Open Type Without Enclosure Cat. No.*	Type 1 General Purpose Enclosure Surface Mounting Cat. No.	Type 3R/12 Rainproof, Dusttight Industrial Use Enclosure Cat. No.	Type 4/4X Watertight Corrosion- Resistant Enclosures Stainless Steel Cat. No.†	Type 4X Watertight Corrosion- Resistant Enclosure Fiberglass- Reinforced Polyester Cat. No.‡
		Motor Voltage								
		200V	230V	50 Hz 380...415V	460...575V					
0	18	3	3	5	5	520F-AO⊗-⊗-⊗	520F-AA⊗-⊗-⊗	520F-AJ⊗-⊗-⊗	520F-AC⊗-⊗-⊗	520F-AS⊗-⊗-⊗
1	27	7-1/2	7-1/2	10	10	520F-BO⊗-⊗-⊗	520F-BA⊗-⊗-⊗	520F-BJ⊗-⊗-⊗	520F-BC⊗-⊗-⊗	520F-BS⊗-⊗-⊗
2	45	10	15	25	25	520F-CO⊗-⊗-⊗	520F-CA⊗-⊗-⊗	520F-CJ⊗-⊗-⊗	520F-CC⊗-⊗-⊗	520F-CS⊗-⊗-⊗
3	90	25	30	50	50	520F-DO⊗-⊗-⊗	520F-DA⊗-⊗-⊗	520F-DJ⊗-⊗-⊗	520F-DC⊗-⊗-⊗	—
4	135	40	50	75	100	520F-EO⊗-⊗-⊗	520F-EA⊗-⊗-⊗	520F-EJ⊗-⊗-⊗	520F-EC⊗-⊗-⊗	
5§	270	75	100	150	200	520F-FO⊗-⊗-⊗	520F-FA⊗-⊗-⊗	520F-FJ⊗-⊗-⊗	520F-FC⊗-⊗-⊗	

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 520F-AA⊗-⊗-⊗** becomes **Cat. No. 520F-AAD-⊗-⊗**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		24V*	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
		Common Control ▶	50 Hz	—	—	—	—	P❖	—	T	—	N	KN	I	Q	—	M
	60 Hz	—	—	—	H	—	A⊗	—	—	—	—	U	—	B	—	—	C
Separate Control (without transformer)	50 Hz	K	S⊗	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	60 Hz	J	—	D+	—	—	—	—	F	—	—	—	—	—	—	—	—

⊗-⊗ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select two overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: **Cat. No. 520F-AAD-⊗-⊗** becomes **Cat. No. 520F-AAD-A2D-A2D**.

* **Vertically Arranged** — Multi-speed starters, sizes 0...5. Open Type Without Enclosure can be supplied in a vertically arranged construction. To order, change the Bulletin number in the listed Cat. No. from **520F** to **520VF**. Example: **Cat. No. 520VF-AOD-A2D-A2D**.

† Size 6 is a painted enclosure.

‡ Fiberglass reinforced polyester hubs are included with each starter.

§ For proper overload relay selection, when low speed full load currents are less than 77 A, consult your local Allen-Bradley distributor.

* Only available on sizes 0...5. When using 24V coils on sizes 4 and 5, an interposing relay may be required. See coil VA values on page 1-110.

▶ When selecting a factory-installed control circuit transformer (see Modifications page 1-87), use the Common Control Voltage Suffix Code to denote the transformer primary voltage. The starter coil and transformer secondary voltage will both be 120V by default. Example: **Cat. No. 520F-BAB-6P** will have a transformer with a 480V primary/120V secondary voltage and a 120V starter coil. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil/transformer secondary voltage. Example: **Cat. No. 520F-BABJ-6P** will have a transformer with a 480V primary/24V secondary and a 24V starter coil.

⊗ This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.

⊗ This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.

❖ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.

⊗ This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

NEMA Multi-Speed Starters

Product Selection, Continued

2-Speed Consequent Pole, 5-Pole — 3-Pole, Constant or Variable Torque, Continued



Bulletin 520F, Size 1
with Eutectic Alloy Overload Relay
Bolted Enclosure (with Cover Open)



Bulletin 520F, Size 1
with Solid-State Overload Relay
Bolted Enclosure (with Cover Open)

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements for each speed. See page 1-152 for heater element selection tables.

NEMA Size	Continuous Ampere Rating (A)	3Ø • 600V AC Maximum • 60 Hz • With 3-Pole Overload Protection				Hazardous Locations	
		Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Bolted Enclosures	
		Motor Voltage				Type 7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –	Type 3R, 7 & 9* Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –
		200V	230V	50Hz 380...415V	460...575V		
0	18	3	3	5	5	520F-AE⊗-⊕-⊕	520F-AH⊗-⊕-⊕
1	27	7-1/2	7-1/2	10	10	520F-BE⊗-⊕-⊕	520F-BH⊗-⊕-⊕
2	45	10	15	25	25	520F-CE⊗-⊕-⊕	520F-CH⊗-⊕-⊕
3	90	25	30	50	50	520F-DE⊗-⊕-⊕	520F-DH⊗-⊕-⊕

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 520F-AE⊗-⊕-⊕** becomes **Cat. No. 520F-AED-⊕-⊕**. For other voltages, consult factory.

Voltage		24V	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
Common Control †	50 Hz	—	—	—	—	P♣	—	T	—	N	KN	I	Q	—	M	R	—
	60 Hz	—	—	—	H	—	A>	—	—	—	—	U	—	B	—	—	C
Separate Control (without transformer)	50 Hz	K	S‡	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	60 Hz	J	—	D§	—	—	—	—	F	—	—	—	—	—	—	—	—

⊕-⊕ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select two overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: **Cat. No. 520F-AED-⊕-⊕** becomes **Cat. No. 520F-AED-A2D-A2D**.

* Includes drain and cover gasket.

† When selecting a factory-installed control circuit transformer (see Modifications page 1-87), use the Common Control Voltage Suffix Code to denote the transformer primary voltage. The starter coil and transformer secondary voltage will both be 120V by default. Example: **Cat. No. 520F-BEB-6P** will have a transformer with a 480V primary/120V secondary voltage and a 120V starter coil. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil/transformer secondary voltage. Example: **Cat. No. 520F-BEBJ-6P** will have a transformer with a 480V primary/24V secondary and a 24V starter coil.

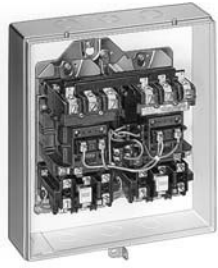
‡ This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.

§ This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.

♣ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.

> This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

2-Speed Consequent Pole, 5-Pole — 3-Pole, Constant Horsepower



Bulletin 520G, Size 1
 with Eutectic Alloy Overload Relays
 Type 1, General Purpose Enclosure
 Shown with Cover Removed



Bulletin 520G, Size 1 with
 Solid-State Overload Relays
 Type 1 General Purpose Enclosure
 (with Cover Removed)



Type 4/4X
 Watertight Corrosion-Resistant
 Enclosure Stainless Steel



Type 4X
 Watertight Corrosion-Resistant
 Enclosure Fiberglass-Reinforced
 Polyester Shown with Optional
 Pilot Lights and Push Buttons

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements for each speed. See page 1-152 for heater element selection tables.

3Ø • 600V AC Maximum • 60 Hz • With 3-Pole Overload Protection

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Open Type Without Enclosure Cat. No.*	Type 1 General Purpose Enclosure Surface Mounting Cat. No.	Type 3R/12 Rainproof, Dusttight Industrial Use Enclosure Cat. No.	Type 4/4X Watertight Corrosion-Resistant Enclosures Stainless Steel Cat. No.†	Type 4X Watertight Corrosion-Resistant Enclosure Fiberglass-Reinforced Polyester Cat. No.‡
		Motor Voltage								
		200V	230V	50 Hz 380...415V	460...575V					
0	18	2	2	3	3	520G-AO-⊕-⊕-⊕	520G-AA-⊕-⊕-⊕	520G-AJ-⊕-⊕-⊕	520G-AC-⊕-⊕-⊕	520G-AS-⊕-⊕-⊕
1	27	5	5	7-1/2	7-1/2	520G-BO-⊕-⊕-⊕	520G-BA-⊕-⊕-⊕	520G-BJ-⊕-⊕-⊕	520G-BC-⊕-⊕-⊕	520G-BS-⊕-⊕-⊕
2	45	7-1/2	10	20	20	520G-CO-⊕-⊕-⊕	520G-CA-⊕-⊕-⊕	520G-CJ-⊕-⊕-⊕	520G-CC-⊕-⊕-⊕	520G-CS-⊕-⊕-⊕
3	90	20	25	40	40	520G-DO-⊕-⊕-⊕	520G-DA-⊕-⊕-⊕	520G-DJ-⊕-⊕-⊕	520G-DC-⊕-⊕-⊕	—
4	135	30	40	60	75	520G-EO-⊕-⊕-⊕	520G-EA-⊕-⊕-⊕	520G-EJ-⊕-⊕-⊕	520G-EC-⊕-⊕-⊕	
5	270	60	75	100	150	520G-FO-⊕-⊕-⊕	520G-FA-⊕-⊕-⊕	520G-FJ-⊕-⊕-⊕	520G-FC-⊕-⊕-⊕	

⊕ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. 520G-AA-⊕-⊕-⊕ becomes Cat. No. 520G-AAD-⊕-⊕-⊕. For other voltages, consult factory.

Voltage	24V§	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
		Common Control*	50 Hz	—	—	—	P+	—	T	—	N	KN	I	Q	—	M
	60 Hz	—	—	—	H	A⊕	—	—	—	—	U	—	B	—	—	C
Separate Control (without transformer)	50 Hz	K	S>	—	—	—	—	—	—	—	—	—	—	—	—	—
	60 Hz	J	—	D%	—	—	—	—	F	—	—	—	—	—	—	—

⊕-⊕ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select two overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: Cat. No. 520G-AAD-⊕-⊕ becomes Cat. No. 520G-AAD-A2D-A2D.

* **Vertically Arranged** — Multi-speed starters, sizes 0...5, Open Type Without Enclosure can be supplied in a vertically arranged construction. To order, change the Bulletin number in the listed Cat. No. from 520G to 520VG. Example: Cat. No. 520VG-AOD-A2D-A2D.

† Size 6 is a painted enclosure.

‡ Fiberglass reinforced polyester hubs are included with each starter.

§ Only available in sizes 0...5. When using 24V coils on sizes 4 and 5, an interposing relay may be required. See coil VA values on page 1-110.

* When selecting a factory-installed control circuit transformer (see Modifications page 1-87), use the Common Control Voltage Suffix Code to denote the transformer primary voltage. The starter coil and transformer secondary voltage will both be 120V by default. Example: Cat. No. 520G-BAB-6P will have a transformer with a 480V primary/120V secondary voltage and a 120V starter coil. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil/transformer secondary voltage. Example: Cat. No. 520G-BABJ-6P will have a transformer with a 480V primary/24V secondary and a 24V starter coil.

> This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.

⊕ This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.

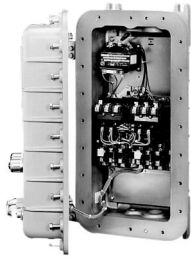
+ This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.

⊕ This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

NEMA Multi-Speed Starters

Product Selection, Continued

2-Speed Consequent Pole, 5-Pole — 3-Pole, Constant Horsepower, Continued



Bulletin 520G, Size 1
with Eutectic Alloy Overload Relay
Bolted Enclosure (with Cover Open)



Bulletin 520G, Size 1
with Solid-State Overload Relay
Bolted Enclosure (with Cover Open)

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements for each speed. See page 1-152 for heater element selection tables.

3Ø • 600V AC Maximum • 60 Hz • With 3-Pole Overload Protection							
NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed “Continuous Ampere Rating”				Hazardous Locations	
		Motor Voltage				Bolted Enclosures	
		200V	230V	380...415V	460...575V	Type 7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –	Type 3R, 7 & 9* Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –
0	18	3	3	5	5	520G-AE⊗-⊕-⊕	520G-AH⊗-⊕-⊕
1	27	7-1/2	7-1/2	10	10	520G-BE⊗-⊕-⊕	520G-BH⊗-⊕-⊕
2	45	10	15	25	25	520G-CE⊗-⊕-⊕	520G-CH⊗-⊕-⊕
3	90	25	30	50	50	520G-DE⊗-⊕-⊕	520G-DH⊗-⊕-⊕

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the **Cat. No. 520G-AE⊗-⊕-⊕** becomes **Cat. No. 520G-AED-⊕-⊕**. For other voltages, consult factory.

Voltage		24V	110-115V	115-120V	200-208V	220-230V	230-240V	240V	277V	380V	380-400V	415V	440-460V	460-480V	500V	550V	575-600V
Common Control †	50 Hz	—	—	—	—	P*	—	T	—	N	KN	I	Q	—	M	R	—
	60 Hz	—	—	—	H	—	A>	—	—	—	—	U	—	B	—	—	C
Separate Control (without transformer)	50 Hz	K	S‡	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	60 Hz	J	—	D§	—	—	—	—	F	—	—	—	—	—	—	—	—

⊕-⊕ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select two overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: **Cat. No. 520G-AED-⊕-⊕** becomes **Cat. No. 520G-AED-A2D-A2D**.

* Includes drain and cover gasket.

† When selecting a factory-installed control circuit transformer (see Modifications page 1-87), use the Common Control Voltage Suffix Code to denote the transformer primary voltage. The starter coil and transformer secondary voltage will both be 120V by default. Example: **Cat. No. 520G-BEB-6P** will have a transformer with a 480V primary/120V secondary voltage and a 120V starter coil. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil/transformer secondary voltage. Example: **Cat. No. 520G-BEBJ-6P** will have a transformer with a 480V primary/24V secondary and a 24V starter coil.

‡ This coil is optimized for 110...115V, 50 Hz applications, but can be used at 120V, 60 Hz nominal.

§ This coil is optimized for 115...120V, 60 Hz applications, but can be used at 110V, 50 Hz nominal.

* This coil is optimized for 220...230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.

> This coil is optimized for 230...240V, 60 Hz applications, but can be used at 220V, 50 Hz nominal.

Typical Wiring Diagrams — page 1-49

Accessories — page 1-93

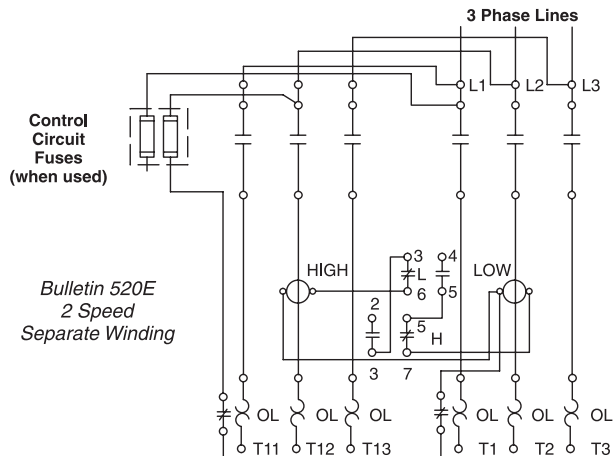
Modifications — page 1-87

Specifications — page 1-107

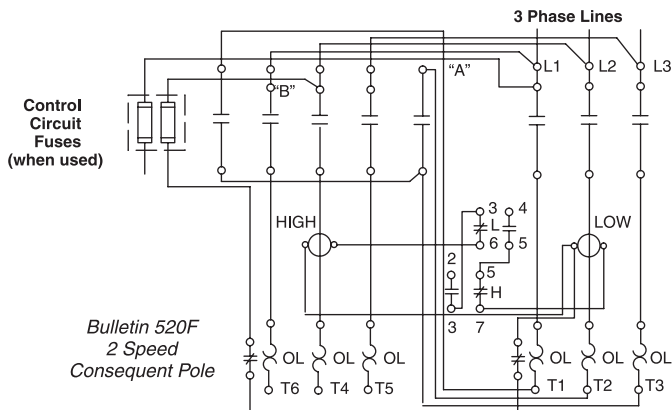
Heater Element Selection — page 1-152

NEMA Multi-Speed Starters

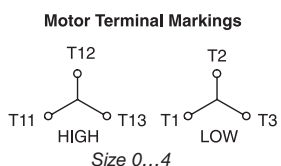
Typical Wiring Diagrams (See Applicable Codes and Laws)



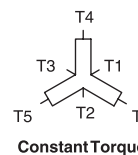
Bulletin 520E
2 Speed
Separate Winding



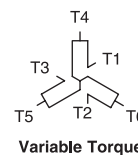
Bulletin 520F
2 Speed
Consequent Pole



2-Speed Separate Winding, Constant or Variable Torque and Constant Horsepower with Eutectic Alloy Overload Relay or Solid-State Overload Relay

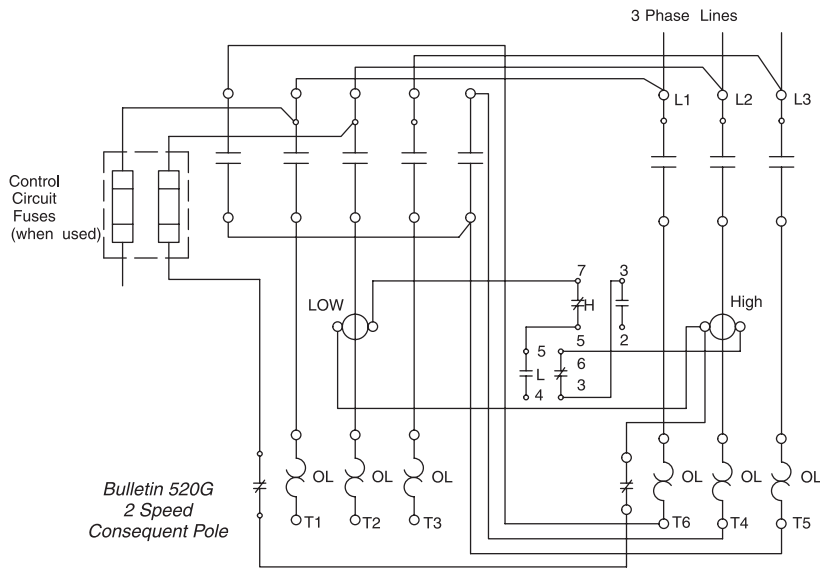


Constant Torque



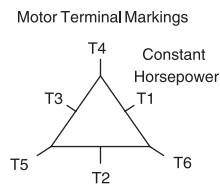
Variable Torque

Size 0...4
2-Speed Consequent Pole, Constant or Variable Torque with Eutectic Alloy Overload Relay or Solid-State Overload Relay



Bulletin 520G
2 Speed
Consequent Pole

Size 0...4
2-Speed Consequent Pole, Constant Horsepower with Eutectic Alloy Overload Relay or Solid-State Overload Relay



NEMA Combination Starters

Cat. No. Explanation

Configuration of a Basic Combination Starter

The information below is for reference purposes. Not all combinations will produce a valid Cat. No. Refer to the tables on the following pages for product selection.

Example Cat. No.

512
- A
- A
- CD
- A2D
- 1
- 24R
- 90

a
b
c
d
e
f

Bulletin No.	
Bulletin No.	Description
502	Combination Contactor with Disconnect Switch
502L	Combination Lighting Contactor with Disconnect Switch
503	Combination Contactor with Circuit Breaker
503L	Combination Lighting Contactor with Circuit Breaker
506	Reversing Combination Starter with Disconnect Switch
506X	Reversing Combination Starter with Disconnect Switch in a narrow enclosure
507	Reversing Combination Starter with Circuit Breaker
507X	Reversing Combination Starter with Circuit Breaker in a narrow enclosure
512	Non-Reversing Combination Starter with Disconnect Switch
512M	Non-Reversing Combination Starter with Disconnect Switch — Extra Panel Space
513	Non-Reversing Combination Starter with Circuit Breaker
513M	Non-Reversing Combination Starter with Circuit Breaker — Extra Panel Space
522E	2-Speed, 2-Winding, Full Voltage, Multi-Speed Combination Starter with Disconnect Switch
522F	2-Speed, 1-Winding, Constant or Variable Torque, Full Voltage, Multi-Speed Combination Starter with Disconnect Switch
522G	2-Speed, 1-Winding, Constant Horsepower, Full Voltage, Multi-Speed Combination Starter with Disconnect Switch
523E	2-Speed, 2-Winding, Full Voltage, Multi-Speed Combination Starter with Circuit Breaker
523F	2-Speed, 1-Winding, Constant or Variable Torque, Full Voltage, Multi-Speed Combination Starter with Circuit Breaker
523G	2-Speed, 1-Winding, Constant Horsepower, Full Voltage, Multi-Speed Combination Starter with Circuit Breaker
1232X	Pump Panel with Disconnect Switch
1233X	Pump Panel with Circuit Breaker

Starter Size	
NEMA Size Code	NEMA Size
A	0
B	1
C	2
D	3
E	4
F	5
G	6
H	7

Enclosure Type	
Code	Type
A	Type 1: General Purpose, painted metal enclosure with spring latch door fastener, external overload relay reset, and non-metallic handle
F	Type 3R/4/12: Rainproof, watertight, dusttight, painted metal enclosure with screw fasteners, external overload relay reset, and non-metallic handle
J	Type 3R/4/12: Rainproof, watertight, dusttight, painted metal enclosure with door safety hardware, metal handle, and NO external overload relay reset
D	Type 3R/4/12: Rainproof, watertight, dusttight, painted metal enclosure with door safety hardware, external overload relay reset, and metal handle
N	Type 3R: Rainproof, painted metal extra-capacity enclosure with screw fasteners, external overload relay reset, and a non-metallic handle
C	Type 4/4X: Watertight corrosion-resistant stainless steel enclosure with screw fasteners, external overload relay reset, and a stainless steel handle
S	Type 4/4X: Watertight corrosion-resistant non-metallic enclosure with screw fasteners, external overload relay reset, and a non-metallic handle
K	Type 12: Hazardous location (Class II, Division 2, Group F + G and Class III, Divisions 1 + 2) painted metal enclosure with screw fasteners, NO external overload relay reset and a non-metallic handle.
L	Type 12: Hazardous location (Class II, Division 2, Group F + G and Class III, Divisions 1 + 2) painted metal enclosure with screw fasteners, external overload relay reset and a non-metallic handle.
E	Type 7+9: Hazardous location bolted enclosure, metal handle.
H	Type 3R/7/9: Hazardous location bolted enclosure, rain proof, metal handle.
U	Type 3R/7/9: Hazardous location Unilock enclosure, rain proof, metal handle.

Coil Voltage			
Voltage Code	Description	Line Voltage (V)	Coil Voltage (V)
H	Common Control (without transformer)	208	208
A		240	240
B		480	480
C	Transformer Control*	600	600
H		208	120
A		240	120
B	Separate Control (without transformer)	480	120
C		600	120
HD		208	120
AD	Separate Control (without transformer)	240	120
BD		480	120
CD		600	120

Overload Relay	
Code	Description
None	Eutectic Alloy
See page 1-137	Solid-State

Options	
See page 1-92	

*** Note**
 When selecting a factory-installed control circuit transformer use the Transformer Control Voltage Suffix Code to denote the transformer primary voltage. The transformer secondary voltage and starter coil will both be 120V AC by default. Example: Cat. No. 512-BAB-6P-24R will have a transformer with a 480V primary voltage, 120V secondary voltage and a 120V starter coil voltage. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil and transformer secondary voltage. Example: 512-BABJ-6P-24R will have a transformer with a 480V primary voltage, 24V secondary voltage and a 24V starter coil voltage.

NEMA Combination Contactors

Disconnect Type



Bulletin 502

- NEMA Contactor Sizes 0...5 (No overload relay)
- Fusible or Non-Fusible Disconnect Switch
- Painted Metal Enclosures: Type 1, Type 3R/4/12
- Stainless Steel Enclosures: Type 4/4X
- Non-Metallic Enclosures: Type 4/4X
- Modifications — Factory-Installed
- Accessories — Field-Installed
- Service entrance rated

A Bulletin 502 combination contactor consists of a Bulletin 500, 3 pole contactor and a disconnect switch (fused or non-fused) mounted in a common enclosure.

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Standards Compliance and Certifications

cULus Listed (File No. E3125)
Guide No. (NLDX) per UL 508 and CSA C22.2 No. 14

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Line Voltage (V)	Fuse Clip Rating Amperes (A) Fuses not included. Select per NEC	Type 1 General Purpose Cat. No.*†	Type 3R/4/12 Rainproof, Waterproof, Dusttight Cat. No.*†	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware) Cat. No.*†	Type 4/4X Watertight Corrosion-Resistant Stainless Steel Cat. No.*†	Type 4/4X Watertight Corrosion-Resistant Non-metallic Cat. No.*†
		Motor Voltage										
		60 Hz 200V	60 Hz 230V	50 Hz 380... 415V	60 Hz 460... 575V							
0	18	3	3	—	—	208...240	30	502-AA®-24R	502-AF®-24R	502-AJ®-24R	502-AC®-24R	502-AS®-24R
		—	—	5	5	480...600	30	502-AA®-24R	502-AF®-24R	502-AJ®-24R	502-AC®-24R	502-AS®-24R
1	27	7-1/2	7-1/2	—	—	208...240	30	502-BA®-24R	502-BF®-24R	502-BJ®-24R	502-BC®-24R	502-BS®-24R
		—	—	10	10	480...600	30	502-BA®-24R	502-BF®-24R	502-BJ®-24R	502-BC®-24R	502-BS®-24R
		7-1/2	7-1/2	—	—	208...240	60	502-BA®-25R	502-BF®-25R	502-BJ®-25R	502-BC®-25R	502-BS®-25R
		—	—	10	10	480...600	60	502-BA®-25R	502-BF®-25R	502-BJ®-25R	502-BC®-25R	502-BS®-25R
2	45	—	—	25	25	480...600	30	502-CA®-24R	502-CF®-24R	502-CJ®-24R	502-CC®-24R	502-CS®-24R
		10	15	—	—	208...240	60	502-CA®-25R	502-CF®-25R	502-CJ®-25R	502-CC®-25R	502-CS®-25R
		—	—	25	25	480...600	60	502-CA®-25R	502-CF®-25R	502-CJ®-25R	502-CC®-25R	502-CS®-25R
		10	15	—	—	208...240	100	502-CA®-26J	502-CF®-26J	502-CJ®-26J	502-CC®-26J	502-CS®-26J
3	90	—	—	50	50	480...600	60	502-DA®-25R	502-DF®-25R	502-DJ®-25R	502-DC®-25R	502-DS®-25R
		25	30	—	—	208...240	100	502-DA®-26R	502-DF®-26R	502-DJ®-26R	502-DC®-26R	502-DS®-26R
		—	—	50	50	480...600	100	502-DA®-26R	502-DF®-26R	502-DJ®-26R	502-DC®-26R	502-DS®-26R
		25	30	—	—	208...240	200	502-DA®-27J	502-DF®-27J	502-DJ®-27J	502-DC®-27J	502-DS®-27J
4	135	—	—	75	100	480...600	100	502-EA®-26R	502-EF®-26R	502-EJ®-26R	502-EC®-26R	502-ES®-26R
		40	50	—	—	208...240	200	502-EA®-27R	502-EF®-27R	502-EJ®-27R	502-EC®-27R	502-ES®-27R
		—	—	75	100	480...600	200	502-EA®-27R	502-EF®-27R	502-EJ®-27R	502-EC®-27R	502-ES®-27R
		—	—	—	—	—	—	502-EA®-28J	502-EF®-28J	502-EJ®-28J	502-EC®-28J	502-ES®-28J
5	270	—	—	75	100	480...600	400	502-EA®-28J	502-EF®-28J	502-EJ®-28J	502-EC®-28J	502-ES®-28J
		40	50	—	—	208...240	200	502-FA®-27R	502-FF®-27R	502-FJ®-27R	502-FC®-27R	502-FS®-27R
		—	—	75	100	480...600	200	502-FA®-27R	502-FF®-27R	502-FJ®-27R	502-FC®-27R	502-FS®-27R
		75	100	150	200	208...600	400	502-FA®-28R	502-FF®-28R	502-FJ®-28R	502-FC®-28R	502-FS®-28R
—	—	150	200	480...600	400	502-FA®-28R	502-FF®-28R	502-FJ®-28R	502-FC®-28R	502-FS®-28R		

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No.
Example: **Cat. No. 502-AA®-24R** becomes **Cat. No. 502-AAB-24R**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		AD	AD	CD	CD
120V Separate Control (without transformer)		AD	AD	CD	CD

*Non-Fusible Disconnect Type

Cat. Nos. listed above include a fusible disconnect switch with Class R or J fuse clips. To order a non-fusible disconnect switch, eliminate the fuse clip code from the Cat. No. Example: **Cat. No. 502-BFB-24R** becomes **Cat. No. 502-BFB**.

† Class H fuse clips can be supplied. Example: **Cat. No. 502-AA®-24R** becomes **502-AA®-24**. Class J fuse clips can be supplied. Example: **Cat. No. 502-AA®-24R** becomes **502-AA®-24J**. Class HRC form II fuse clips can be supplied. Example: **Cat. No. 502-AA®-24R** becomes **502-AA®-24E**.

NEMA Combination Contactors

Circuit Breaker Type



Bulletin 503

- NEMA contactor sizes 0...5
- Circuit breaker thermal magnetic (inverse time)
- Painted metal enclosures: Type 1, Type 3R/4/12
- Stainless steel enclosures: Type 4/4X
- Non-metallic enclosures: Type 4/4X
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

A Bulletin 503 combination contactor consists of a Bulletin 500, 3 pole contactor and a thermal magnetic circuit breaker (inverse time) mounted in a common enclosure.

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Standards Compliance and Certifications

cULus Listed (File No. E3125)
 Guide No. (NLDX) per UL 508
 and CSA C22.2 No. 14

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Type 1 General Purpose Cat. No.*	Type 3R/4/12 Rainproof, Waterproof, Dusttight Cat. No.*	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware) Cat. No.*	Type 4/4X Watertight Corrosion-Resistant Stainless Steel Cat. No.*	Type 4/4X Watertight Corrosion-Resistant Non-metallic Cat. No.*
		Motor Voltage								
		200V	230V	460V	575V					
0	18	0...1/3	0...1/3	—	—	503-AA⊗-32T	503-AF⊗-32T	503-AJ⊗-32T	503-AC⊗-32T	503-AS⊗-32T
		1/2...1	1/2...1	0...1	0...1	503-AA⊗-35T	503-AF⊗-35T	503-AJ⊗-35T	503-AC⊗-35T	503-AS⊗-35T
		1-1/2...3	1-1/2...3	1-1/2...3	1-1/2...3	503-AA⊗-38T	503-AF⊗-38T	503-AJ⊗-38T	503-AC⊗-38T	503-AS⊗-38T
		—	—	5	5	503-AA⊗-39T	503-AF⊗-39T	503-AJ⊗-39T	503-AC⊗-39T	503-AS⊗-39T
1	27	0...1/3	0...1/3	—	—	503-BA⊗-32T	503-BF⊗-32T	503-BJ⊗-32T	503-BC⊗-32T	503-BS⊗-32T
		1/2...1	1/2...1	0...1	0...1	503-BA⊗-35T	503-BF⊗-35T	503-BJ⊗-35T	503-BC⊗-35T	503-BS⊗-35T
		1-1/2...3	1-1/2...3	1-1/2...3	1-1/2...3	503-BA⊗-38T	503-BF⊗-38T	503-BJ⊗-38T	503-BC⊗-38T	503-BS⊗-38T
		5	—	—	—	503-BA⊗-39T	503-BF⊗-39T	503-BJ⊗-39T	503-BC⊗-39T	503-BS⊗-39T
		7-1/2	5...7-1/2	5...7-1/2	5...7-1/2	503-BA⊗-40T	503-BF⊗-40T	503-BJ⊗-40T	503-BC⊗-40T	503-BS⊗-40T
2	45	—	—	10	10	503-BA⊗-41T	503-BF⊗-41T	503-BJ⊗-41T	503-BC⊗-41T	503-BS⊗-41T
		10	10	—	—	503-CA⊗-41T	503-CF⊗-41T	503-CJ⊗-41T	503-CC⊗-41T	503-CS⊗-41T
		—	15	15	15	503-CA⊗-42T	503-CF⊗-42T	503-CJ⊗-42T	503-CC⊗-42T	503-CS⊗-42T
3	90	—	—	20...25	20...25	503-CA⊗-44T	503-CF⊗-44T	503-CJ⊗-44T	503-CC⊗-44T	503-CS⊗-44T
		15...25	20...25	—	—	503-DA⊗-44T	503-DF⊗-44T	503-DJ⊗-44T	503-DC⊗-44T	503-DS⊗-44T
		—	30	—	30	503-DA⊗-45T	503-DF⊗-45T	503-DJ⊗-45T	503-DC⊗-45T	503-DS⊗-45T
		—	—	30...50	40...50	503-DA⊗-47T	503-DF⊗-47T	503-DJ⊗-47T	503-DC⊗-47T	503-DS⊗-47T
4	135	30	—	—	—	503-EA⊗-45T	503-EF⊗-45T	503-EJ⊗-45T	503-EC⊗-45T	503-ES⊗-45T
		40	40	—	—	503-EA⊗-46T	503-EF⊗-46T	503-EJ⊗-46T	503-EC⊗-46T	503-ES⊗-46T
		—	50	—	—	503-EA⊗-47T	503-EF⊗-47T	503-EJ⊗-47T	503-EC⊗-47T	503-ES⊗-47T
		—	—	—	60	503-EA⊗-48T	503-EF⊗-48T	503-EJ⊗-48T	503-EC⊗-48T	503-ES⊗-48T
		—	—	60...75	—	503-EA⊗-49T	503-EF⊗-49T	503-EJ⊗-49T	503-EC⊗-49T	503-ES⊗-49T
5	270	—	—	100	75...100	503-EA⊗-50T	503-EF⊗-50T	503-EJ⊗-50T	503-EC⊗-50T	503-ES⊗-50T
		50...60	—	—	—	503-FA⊗-48T	503-FF⊗-48T	503-FJ⊗-48T	503-FC⊗-48T	503-FS⊗-48T
		75	60...75	—	—	503-FA⊗-49T	503-FF⊗-49T	503-FJ⊗-49T	503-FC⊗-49T	503-FS⊗-49T
		—	100	—	—	503-FA⊗-50T	503-FF⊗-50T	503-FJ⊗-50T	503-FC⊗-50T	503-FS⊗-50T
		—	—	—	125	503-FA⊗-51T	503-FF⊗-51T	503-FJ⊗-51T	503-FC⊗-51T	503-FS⊗-51T
		—	—	125...150	—	503-FA⊗-52T	503-FF⊗-52T	503-FJ⊗-52T	503-FC⊗-52T	503-FS⊗-52T
—	—	200	150...200	503-FA⊗-54T	503-FF⊗-54T	503-FJ⊗-54T	503-FC⊗-54T	503-FS⊗-54T		

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No.
 Example: **Cat. No. 503-BA⊗-35T** becomes **Cat. No. 503-BAB-35T**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

* To order contactors (0 through 3) with current limiters, change the letter "T" to "D" at the end of the listed Cat. No. Example: **Cat. No. 503-AA⊗-35D**.

NEMA Combination Lighting Contactors

Disconnect Type (Fusible with Class R Fuse Clips) (Non-Fusible)



Bulletin 502L

- Current Ratings 15...300 A
- Fusible or non-fusible disconnect switch
- Painted metal enclosures: Type 1, Type 3R/4/12
- Stainless steel enclosures: Type 4/4X
- Non-metallic enclosures: Type 4/4X
- Modifications — Factory installed
- Accessories — Field installed

A Bulletin 502L combination lighting contactor consists of a Bulletin 500L, 3 pole lighting contactor and a disconnect switch (fused or non-fused) mounted in a common enclosure.

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Standards Compliance and Certifications

cULus Listed (File No. E54866)
Guide No. (NITW) per UL 508
and CSA C22.2 No. 14

Maximum Continuous Ampere Rating (A)		Line Voltage (V)	Fuse Clip Rating Amperes (A) Fuses not included. Select per NEC.	Type 1	Type 3R/4/12	Type 3R/4/12	Type 4/4X
Tungsten Lamp Loads (Maximum 480V Line 277V Load)	General Use			General Purpose	Rainproof, Waterproof, Dusttight	Rainproof, Waterproof, Dusttight (Door Safety Hardware)	Corrosion-Resistant Stainless Steel
	Resistive Heating	Cat. No.*†	Cat. No.*†	Cat. No.*†	Cat. No.*†		
	Ballast Lighting (Fluorescent)						
	Discharge Lighting (Mercury Vapor High Pressure Sodium and Metal Halide)						
15	20	208...240	30	502L-AA⊗-24R	502L-AF⊗-24R	502L-AJ⊗-24R	502L-AC⊗-24R
		480...600	30	502L-AA⊗-24R	502L-AF⊗-24R	502L-AJ⊗-24R	502L-AC⊗-24R
30	30	208...240	30	502L-BA⊗-24R	502L-BF⊗-24R	502L-BJ⊗-24R	502L-BC⊗-24R
		480...600	30	502L-BA⊗-24R	502L-BF⊗-24R	502L-BJ⊗-24R	502L-BC⊗-24R
		208...240	60	502L-BA⊗-25R	502L-BF⊗-25R	502L-BJ⊗-25R	502L-BC⊗-25R
		480...600	60	502L-BA⊗-25R	502L-BF⊗-25R	502L-BJ⊗-25R	502L-BC⊗-25R
60	60	480...600	30	502L-CA⊗-24R	502L-CF⊗-24R	502L-CJ⊗-24R	502L-CC⊗-24R
		208...240	60	502L-CA⊗-25R	502L-CF⊗-25R	502L-CJ⊗-25R	502L-CC⊗-25R
		480...600	60	502L-CA⊗-25R	502L-CF⊗-25R	502L-CJ⊗-25R	502L-CC⊗-25R
		208...240	100	502L-CA⊗-26J	502L-CF⊗-26J	502L-CJ⊗-26J	502L-CC⊗-26J
100	100	480...600	100	502L-CA⊗-26J	502L-CF⊗-26J	502L-CJ⊗-26J	502L-CC⊗-26J
		208...240	100	502L-DA⊗-26R	502L-DF⊗-26R	502L-DJ⊗-26R	502L-DC⊗-26R
		480...600	100	502L-DA⊗-26R	502L-DF⊗-26R	502L-DJ⊗-26R	502L-DC⊗-26R
		208...240	200	502L-DA⊗-27J	502L-DF⊗-27J	502L-DJ⊗-27J	502L-DC⊗-27J
200	200	480...600	200	502L-DA⊗-27J	502L-DF⊗-27J	502L-DJ⊗-27J	502L-DC⊗-27J
		480...600	100	502L-EA⊗-26R	502L-EF⊗-26R	502L-EJ⊗-26R	502L-EC⊗-26R
		208...240	200	502L-EA⊗-27R	502L-EF⊗-27R	502L-EJ⊗-27R	502L-EC⊗-27R
		480...600	200	502L-EA⊗-27R	502L-EF⊗-27R	502L-EJ⊗-27R	502L-EC⊗-27R
300	300	208...240	400	502L-EA⊗-28R	502L-EF⊗-28R	502L-EJ⊗-28R	502L-EC⊗-28J
		480...600	400	502L-EA⊗-28R	502L-EF⊗-28R	502L-EJ⊗-28R	502L-EC⊗-28J
		208...600	400	502L-FA⊗-28R	502L-FF⊗-28R	502L-FJ⊗-28R	502L-FC⊗-28R

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No.

Example: **Cat. No. 502L-AA⊗-24R** becomes **Cat. No. 502L-AAB-24R**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		AD	AD	CD	CD
120V Separate Control (without transformer)					

*Non-Fusible Disconnect Type

Cat. Nos. listed above include a fusible disconnect switch with Class R or J fuse clips. To order a non-fusible disconnect switch, eliminate the fuse clip code from the Cat. No. Example: **Cat. No. 502L-BFB-24R** becomes **Cat. No. 502L-BFB**.

† Class H fuse clips can be supplied. Example: **Cat. No. 502L-AA⊗-24R** becomes **502L-AA⊗-24**. Class J fuse clips can be supplied. Example: **Cat. No. 502L-AA⊗-24R** becomes **502L-AA⊗-24J**. Class HRC form II fuse clips can be supplied. Example: **502L-AA⊗-24R** becomes **502L-AA⊗-24E**.

NEMA Combination Lighting Contactors

Circuit Breaker Type



Bulletin 503L

- Current Ratings 15...300 A
- Circuit breaker thermal magnetic (inverse time)
- Painted metal enclosures: Type 1, Type 3R/4/12
- Stainless steel enclosures: Type 4/4X
- Non-metallic enclosures: Type 4/4X
- Modifications — Factory installed
- Accessories — Field installed

A Bulletin 503L combination lighting contactor consists of a Bulletin 500L lighting contactor and a thermal magnetic circuit breaker (inverse time) mounted in a common enclosure.

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cULus Listed (File No. E54866)
 (Guide No. NITW) per UL 508
 and CSA C22.2 No. 14

Tungsten Lamp Loads (Maximum 480V Line 277V Load)	Maximum Continuous Ampere Rating (A)	Type 1 General Purpose Enclosure	Type 3R/412 Rainproof, Waterproof, Dusttight Enclosure	Type 3R/412 Rainproof, Waterproof, Dusttight Enclosure with Door Safety Hardware	Type 4/4X Watertight Corrosion- Resistant Enclosure Stainless Steel
		Cat. No.*	Cat. No.*	Cat. No.*	Cat. No.*
15	20	503L-AA-30T	503L-AF-30T	503L-AJ-30T	503L-AC-30T
		503L-AA-31T	503L-AF-31T	503L-AJ-31T	503L-AC-31T
30	30	503L-BA-30T	503L-BF-30T	503L-BJ-30T	503L-BC-30T
		503L-BA-31T	503L-BF-31T	503L-BJ-31T	503L-BC-31T
		503L-BA-32T	503L-BF-32T	503L-BJ-32T	503L-BC-32T
		503L-BA-33T	503L-BF-33T	503L-BJ-33T	503L-BC-33T
60	60	503L-BA-34T	503L-BF-34T	503L-BJ-34T	503L-BC-34T
		503L-CA-33T	503L-CF-33T	503L-CJ-33T	503L-CC-33T
		503L-CA-34T	503L-CF-34T	503L-CJ-34T	503L-CC-34T
		503L-CA-35T	503L-CF-35T	503L-CJ-35T	503L-CC-35T
100	100	503L-CA-36T	503L-CF-36T	503L-CJ-36T	503L-CC-36T
		503L-CA-37T	503L-CF-37T	503L-CJ-37T	503L-CC-37T
		503L-DA-36T	503L-DF-36T	503L-DJ-36T	503L-DC-36T
		503L-DA-37T	503L-DF-37T	503L-DJ-37T	503L-DC-37T
200	200	503L-DA-38T	503L-DF-38T	503L-DJ-38T	503L-DC-38T
		503L-DA-39T	503L-DF-39T	503L-DJ-39T	503L-DC-39T
		503L-DA-40T	503L-DF-40T	503L-DJ-40T	503L-DC-40T
		503L-DA-41T	503L-DF-41T	503L-DJ-41T	503L-DC-41T
300	300	503L-EA-37T	503L-EF-37T	503L-EJ-37T	503L-EC-37T
		503L-EA-38T	503L-EF-38T	503L-EJ-38T	503L-EC-38T
		503L-EA-39T	503L-EF-39T	503L-EJ-39T	503L-EC-39T
		503L-EA-40T	503L-EF-40T	503L-EJ-40T	503L-EC-40T
		503L-EA-41T	503L-EF-41T	503L-EJ-41T	503L-EC-41T
		503L-EA-42T	503L-EF-42T	503L-EJ-42T	503L-EC-42T
		503L-EA-43T	503L-EF-43T	503L-EJ-43T	503L-EC-43T
		503L-EA-44T	503L-EF-44T	503L-EJ-44T	503L-EC-44T
300	300	503L-EA-45T	503L-EF-45T	503L-EJ-45T	503L-EC-45T
		503L-EA-46T	503L-EF-46T	503L-EJ-46T	503L-EC-46T
		503L-FA-45T	503L-FF-45T	503L-FJ-45T	503L-FC-45T
		503L-FA-46T	503L-FF-46T	503L-FJ-46T	503L-FC-46T
		503L-FA-47T	503L-FF-47T	503L-FJ-47T	503L-FC-47T
		503L-FA-48T	503L-FF-48T	503L-FJ-48T	503L-FC-48T
		503L-FA-49T	503L-FF-49T	503L-FJ-49T	503L-FC-49T
		503L-FA-50T	503L-FF-50T	503L-FJ-50T	503L-FC-50T

⊗ Voltage Suffix Code

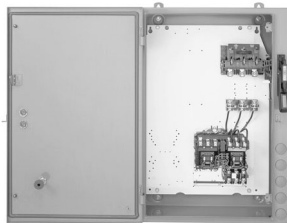
The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No.
 Example: **Cat. No. 503L-BA-35T** becomes **Cat. No. 503L-BAB-35T**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

* To order lighting contactors (0...3) with current limiters, change the letter "T" to "D" at the end of the listed Cat. No. Example: **Cat. No. 503L-AA-35D**.

NEMA Combination Reversing Starters

Disconnect Type (Fusible with Class R Fuse Clips) (Non-Fusible)



Bulletin 506

- NEMA starter sizes 0...5
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Fusible or non-fusible disconnect switch
- Painted metal enclosures: Type 1, Type 3R/4/12
- Stainless steel enclosures: Type 4/4X
- Non-metallic enclosures: Type 4/4X
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

A Bulletin 506 combination reversing starter consists of a Bulletin 505 reversing starter and a disconnect switch (fused or non-fused) mounted in a common enclosure.

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Standards Compliance and Certifications

- Fusible Versions
cULus Listed (File No. E125316)(Guide No. NKJH)
- Non-Fusible Versions
cULus Listed (File No. E3125)(Guide No. NLDX)
- UL 508 and CSA C22.2 No. 14

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Max. Hp Rating FLC Must Not Exceed Continuous Amp Rating Motor Voltage				Line Voltage (V)	Fuse Clip Rating Amperes (A) Fuses not included. Select per NEC	Type 1	Type 3R/4/12	Type 3R/4/12	Type 4/4X	Type 4/4X
		60 Hz	60 Hz	50 Hz	60 Hz			General Purpose	Rainproof, Waterproof, Dusttight	Rainproof, Waterproof, Dusttight (Door Safety Hardware)	Corrosion-Resistant Stainless Steel	Corrosion-Resistant Non-metallic
		200V	230V	380...415V	460...575V			Cat. No. *†‡	Cat. No. *†‡	Cat. No. *†‡	Cat. No. *†	Cat. No. *†
0	18	3	3	—	—	208...240	30	506-AA⊗-24R	506-AF⊗-24R	506-AJ⊗-24R	506-AC⊗-24R	506-AS⊗-24R
		—	—	5	5	480...600	30	506-AA⊗-24R	506-AF⊗-24R	506-AJ⊗-24R	506-AC⊗-24R	506-AS⊗-24R
1	27	7-1/2	7-1/2	—	—	208...240	30	506-BA⊗-24R	506-BF⊗-24R	506-BJ⊗-24R	506-BC⊗-24R	506-BS⊗-24R
		—	—	10	10	480...600	30	506-BA⊗-24R	506-BF⊗-24R	506-BJ⊗-24R	506-BC⊗-24R	506-BS⊗-24R
		7-1/2	7-1/2	—	—	208...240	60	506-BA⊗-25R	506-BF⊗-25R	506-BJ⊗-25R	506-BC⊗-25R	506-BS⊗-25R
		—	—	10	10	480...600	60	506-BA⊗-25R	506-BF⊗-25R	506-BJ⊗-25R	506-BC⊗-25R	506-BS⊗-25R
2	45	—	—	25	25	480...600	30	506-CA⊗-24R	506-CF⊗-24R	506-CJ⊗-24R	506-CC⊗-24R	506-CS⊗-24R
		10	15	—	—	208...240	60	506-CA⊗-25R	506-CF⊗-25R	506-CJ⊗-25R	506-CC⊗-25R	506-CS⊗-25R
		—	—	25	25	480...600	60	506-CA⊗-25R	506-CF⊗-25R	506-CJ⊗-25R	506-CC⊗-25R	506-CS⊗-25R
		10	15	—	—	208...240	100	506-CA⊗-26R	506-CF⊗-26R	506-CJ⊗-26R	506-CC⊗-26J	506-CS⊗-26J
3	90	—	—	50	50	480...600	100	506-CA⊗-26J	506-CF⊗-26J	506-CJ⊗-26J	506-CC⊗-26J	506-CS⊗-26J
		—	—	50	50	480...600	60	506-DA⊗-25J	506-DF⊗-25J	506-DJ⊗-25J	506-CC⊗-25R	506-DS⊗-25R
		25	30	—	—	208...240	100	506-DA⊗-26R	506-DF⊗-26R	506-DJ⊗-26R	506-DC⊗-26R	506-DS⊗-26R
		—	—	50	50	480...600	100	506-DA⊗-26R	506-DF⊗-26R	506-DJ⊗-26R	506-DC⊗-26R	506-DS⊗-26R
4	135	25	30	—	—	208...240	200	506-DA⊗-27J	506-DF⊗-27J	506-DJ⊗-27J	506-DC⊗-27J	506-DS⊗-27J
		—	—	50	50	480...600	200	506-DA⊗-27J	506-DF⊗-27J	506-DJ⊗-27J	506-DC⊗-27J	506-DS⊗-27J
		—	—	75	100	480...600	100	506-EA⊗-26R	506-EF⊗-26R	506-EJ⊗-26R	506-EC⊗-26R	506-ES⊗-26R
		40	50	—	—	208...240	200	506-EA⊗-27R	506-EF⊗-27R	506-EJ⊗-27R	506-EC⊗-27R	506-ES⊗-27R
5	270	—	—	75	100	480...600	200	506-EA⊗-27R	506-EF⊗-27R	506-EJ⊗-27R	506-EC⊗-27R	506-ES⊗-27R
		—	—	—	100	480...600	400	506-EA⊗-28R	506-EF⊗-28R	506-EJ⊗-28R	506-EC⊗-28R	506-ES⊗-28J
		—	—	75	100	480...600	400	506-EA⊗-28J	506-EF⊗-28J	506-EJ⊗-28J	506-EC⊗-28J	506-ES⊗-28J
		75	100	—	—	208...240	400	506-FA⊗-28R	506-FF⊗-28R	506-FJ⊗-28R	506-FC⊗-28R	506-FS⊗-28R
—	—	150	200	480...600	400	506-FA⊗-28R	506-FF⊗-28R	506-FJ⊗-28R	506-FC⊗-28R	506-FS⊗-28R		

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 506-AA⊗-24R** becomes **Cat. No. 506-AAB-24R**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		AD	AD	CD	CD
120V — Separate Control (without transformer)		AD	AD	CD	CD

⊗ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 506-AAB-24R** becomes **Cat. No. 506-AAB-A2D-24R**.

*Non-Fusible Disconnect Type

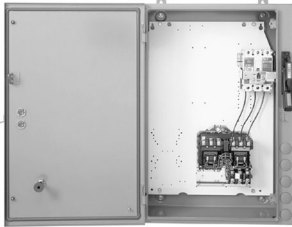
Cat. Nos. listed above include a fusible disconnect switch with Class R or J fuse clips. To order a non-fusible disconnect switch, eliminate the fuse clip code from the Cat. No. Example: **506-BFB-24R** becomes **Cat. No. 506-BFB**.

† Class H fuse clips can be supplied. Example: **Cat. No. 506L-AA⊗-24R** becomes **506-AA⊗-24**. Class J fuse clips can be supplied. Example: **Cat. No. 506-AA⊗-24R** becomes **506-AA⊗-24J**. Class HRC form II fuse clips can be supplied. Example: **506-AA⊗-24R** becomes **506-AA⊗-24E**.

‡ **Bulletin 506 Narrow Enclosure** — Sizes 0 & 1 are supplied in a (30 in H x 20 in W) enclosure. If a narrow enclosure (27 in H x 10 in W) is required, add the letter "X" to the Bulletin Number (506X).

NEMA Combination Reversing Starters

Circuit Breaker Type



Bulletin 507

- NEMA starter sizes 0...5
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Circuit breaker magnetic only (instantaneous)
- Painted metal enclosures: Type 1, Type 3R/4/12
- Stainless steel enclosures: Type 4/4X
- Non-metallic enclosures: Type 4/4X
- Hazardous location enclosures: Type 3R, 7 & 9
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

A Bulletin 507 combination reversing starter consists of a Bulletin 505 reversing starter and a circuit breaker magnetic only (instantaneous trip) mounted in a common enclosure.

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Standards Compliance and Certifications

- Circuit Breaker Versions cULus Listed (File No. E125316)(Guide No. NKJH)
- Hazardous Locations cULus Listed (File No. E138817)(Guide No. NOTH)
- UL 508 and CSA C22.2 No. 14

Heater Elements — Starters with eutectic alloy overload relay require 3 heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Type 1 General Purpose Cat. No.*†	Type 3R/4/12 Rainproof, Waterproof, Dusttight Cat. No.*†	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware) Cat. No.*†	Type 4/4X Watertight Corrosion Resistant Stainless Steel Cat. No.*†	Type 4/4X Watertight Corrosion Resistant Non-metallic Cat. No.*†
		Motor Voltage								
		200V	230V	460V	575V					
0	18	0...1/3	0...1/3	—	—	507-AA⊗-32	507-AF⊗-32	507-AJ⊗-32	507-AC⊗-32	507-AS⊗-32
		1/2...1	1/2...1	0...1	0...1	507-AA⊗-35	507-AF⊗-35	507-AJ⊗-35	507-AC⊗-35	507-AS⊗-35
		1-1/2...3	1-1/2...3	1-1/2...3	1-1/2...3	507-AA⊗-38	507-AF⊗-38	507-AJ⊗-38	507-AC⊗-38	507-AS⊗-38
1	27	—	—	5	5	507-AA⊗-39	507-AF⊗-39	507-AJ⊗-39	507-AC⊗-39	507-AS⊗-39
		0...1/3	0...1/3	—	—	507-BA⊗-32	507-BF⊗-32	507-BJ⊗-32	507-BC⊗-32	507-BS⊗-32
		1/2...1	1/2...1	0...1	0...1	507-BA⊗-35	507-BF⊗-35	507-BJ⊗-35	507-BC⊗-35	507-BS⊗-35
		1-1/2...3	1-1/2...3	1-1/2...3	1-1/2...3	507-BA⊗-38	507-BF⊗-38	507-BJ⊗-38	507-BC⊗-38	507-BS⊗-38
		5	—	—	—	507-BA⊗-39	507-BF⊗-39	507-BJ⊗-39	507-BC⊗-39	507-BS⊗-39
		7-1/2	5...7-1/2	5...7-1/2	5...7-1/2	507-BA⊗-40	507-BF⊗-40	507-BJ⊗-40	507-BC⊗-40	507-BS⊗-40
2	45	—	—	10	10	507-BA⊗-41	507-BF⊗-41	507-BJ⊗-41	507-BC⊗-41	507-BS⊗-41
		10	10	—	—	507-CA⊗-41	507-CF⊗-41	507-CJ⊗-41	507-CC⊗-41	507-CS⊗-41
		—	15	15	15	507-CA⊗-42	507-CF⊗-42	507-CJ⊗-42	507-CC⊗-42	507-CS⊗-42
3	90	—	—	20...25	20...25	507-CA⊗-44	507-CF⊗-44	507-CJ⊗-44	507-CC⊗-44	507-CS⊗-44
		15...25	20...25	—	—	507-DA⊗-44	507-DF⊗-44	507-DJ⊗-44	507-DC⊗-44	507-DS⊗-44
		—	30	—	30	507-DA⊗-45	507-DF⊗-45	507-DJ⊗-45	507-DC⊗-45	507-DS⊗-45
4	135	—	—	30...50	40...50	507-DA⊗-47	507-DF⊗-47	507-DJ⊗-47	507-DC⊗-47	507-DS⊗-47
		30	—	—	—	507-EA⊗-45	507-EF⊗-45	507-EJ⊗-45	507-EC⊗-45	507-ES⊗-45
		40	40	—	—	507-EA⊗-46	507-EF⊗-46	507-EJ⊗-46	507-EC⊗-46	507-ES⊗-46
		—	50	—	—	507-EA⊗-47	507-EF⊗-47	507-EJ⊗-47	507-EC⊗-47	507-ES⊗-47
		—	—	—	60	507-EA⊗-48	507-EF⊗-48	507-EJ⊗-48	507-EC⊗-48	507-ES⊗-48
		—	—	60...75	—	507-EA⊗-49	507-EF⊗-49	507-EJ⊗-49	507-EC⊗-49	507-ES⊗-49
5	270	—	—	100	75...100	507-EA⊗-50	507-EF⊗-50	507-EJ⊗-50	507-EC⊗-50	507-ES⊗-50
		50...60	60	—	—	507-FA⊗-48	507-FF⊗-48	507-FJ⊗-48	507-FC⊗-48	507-FS⊗-48
		75	—	—	—	507-FA⊗-49	507-FF⊗-49	507-FJ⊗-49	507-FC⊗-49	507-FS⊗-49
		—	75...100	—	—	507-FA⊗-50	507-FF⊗-50	507-FJ⊗-50	507-FC⊗-50	507-FS⊗-50
		—	—	—	125	507-FA⊗-51	507-FF⊗-51	507-FJ⊗-51	507-FC⊗-51	507-FS⊗-51
		—	—	125...150	150	507-FA⊗-52	507-FF⊗-52	507-FJ⊗-52	507-FC⊗-52	507-FS⊗-52
—	—	200	200	507-FA⊗-54	507-FF⊗-54	507-FJ⊗-54	507-FC⊗-54	507-FS⊗-54		

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 507-BA⊗-35** becomes **Cat. No. 507-BAB-35**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		HD	AD	BD	CD
120V — Separate Control					

⊗ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 507-BAB-35** becomes **Cat. No. 507-BAB-A2D-35**.

* **Bulletin 507 Narrow Enclosure** — Sizes 0 & 1 are supplied in a (30 in H x 20 in W) enclosure. If a narrow enclosure (27 in H x 10 in W) is required, add the letter "X" to the Bulletin Number (507X).

† To order Visa-Window Breakers for certain mining applications (Canada only), add the letter "V" to the **Cat. No.** Example: **Cat. No. 507-BA⊗-35V**.

NEMA Combination Reversing Starters

Circuit Breaker Type

Heater Elements — Starters with eutectic alloy overload relay require 3 heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Type 7 & 9 Bolted Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –	Type 3R, 7 & 9 Bolted Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –	Type 3R, 7 & 9 Unilock Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –
		Motor Voltage				Cat. No.†	Cat. No.*†	Cat. No.*†
		200V	230V	460V	575V			
0	18	0...1/3	0...1/3	—	—	507-AE⊗-⊖-32	507-AH⊗-⊖-32	507-AU⊗-⊖-32
		1/2...1	1/2...1	0...1	0...1	507-AE⊗-⊖-35	507-AH⊗-⊖-35	507-AU⊗-⊖-35
		1-1/2...3	1-1/2...3	1-1/2...3	1-1/2...3	507-AE⊗-⊖-38	507-AH⊗-⊖-38	507-AU⊗-⊖-38
		—	—	5	5	507-AE⊗-⊖-39	507-AH⊗-⊖-39	507-AU⊗-⊖-39
1	27	0...1/3	0...1/3	—	—	507-BE⊗-⊖-32	507-BH⊗-⊖-32	507-BU⊗-⊖-32
		1/2...1	1/2...1	0...1	0...1	507-BE⊗-⊖-35	507-BH⊗-⊖-35	507-BU⊗-⊖-35
		1-1/2...3	1-1/2...3	1-1/2...3	1-1/2...3	507-BE⊗-⊖-38	507-BH⊗-⊖-38	507-BU⊗-⊖-38
		5	—	—	—	507-BE⊗-⊖-39	507-BH⊗-⊖-39	507-BU⊗-⊖-39
		7-1/2	5...7-1/2	5...7-1/2	5...7-1/2	507-BE⊗-⊖-40	507-BH⊗-⊖-40	507-BU⊗-⊖-40
2	45	—	—	10	10	507-BE⊗-⊖-41	507-BH⊗-⊖-41	507-BU⊗-⊖-41
		10	10	—	—	507-CE⊗-⊖-41	507-CH⊗-⊖-41	507-CU⊗-⊖-41
		—	15	15	15	507-CE⊗-⊖-42	507-CH⊗-⊖-42	507-CU⊗-⊖-42
3	90	—	—	20...25	20...25	507-CE⊗-⊖-44	507-CH⊗-⊖-44	507-CU⊗-⊖-44
		15...25	20...25	—	—	507-DE⊗-⊖-44	507-DH⊗-⊖-44	507-DU⊗-⊖-44
		—	30	—	30	507-DE⊗-⊖-45	507-DH⊗-⊖-45	507-DU⊗-⊖-45
4	135	—	—	30...50	40...50	507-DE⊗-⊖-47	507-DH⊗-⊖-47	507-DU⊗-⊖-47
		30	—	—	—	507-EE⊗-⊖-45	507-EH⊗-⊖-45	507-EU⊗-⊖-45
		40	40	—	—	507-EE⊗-⊖-46	507-EH⊗-⊖-46	507-EU⊗-⊖-46
		—	50	—	—	507-EE⊗-⊖-47	507-EH⊗-⊖-47	507-EU⊗-⊖-47
		—	—	—	60	507-EE⊗-⊖-48	507-EH⊗-⊖-48	507-EU⊗-⊖-48
		—	—	60...75	—	507-EE⊗-⊖-49	507-EH⊗-⊖-49	507-EU⊗-⊖-49
—	—	—	75...100	—	507-EE⊗-⊖-50	507-EH⊗-⊖-50	507-EU⊗-⊖-50	

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 507-BE⊗-⊖-35** becomes **Cat. No. 507-BEB-⊖-35**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		HD	AD	BD	CD
120V — Separate Control					

⊗ Overload Relay Code

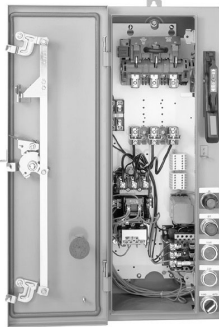
Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 507-BEB-⊖-35** becomes **Cat. No. 507-BEB-A2D-35**.

* Includes drain and cover with gasket.

† To order Visa-Window Breakers for certain mining applications (Canada only), add the letter "V" to the Cat. No. Example: **Cat. No. 507-BE⊗-⊖-35V**.

NEMA Combination Non-Reversing Starters

Disconnect Type (Fusible with Class R Fuse Clips) (Non-Fusible)



Bulletin 512

- NEMA starter sizes 0...7
- Fusible or non-fusible disconnect switch
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Painted metal enclosures: Type 1, Type 3R/4/12
- Stainless steel enclosures: Type 4/4X
- Non-metallic enclosures: Type 4/4X
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

A Bulletin 512 combination non-reversing starter consists of a Bulletin 509 starter and a disconnect switch (fused or unfused) mounted in a common enclosure.

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Standards Compliance and Certifications

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 cULus Listed (File No. E125316)(Guide No. NKJH)
- Non-Fusible Versions
 cULus Listed (File No. E3125)(Guide No. NLDX)
- UL 508 and CSA 22.2 No. 14
- American Bureau of Shipping

Heater Elements — Starters with eutectic alloy overload relay require 3 heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Max. Hp Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Line Voltage (V)	Fuse Clip Rating Amperes (A) Fuses not included. Select per NEC	Type 1 General Purpose	Type 3R/4/12 Rainproof, Waterproof, Dusttight	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware)	Type 4/4X Watertight Corrosion-Resistant Stainless Steel	Type 4X Watertight Corrosion-Resistant Non-Metallic
		Motor Voltage						Cat. No.*†	Cat. No.*†	Cat. No.*†	Cat. No.*†	Cat. No.*†
		60 Hz	60 Hz	50 Hz	60 Hz							
0	18	3	3	—	—	208...240	30	512-AA-24R	512-AF-24R	512-AJ-24R	512-AC-24R	512-AS-24R
		—	—	5	5	480...600	30	512-AA-24R	512-AF-24R	512-AJ-24R	512-AC-24R	512-AS-24R
1	27	7-1/2	7-1/2	—	—	208...240	30	512-BA-24R	512-BF-24R	512-BJ-24R	512-BC-24R	512-BS-24R
		—	—	10	10	480...600	30	512-BA-24R	512-BF-24R	512-BJ-24R	512-BC-24R	512-BS-24R
		7-1/2	7-1/2	—	—	208...240	60	512-BA-25R	512-BF-25R	512-BJ-25R	512-BC-25R	512-BS-25R
		—	—	10	10	480...600	60	512-BA-25R	512-BF-25R	512-BJ-25R	512-BC-25R	512-BS-25R
2	45	—	—	25	25	480...600	30	512-CA-24R	512-CF-24R	512-CJ-24R	512-CC-24R	512-CS-24R
		10	15	—	—	208...240	60	512-CA-25R	512-CF-25R	512-CJ-25R	512-CC-25R	512-CS-25R
		—	—	25	25	480...600	60	512-CA-25R	512-CF-25R	512-CJ-25R	512-CC-25R	512-CS-25R
		10	15	—	—	208...240	100	512-CA-26J	512-CF-26J	512-CJ-26J	512-CC-26J	512-CS-26J
		—	—	25	25	480...600	100	512-CA-26J	512-CF-26J	512-CJ-26J	512-CC-26J	512-CS-26J

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 512-AA-24R** becomes **Cat. No. 512-AAB-24R**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		AD	AD	CD	CD
120V Separate Control (without transformer)		AD	AD	CD	CD

⊗ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 512-AAB-24R** becomes **Cat. No. 512-AAB-A2D-24R**.

*Non-Fusible Disconnect Type

Cat. Nos. listed above include a fusible disconnect switch with Class R or J fuse clips. To order a non-fusible disconnect switch, eliminate the fuse clip code from the Cat. No. Example: **Cat. No. 512-BFB-24R** becomes **Cat. No. 512-BFB**.

† Class H fuse clips can be supplied. Example: **Cat. No. 512-AA-24R** becomes **512-AA-24**. Class J fuse clips can be supplied. Example: **Cat. No. 512-AA-24R** becomes **512-AA-24J**. Class HRC form II fuse clips can be supplied. Example: **Cat. No. 512-AA-24R** becomes **512-AA-24E**.

NEMA Combination Non-Reversing Starters

Disconnect Type (Fusible with Class R Fuse Clips) (Non-Fusible)

Heater Elements — Starters with eutectic alloy overload relay require 3 heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Max. Hp Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Line Voltage (V)	Fuse Clip Rating Amperes (A) Fuses not included. Select per NEC	Type 1 General Purpose Cat. No.*†	Type 3R/4/12 Rainproof, Waterproof, Dusttight Cat. No.*†	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware) Cat. No.*†	Type 4/4X Watertight Corrosion-Resistant Stainless Steel Cat. No.*†	Type 4X Watertight Corrosion-Resistant Non-Metallic Cat. No.*†
		Motor Voltage										
		60 Hz	60 Hz	50 Hz	60 Hz							
3	90	—	—	50	50	480...600	60	512-DAⓈ-25R	512-DFⓈ-25R	512-DJⓈ-25R	512-DCⓈ-25R	512-DSⓈ-25R
		25	30	—	—	208...240	100	512-DAⓈ-26R	512-DFⓈ-26R	512-DJⓈ-26R	512-DCⓈ-26R	512-DSⓈ-26R
		—	—	50	50	480...600	100	512-DAⓈ-26R	512-DFⓈ-26R	512-DJⓈ-26R	512-DCⓈ-26R	512-DSⓈ-26R
		25	30	—	—	208...240	200	512-DAⓈ-27J	512-DFⓈ-27J	512-DJⓈ-27J	512-DCⓈ-27J	512-DSⓈ-27J
		—	—	50	50	480...600	200	512-DAⓈ-27J	512-DFⓈ-27J	512-DJⓈ-27J	512-DCⓈ-27J	512-DSⓈ-27J
4	135	—	—	75	100	480...600	100	512-EAⓈ-26R	512-EFⓈ-26R	512-EJⓈ-26R	512-ECⓈ-26R	512-ESⓈ-26R
		40	50	—	—	208...240	200	512-EAⓈ-27R	512-EFⓈ-27R	512-EJⓈ-27R	512-ECⓈ-27R	512-ESⓈ-27R
		—	—	75	100	480...600	200	512-EAⓈ-27R	512-EFⓈ-27R	512-EJⓈ-27R	512-ECⓈ-27R	512-ESⓈ-27R
		40	50	—	—	208...240	400	512-EAⓈ-28J	512-EFⓈ-28J	512-EJⓈ-28J	512-ECⓈ-28J	512-ESⓈ-28J
		—	—	75	100	480...600	400	512-EAⓈ-28J	512-EFⓈ-28J	512-EJⓈ-28J	512-ECⓈ-28J	512-ESⓈ-28J
5	270	40	50	—	—	208...240	200	512-FAⓈ-27R	512-FFⓈ-27R	512-FJⓈ-27R	512-FCⓈ-27R	512-FSⓈ-27R
		—	—	75	100	480...600	200	512-FAⓈ-27R	512-FFⓈ-27R	512-FJⓈ-27R	512-FCⓈ-27R	512-FSⓈ-27R
		75	100	150	200	208...600	400	512-FAⓈ-28R	512-FFⓈ-28R	512-FJⓈ-28R	512-FCⓈ-28R	512-FSⓈ-28R
6	540	150	200	300	400	208...600	600‡	—	512-GFⓈ-29R	—	512-GCⓈ-29R	—
7	810	—	300	500	600	240...600	1200	—	512-HFⓈ-25L	—	—	—

Ⓢ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 512-AAⓈ-24R** becomes **Cat. No. 512-AABⓈ-24R**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		AD	AD	CD	CD
120V Separate Control (without transformer)		AD	AD	CD	CD

Ⓢ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 512-AABⓈ-24R** becomes **Cat. No. 512-AAB-A2D-24R**.

*Non-Fusible Disconnect Type

Cat. Nos. listed above include a fusible disconnect switch with Class R or J fuse clips. To order a non-fusible disconnect switch, eliminate the fuse clip code from the Cat. No. Example: **Cat. No. 512-BFB-24R** becomes **Cat. No. 512-BFB**.

† Class H fuse clips can be supplied. Example: **Cat. No. 512-AAⓈ-24R** becomes **512-AAⓈ-24**. Class J fuse clips can be supplied. Example: **Cat. No. 512-AAⓈ-24R** becomes **512-AAⓈ-24J**. Class HRC form II fuse clips can be supplied. Example: **Cat. No. 512-AAⓈ-24R** becomes **512-AAⓈ-24E**.

‡ For 230V and 460V Hp ratings, limit the maximum fuse sizing to 125% of motor full load current.

NEMA Combination Non-Reversing Starters with Extra Panel Space

Disconnect Type (Fusible with Class R Fuse Clips) (Non-Fusible)



Bulletin 512M

- NEMA starter sizes 1...2
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Fusible or non-fusible disconnect switch
- Painted metal extra capacity enclosures: Type 3R/4/12
- Stainless Steel extra capacity enclosures: Type 4/4X
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

A Bulletin 512M combination non-reversing starter consists of a Bulletin 509 starter and a disconnect switch (fused or unfused) mounted in a common enclosure with extra panel space.

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Standards Compliance and Certifications

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 cULus Listed (File No. E125316)(Guide No. NKJH)
- Non-Fusible Versions
 cULus Listed (File No. E3125)(Guide No. NLDX)
- UL 508 and CSA 22.2 No. 14

Heater Elements — Starters with eutectic alloy overload relay require 3 heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Line Voltage (V)	Fuse Clip Rating Amperes (A) Fuses not included. Select per NEC	Type 3R/4/12 Rainproof, Waterproof, Dusttight	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware)	Type 4/4X Watertight, Corrosion- Resistant, Stainless Steel
		Motor Voltages						Cat. No.*†	Cat. No.*†	Cat. No.*†
		60 Hz 200V	60 Hz 230V	50 Hz 380... 415V	60 Hz 460... 575V					
1	27	7-1/2	7-1/2	—	—	208...240	30	512M-BF⊗-⊗-24R	512M-BJ⊗-⊗-24R	512M-BC⊗-⊗-24R
							60	512M-BF⊗-⊗-25R	512M-BJ⊗-⊗-25R	512M-BC⊗-⊗-25R
		—	—	10	10	480...600	30	512M-BF⊗-⊗-24R	512M-BJ⊗-⊗-24R	512M-BC⊗-⊗-24R
							60	512M-BF⊗-⊗-25R	512M-BJ⊗-⊗-25R	512M-BC⊗-⊗-24R
2	45	10	15	—	—	208...240	60	512M-CF⊗-⊗-25R	512M-CJ⊗-⊗-25R	512M-CC⊗-⊗-25R
							100	512M-CF⊗-⊗-26J	512M-CJ⊗-⊗-26J	512M-CC⊗-⊗-26J
		—	—	25	25	480...600	30	512M-CF⊗-⊗-24R	512M-CJ⊗-⊗-24R	512M-CC⊗-⊗-24R
							60	512M-CF⊗-⊗-25R	512M-CJ⊗-⊗-25R	512M-CC⊗-⊗-25R
						100	512M-CF⊗-⊗-26J	512M-CJ⊗-⊗-26J	512M-CC⊗-⊗-26J	

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 512M-BF⊗-⊗-24R** becomes **Cat. No. 512M-BFB-⊗-24R**. For other values consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		AD	AD	CD	CD
120V Separate Control (without transformer)		AD	AD	CD	CD

⊗ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 512M-BJB-⊗-24R** becomes **Cat. No. 512M-BJB-A2D-24R**.

*Non-Fusible Disconnect Type

Cat. Nos. listed above include a fusible disconnect switch with Class R or J fuse clips. To order a non-fusible disconnect switch, eliminate the fuse clip code from the Cat. No. Example: **Cat. No. 512M-BFB-⊗-24R** becomes **Cat. No. 512M-BFB**.

† Class H fuse clips can be supplied. Example: **Cat. No. 512M-BA⊗-24R** becomes **Cat. No. 512M-BA⊗-24**. Class J fuse clips can be supplied. Example: **Cat. No. 512M-BA⊗-24R** becomes **Cat. No. 512M-BA⊗-24J**. Class HRC form II fuse clips can be supplied. Example: **Cat. No. 512M-BA⊗-24R** becomes **Cat. No. 512M-BA⊗-24E**.

NEMA Combination Non-Reversing Starters

Circuit Breaker Type



Bulletin 513

- NEMA starter sizes 0...7
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Circuit breaker magnetic only (instantaneous)
- Painted metal enclosures: Type 1, Type 3R/4/12
- Stainless steel enclosures: Type 4/4X
- Non-metallic enclosures: Type 4/4X
- Hazardous location enclosures: Type 7 & 9
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

A Bulletin 513 combination non-reversing starter consists of a Bulletin 509 starter and a circuit breaker magnetic only (instantaneous trip) mounted in a common enclosure. Starters sizes 6 & 7 consists of a thermal magnetic (inverse time) circuit breaker.

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- Circuit Breaker Versions cULus Listed (File No. E125316)(Guide No. NKJH)
- Hazardous Locations cULus Listed (File No. E138817)(Guide No. NOTH)
- UL 508 and CSA C22.2 No. 14
- American Bureau of Shipping

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Type 1 General Purpose Cat. No.*†	Type 3R/4/12 Rainproof, Waterproof, Dusttight	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware)	Type 4/4X Watertight Corrosion- Resistant Stainless Steel	Type 4/4X Watertight Corrosion- Resistant Non-metallic
		Motor Voltages								
		200V	230V	460V	575V					
0	18	0...1/3	0...1/3	—	—	513-AA⊗-⊖-32	513-AF⊗-⊖-32	513-AJ⊗-⊖-32	513-AC⊗-⊖-32	513-AS⊗-⊖-32
		1/2...1	1/2...1	0...1	0...1	513-AA⊗-⊖-35	513-AF⊗-⊖-35	513-AJ⊗-⊖-35	513-AC⊗-⊖-35	513-AS⊗-⊖-35
		1-1/2...3	1-1/2...3	1-1/2...3	1-1/2...3	513-AA⊗-⊖-38	513-AF⊗-⊖-38	513-AJ⊗-⊖-38	513-AC⊗-⊖-38	513-AS⊗-⊖-38
		—	—	5	5	513-AA⊗-⊖-39	513-AF⊗-⊖-39	513-AJ⊗-⊖-39	513-AC⊗-⊖-39	513-AS⊗-⊖-39
1	27	0...1/3	0...1/3	—	—	513-BA⊗-⊖-32	513-BF⊗-⊖-32	513-BJ⊗-⊖-32	513-BC⊗-⊖-32	513-BS⊗-⊖-32
		1/2...1	1/2...1	0...1	0...1	513-BA⊗-⊖-35	513-BF⊗-⊖-35	513-BJ⊗-⊖-35	513-BC⊗-⊖-35	513-BS⊗-⊖-35
		1-1/2...3	1-1/2...3	1-1/2...3	1-1/2...3	513-BA⊗-⊖-38	513-BF⊗-⊖-38	513-BJ⊗-⊖-38	513-BC⊗-⊖-38	513-BS⊗-⊖-38
		5	—	—	—	513-BA⊗-⊖-39	513-BF⊗-⊖-39	513-BJ⊗-⊖-39	513-BC⊗-⊖-39	513-BS⊗-⊖-39
		7-1/2	5...7-1/2	5...7-1/2	5...7-1/2	513-BA⊗-⊖-40	513-BF⊗-⊖-40	513-BJ⊗-⊖-40	513-BC⊗-⊖-40	513-BS⊗-⊖-40
2	45	—	—	10	10	513-BA⊗-⊖-41	513-BF⊗-⊖-41	513-BJ⊗-⊖-41	513-BC⊗-⊖-41	513-BS⊗-⊖-41
		10	10	—	—	513-CA⊗-⊖-41	513-CF⊗-⊖-41	513-CJ⊗-⊖-41	513-CC⊗-⊖-41	513-CS⊗-⊖-41
		—	15	15	15	513-CA⊗-⊖-42	513-CF⊗-⊖-42	513-CJ⊗-⊖-42	513-CC⊗-⊖-42	513-CS⊗-⊖-42
		—	—	20...25	20...25	513-CA⊗-⊖-44	513-CF⊗-⊖-44	513-CJ⊗-⊖-44	513-CC⊗-⊖-44	513-CS⊗-⊖-44

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 513-BA⊗-⊖-35** becomes **Cat. No. 513-BAB⊗-⊖-35**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

⊛ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 513-BAB-32** becomes **Cat. No. 513-BAB-A2F-32**.

* To order starters (0 through 4) with current limiters, add the letter "C" at the end of the listed Cat. No. Example: **Cat. No. 513-AA⊗-⊖-35C**.

† To order Visa-Window Breakers for certain mining applications (Canada only), add the letter "V" to the Cat. No. Example: **Cat. No. 513-BA⊗-⊖-35V**.

NEMA Combination Non-Reversing Starters

Circuit Breaker Type, Continued

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Hazardous Locations				
		Motor Voltage				Type 1 General Purpose Cat. No.*†	Type 3R/4/12 Rainproof, Waterproof, Dustlight Cat. No.*†	Type 3R/4/12 Rainproof, Waterproof, Dustlight (Door Safety Hardware) Cat. No.*†	Type 4/4X Watertight Corrosion- Resistant Stainless Steel Cat. No.*†	Type 4/4X Watertight Corrosion- Resistant Non- metallic Cat. No.*†
		200V	230V	460V	575V					
3	90	15...25	20...25	—	—	513-DAⓈ-44	513-DFⓈ-44	513-DJⓈ-44	513-DCⓈ-44	513-DSⓈ-44
		—	30	—	30	513-DAⓈ-45	513-DFⓈ-45	513-DJⓈ-45	513-DCⓈ-45	513-DSⓈ-45
		—	—	30...50	40...50	513-DAⓈ-47	513-DFⓈ-47	513-DJⓈ-47	513-DCⓈ-47	513-DSⓈ-47
4	135	30	—	—	—	513-EAⓈ-45	513-EFⓈ-45	513-EJⓈ-45	513-ECⓈ-45	513-ESⓈ-45
		40	40	—	—	513-EAⓈ-46	513-EFⓈ-46	513-EJⓈ-46	513-ECⓈ-46	513-ESⓈ-46
		—	50	—	—	513-EAⓈ-47	513-EFⓈ-47	513-EJⓈ-47	513-ECⓈ-47	513-ESⓈ-47
		—	—	—	60	513-EAⓈ-48	513-EFⓈ-48	513-EJⓈ-48	513-ECⓈ-48	513-ESⓈ-48
		—	—	60...75	—	513-EAⓈ-49	513-EFⓈ-49	513-EJⓈ-49	513-ECⓈ-49	513-ESⓈ-49
		—	—	100	75...100	513-EAⓈ-50	513-EFⓈ-50	513-EJⓈ-50	513-ECⓈ-50	513-ESⓈ-50
5	270	50...60	—	—	—	513-FAⓈ-48	513-FFⓈ-48	513-FJⓈ-48	513-FCⓈ-48	513-FSⓈ-48
		75	60...75	—	—	513-FAⓈ-49	513-FFⓈ-49	513-FJⓈ-49	513-FCⓈ-49	513-FSⓈ-49
		—	100	—	—	513-FAⓈ-50	513-FFⓈ-50	513-FJⓈ-50	513-FCⓈ-50	513-FSⓈ-50
		—	—	—	125	513-FAⓈ-51	513-FFⓈ-51	513-FJⓈ-51	513-FCⓈ-51	513-FSⓈ-51
		—	—	125...150	—	513-FAⓈ-52	513-FFⓈ-52	513-FJⓈ-52	513-FCⓈ-52	513-FSⓈ-52
		—	—	200	150...200	513-FAⓈ-54	513-FFⓈ-54	513-FJⓈ-54	513-FCⓈ-54	513-FSⓈ-54
6	540	100	—	—	—	513-GFⓈ-50T	—	513-GCⓈ-50T	—	—
		125	125	—	—	513-GFⓈ-51T	—	513-GCⓈ-51T	—	—
		150	150	—	—	513-GFⓈ-52T	—	513-GCⓈ-52T	—	—
		—	200	—	—	513-GFⓈ-54T	—	513-GCⓈ-54T	—	—
		—	—	250	250	513-GFⓈ-56T	—	513-GCⓈ-56T	—	—
		—	—	300	300	513-GFⓈ-57T	—	513-GCⓈ-57T	—	—
		—	—	—	350	513-GFⓈ-58T	—	513-GCⓈ-58T	—	—
		—	—	—	—	513-GFⓈ-59T	—	513-GCⓈ-59T	—	—
7	810	—	250	—	—	513-HFⓈ-56T	—	—	—	—
		—	300	—	—	513-HFⓈ-57T	—	—	—	—
		—	—	450...500	—	513-HFⓈ-61T	—	—	—	—
		—	—	—	450...600	513-HFⓈ-62T	—	—	—	—

Ⓢ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 513-BAⓈ-35** becomes **Cat. No. 513-BABⓈ-35**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

Ⓢ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 513-BABⓈ-32** becomes **Cat. No. 513-BAB-A2F-32**.

* For Type 3R applications it is **necessary** that a drain or breather and drain fitting be added to the enclosure.

† To order Visa-Window Breakers for certain mining applications (Canada only), add the letter "V" to the Cat. No. Example: **Cat. No. 513-BUⓈ-35V**.

NEMA Combination Non-Reversing Starters

Circuit Breaker Type, Continued

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Hazardous Locations		
						Unilock Enclosure	Bolted Enclosure	
		Motor Voltage				Type 3R/7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –	Type 7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –	Type 3R/7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –
200V	230V	460V	575V	Cat. No.*†	Cat. No.†	Cat. No.*‡		
0	18	0...1/3	0...1/3	—	—	513-AU⊗-⊖-32	513-AE⊗-⊖-32	513-AH⊗-⊖-32
		1/2...1	1/2...1	0...1	0...1	513-AU⊗-⊖-35	513-AE⊗-⊖-35	513-AH⊗-⊖-35
		1-1/2...3	1-1/2...3	1-1/2...3	1-1/2...3	513-AU⊗-⊖-38	513-AE⊗-⊖-38	513-AH⊗-⊖-38
		—	—	5	5	513-AU⊗-⊖-39	513-AE⊗-⊖-39	513-AH⊗-⊖-39
1	27	0...1/3	0...1/3	—	—	513-BU⊗-⊖-32	513-BE⊗-⊖-32	513-BH⊗-⊖-32
		1/2...1	1/2...1	0...1	0...1	513-BU⊗-⊖-35	513-BE⊗-⊖-35	513-BH⊗-⊖-35
		1-1/2...3	1-1/2...3	1-1/2...3	1-1/2...3	513-BU⊗-⊖-38	513-BE⊗-⊖-38	513-BH⊗-⊖-38
		5	—	—	—	513-BU⊗-⊖-39	513-BE⊗-⊖-39	513-BH⊗-⊖-39
		7-1/2	5...7-1/2	5...7-1/2	5...7-1/2	513-BU⊗-⊖-40	513-BE⊗-⊖-40	513-BH⊗-⊖-40
2	45	—	—	10	10	513-BU⊗-⊖-41	513-BE⊗-⊖-41	513-BH⊗-⊖-41
		10	10	—	—	513-CU⊗-⊖-41	513-CE⊗-⊖-41	513-CH⊗-⊖-41
		—	15	15	15	513-CU⊗-⊖-42	513-CE⊗-⊖-42	513-CH⊗-⊖-42
3	90	—	—	20...25	20...25	513-CU⊗-⊖-44	513-CE⊗-⊖-44	513-CH⊗-⊖-44
		15...25	20...25	—	—	513-DU⊗-⊖-44	513-DE⊗-⊖-44	513-DH⊗-⊖-44
		—	30	—	30	513-DU⊗-⊖-45	513-DE⊗-⊖-45	513-DH⊗-⊖-45
		—	—	30...50	40...50	513-DU⊗-⊖-47	513-DE⊗-⊖-47	513-DH⊗-⊖-47
4	135	30	—	—	—	513-EU⊗-⊖-45	513-EE⊗-⊖-45	513-EH⊗-⊖-45
		40	40	—	—	513-EU⊗-⊖-46	513-EE⊗-⊖-46	513-EH⊗-⊖-46
		—	50	—	—	513-EU⊗-⊖-47	513-EE⊗-⊖-47	513-EH⊗-⊖-47
		—	—	—	60	513-EU⊗-⊖-48	513-EE⊗-⊖-48	513-EH⊗-⊖-48
		—	—	60...75	—	513-EU⊗-⊖-49	513-EE⊗-⊖-49	513-EH⊗-⊖-49
		—	—	100	75...100	513-EU⊗-⊖-50	513-EE⊗-⊖-50	513-EH⊗-⊖-50
5	270§	50...60	50...60	50...60	50...60	513-FU⊗-⊖-48	513-FE⊗-⊖-48	513-FH⊗-⊖-48
		75	60...75	—	—	513-FU⊗-⊖-49	513-FE⊗-⊖-49	513-FH⊗-⊖-49
		—	100	—	—	513-FU⊗-⊖-50	513-FE⊗-⊖-50	513-FH⊗-⊖-50
		—	—	—	125	513-FU⊗-⊖-51	513-FE⊗-⊖-51	513-FH⊗-⊖-51
		—	—	125...150*	—	513-FU⊗-⊖-52	513-FE⊗-⊖-52	513-FH⊗-⊖-52
		—	—	200	150...200	513-FU⊗-⊖-54	513-FE⊗-⊖-54	513-FH⊗-⊖-54

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 513-BU⊗-⊖-35** becomes **Cat. No. 513-BUA-⊖-35**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

⊛ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 513-BUB-⊖-35** becomes **Cat. No. 513-BUB-A2D-35**.

* For Type 3R applications it is **necessary** that a drain or breather and drain fitting be added to the enclosure.

† To order Visa-Window Breakers for certain mining applications (Canada only), add the letter "V" to the Cat. No. Example: **Cat. No. 513-BU⊗-⊖-35V**.

‡ Includes drain and cover with gasket.

§ NEMA size 5 Unilock enclosed starters have a continuous ampere rating of 210 A.

* Bolted Enclosure suitable for use on motors from 125...200 HP, 460V.

NEMA Combination Non-Reversing Starters with Extra Panel Space

Circuit Breaker Type



Bulletin 513M

- NEMA starter sizes 1...2
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Circuit breaker magnetic only (instantaneous trip)
- Painted metal extra capacity enclosures: Type 1, Type 3R/4/12
- Stainless Steel extra capacity enclosures: Type 4/4X
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

A Bulletin 513M combination non-reversing starter consists of a Bulletin 509 starter and a circuit breaker magnetic only (instantaneous trip) mounted in a common enclosure with extra panel space.

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cULus Listed (File No. E125316)(Guide No. NKJH) per UL 508 and CSA 22.2 No. 14

Heater Elements — Starters with eutectic alloy overload relay require 3 overload heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Type 3R/4/12 Rainproof, Waterproof, Dusttight	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware)	Type 4/4X Watertight, Corrosion-Resistant, Stainless Steel
		Motor Voltage						
		200V	230V	460V	575V	Cat. No.*†	Cat. No.*†	Cat. No.*†
1	27	0...1/3	0...1/3	—	—	513M-BF⊗-⊕-32	513M-BJ⊗-⊕-32	513M-BC⊗-⊕-32
		1/2...1	1/2...1	0...1	0...1	513M-BF⊗-⊕-35	513M-BJ⊗-⊕-35	513M-BC⊗-⊕-35
		1-1/2...3	1-1/2...3	1-1/2...3	1-1/2...3	513M-BF⊗-⊕-38	513M-BJ⊗-⊕-38	513M-BC⊗-⊕-38
		5	—	—	—	513M-BF⊗-⊕-39	513M-BJ⊗-⊕-39	513M-BC⊗-⊕-39
		7-1/2	5...7-1/2	5...7-1/2	5...7-1/2	513M-BF⊗-⊕-40	513M-BJ⊗-⊕-40	513M-BC⊗-⊕-40
2	45	—	—	10	10	513M-BF⊗-⊕-41	513M-BJ⊗-⊕-41	513M-BC⊗-⊕-41
		10	10	—	—	513M-CF⊗-⊕-41	513M-CJ⊗-⊕-41	513M-CC⊗-⊕-41
		—	15	15	15	513M-CF⊗-⊕-42	513M-CJ⊗-⊕-42	513M-CC⊗-⊕-42
—	—	20...25	20...25	513M-CF⊗-⊕-44	513M-CJ⊗-⊕-44	513M-CC⊗-⊕-44		

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 513M-BF⊗-⊕-35** becomes **Cat. No. 513M-BFB-⊕-35**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

⊕ Overload Relay Code

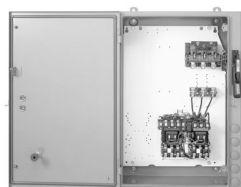
Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 513M-BAB-⊕-35** becomes **Cat. No. 513M-BAB-A2D-35**.

* To order starters (0 through 4) with current limiters, add the letter "C" at the end of the listed Cat. No. Example: **Cat. No. 513M-AA⊗-⊕-35C**.

† To order Visa-Window Breakers for certain mining applications (Canada only), add the letter "V" to the Cat. No. Example: **Cat. No. 513M-BA⊗-⊕-35V**.

NEMA Combination Multi-Speed Starters

Disconnect Type (Fusible with Class R Fuse Clips) (Non-Fusible)



Bulletin 522

- NEMA starter sizes 1...5
- 2-speed separate winding, constant or variable torque
- 2-speed separate winding, constant horsepower
- 2-speed Con. Pole, single winding, constant or variable torque
- 2-speed Con. Pole, single winding, constant horsepower
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

A Bulletin 522 combination multi-speed starter consists of a Bulletin 520 multi-speed starter and a disconnect switch (fused or non-fused) mounted in a common enclosure.

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- Non-Fusible Versions
cULus Listed (File No. E3125)(Guide No. NLDX)
- UL 508 and CSA 22.2 No. 14

2-Speed Separate Winding, 3-Pole – 3-Pole, Constant or Variable Torque (Constant Horsepower — page 1-66)

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements for each speed located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Hp Rating FLC Must Not Exceed "Continuous Ampere Rating"				Line Voltage (V)	Fuse Clip Rating Amperes (A) Fuses not included. Select per NEC	Type 1 General Purpose	Type 3R/4/12 Rainproof, Waterproof, Dusttight	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware)	Type 4/4X Watertight Corrosion-Resistant Stainless Steel	Type 4/4X Watertight Corrosion-Resistant Non-metallic
		Motor Voltage										
		60 Hz 200V	60 Hz 230V	50 Hz 380...415V	60 Hz 460...575V							
1	27	5	5	—	—	208...240	30	522E-BA [†] - [†] - [†] -24R	522E-BF [†] - [†] - [†] -24R	522E-BJ [†] - [†] - [†] -24R	522E-BC [†] - [†] - [†] -24R	522E-BS [†] - [†] - [†] -24R
		—	—	7-1/2	7-1/2	480...600	30	522E-BA [†] - [†] - [†] -24R	522E-BF [†] - [†] - [†] -24R	522E-BJ [†] - [†] - [†] -24R	522E-BC [†] - [†] - [†] -24R	522E-BS [†] - [†] - [†] -24R
		7-1/2	7-1/2	—	—	208...240	30	522E-BA [†] - [†] - [†] -24R	522E-BF [†] - [†] - [†] -24R	522E-BJ [†] - [†] - [†] -24R	522E-BC [†] - [†] - [†] -24R	522E-BS [†] - [†] - [†] -24R
		—	—	10	10	480...600	30	522E-BA [†] - [†] - [†] -24R	522E-BF [†] - [†] - [†] -24R	522E-BJ [†] - [†] - [†] -24R	522E-BC [†] - [†] - [†] -24R	522E-BS [†] - [†] - [†] -24R
		7-1/2	7-1/2	—	—	208...240	60	522E-BA [†] - [†] - [†] -25R	522E-BF [†] - [†] - [†] -25R	522E-BJ [†] - [†] - [†] -25R	522E-BC [†] - [†] - [†] -25R	522E-BS [†] - [†] - [†] -25R
		—	—	10	10	480...600	60	522E-BA [†] - [†] - [†] -25R	522E-BF [†] - [†] - [†] -25R	522E-BJ [†] - [†] - [†] -25R	522E-BC [†] - [†] - [†] -25R	522E-BS [†] - [†] - [†] -25R
2	45	10	15	—	—	208...240	60	522E-CA [†] - [†] - [†] -25R	522E-CF [†] - [†] - [†] -25R	522E-CJ [†] - [†] - [†] -25R	522E-CC [†] - [†] - [†] -25R	522E-CS [†] - [†] - [†] -25R
		—	—	25	25	480...600	60	522E-CA [†] - [†] - [†] -25R	522E-CF [†] - [†] - [†] -25R	522E-CJ [†] - [†] - [†] -25R	522E-CC [†] - [†] - [†] -25R	522E-CS [†] - [†] - [†] -25R
		10	15	—	—	208...240	100	522E-CA [†] - [†] - [†] -26J	522E-CF [†] - [†] - [†] -26J	522E-CJ [†] - [†] - [†] -26J	522E-CC [†] - [†] - [†] -26J	522E-CS [†] - [†] - [†] -26J
		—	—	25	25	480...600	100	522E-CA [†] - [†] - [†] -26J	522E-CF [†] - [†] - [†] -26J	522E-CJ [†] - [†] - [†] -26J	522E-CC [†] - [†] - [†] -26J	522E-CS [†] - [†] - [†] -26J
3	90	25	30	—	—	208...240	100	522E-DA [†] - [†] - [†] -26R	522E-DF [†] - [†] - [†] -26R	522E-DJ [†] - [†] - [†] -26R	522E-DC [†] - [†] - [†] -26R	522E-DS [†] - [†] - [†] -26R
		—	—	50	50	480...600	100	522E-DA [†] - [†] - [†] -26R	522E-DF [†] - [†] - [†] -26R	522E-DJ [†] - [†] - [†] -26R	522E-DC [†] - [†] - [†] -26R	522E-DS [†] - [†] - [†] -26R
		25	30	—	—	208...240	200	522E-DA [†] - [†] - [†] -27J	522E-DF [†] - [†] - [†] -27J	522E-DJ [†] - [†] - [†] -27J	522E-DC [†] - [†] - [†] -27J	522E-DS [†] - [†] - [†] -27J
		—	—	50	50	480...600	200	522E-DA [†] - [†] - [†] -27J	522E-DF [†] - [†] - [†] -27J	522E-DJ [†] - [†] - [†] -27J	522E-DC [†] - [†] - [†] -27J	522E-DS [†] - [†] - [†] -27J
4	135	40	50	—	—	208...240	200	522E-EA [†] - [†] - [†] -27R	522E-EF [†] - [†] - [†] -27R	522E-EJ [†] - [†] - [†] -27R	522E-EC [†] - [†] - [†] -27R	—
		—	—	75	100	480...600	200	522E-EA [†] - [†] - [†] -27R	522E-EF [†] - [†] - [†] -27R	522E-EJ [†] - [†] - [†] -27R	522E-EC [†] - [†] - [†] -27R	—
		40	50	—	—	208...240	400	522E-EA [†] - [†] - [†] -28J	522E-EF [†] - [†] - [†] -28J	522E-EJ [†] - [†] - [†] -28J	522E-EC [†] - [†] - [†] -28J	—
		—	—	75	100	480...600	400	522E-EA [†] - [†] - [†] -28J	522E-EF [†] - [†] - [†] -28J	522E-EJ [†] - [†] - [†] -28J	522E-EC [†] - [†] - [†] -28J	—
5	270	40	50	—	—	208...240	200	522E-FA [†] - [†] - [†] -27R	522E-FF [†] - [†] - [†] -27R	522E-FJ [†] - [†] - [†] -27R	522E-FC [†] - [†] - [†] -27R	—
		—	—	75	100	480...600	200	522E-FA [†] - [†] - [†] -27R	522E-FF [†] - [†] - [†] -27R	522E-FJ [†] - [†] - [†] -27R	522E-FC [†] - [†] - [†] -27R	—
		75	100	150	200	208...600	400	522E-FA [†] - [†] - [†] -28R	522E-FF [†] - [†] - [†] -28R	522E-FJ [†] - [†] - [†] -28R	522E-FC [†] - [†] - [†] -28R	—

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 522E-BA[†]-[†]-[†]-24R** becomes **Cat. No. 522E-BAB-[†]-[†]-24R**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		AD	AD	CD	CD
120V Separate Control (without transformer)		AD	AD	CD	CD

⊗ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select (2) overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: **Cat. No. 522E-BAB-[†]-[†]-24R** becomes **Cat. No. 522E-BAB-A2D-A2D-24R**.

* Non-Fusible Disconnect Type

Cat. Nos. listed above include a fusible disconnect switch with Class R or J fuse clips. To order a non-fusible disconnect switch, eliminate the fuse clip code from the Cat. No. Example: **Cat. No. 522E-BFB-24R** becomes **Cat. No. 522E-BFB**.

† Class H fuse clips can be supplied. Example: **Cat. No. 522E-BA[†]-[†]-[†]-24R** becomes **522E-BA[†]-[†]-[†]-24**. Class J fuse clips can be supplied. Example: **Cat. No. 522E-BA[†]-[†]-[†]-24R** becomes **522E-BA[†]-[†]-[†]-24E**.

‡ These starters are for wye connected motor windings. They may not be used with open delta connected motor windings. For starters to be used with open delta connected separate winding motors, use consequent pole starter, and furnish complete ordering information, see page 1-67.

NEMA Combination Multi-Speed Starters

Disconnect Type (Fusible with Class R Fuse Clips) (Non-Fusible)

2-Speed Separate Winding, 3-Pole – 3-Pole, Constant Horsepower (Constant or Variable Torque — page 1-65)

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements for each overload. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Line Voltage (V)	Fuse Clip Rating Amperes (A) Fuses not included. Select per NEC	Type 1	Type 3R/4/12	Type 3R/4/12	Type 4/4X	Type 4/4X
		Motor Voltage						General Purpose	Rainproof, Waterproof, Dusttight	Rainproof, Waterproof, Dusttight (Door Safety Hardware)	Watertight Corrosion-Resistant Stainless Steel	Watertight Corrosion-Resistant Non-metallic
		60 Hz	60 Hz	50 Hz	60 Hz							
		200V	230V	380...415V	460...575V			Cat. No.*†‡	Cat. No.*†‡	Cat. No.*†‡	Cat. No.*†‡	Cat. No.*†‡
1	27	5	5	—	—	208...240	30	522E-BA-Ⓢ-Ⓢ-24R	522E-BF-Ⓢ-Ⓢ-24R	522E-BJ-Ⓢ-Ⓢ-24R	522E-BC-Ⓢ-Ⓢ-24R	522E-BS-Ⓢ-Ⓢ-24R
		—	—	7-1/2	7-1/2	480...600	30	522E-BA-Ⓢ-Ⓢ-24R	522E-BF-Ⓢ-Ⓢ-24R	522E-BJ-Ⓢ-Ⓢ-24R	522E-BC-Ⓢ-Ⓢ-24R	522E-BS-Ⓢ-Ⓢ-24R
		5	5	—	—	208...240	60	522E-BA-Ⓢ-Ⓢ-25R	522E-BF-Ⓢ-Ⓢ-25R	522E-BJ-Ⓢ-Ⓢ-25R	522E-BC-Ⓢ-Ⓢ-25R	522E-BS-Ⓢ-Ⓢ-25R
2	45	—	—	7-1/2	7-1/2	480...600	60	522E-BA-Ⓢ-Ⓢ-25R	522E-BF-Ⓢ-Ⓢ-25R	522E-BJ-Ⓢ-Ⓢ-25R	522E-BC-Ⓢ-Ⓢ-25R	522E-BS-Ⓢ-Ⓢ-25R
		7-1/2	10	—	—	208...240	60	522E-CA-Ⓢ-Ⓢ-25R	522E-CF-Ⓢ-Ⓢ-25R	522E-CJ-Ⓢ-Ⓢ-25R	522E-CC-Ⓢ-Ⓢ-25R	522E-CS-Ⓢ-Ⓢ-25R
		—	—	20	20	480...600	60	522E-CA-Ⓢ-Ⓢ-25R	522E-CF-Ⓢ-Ⓢ-25R	522E-CJ-Ⓢ-Ⓢ-25R	522E-CC-Ⓢ-Ⓢ-25R	522E-CS-Ⓢ-Ⓢ-25R
3	90	7-1/2	10	—	—	208...240	100	522E-CA-Ⓢ-Ⓢ-26J	522E-CF-Ⓢ-Ⓢ-26J	522E-CJ-Ⓢ-Ⓢ-26J	522E-CC-Ⓢ-Ⓢ-26J	522E-CS-Ⓢ-Ⓢ-26J
		—	—	20	20	480...600	100	522E-CA-Ⓢ-Ⓢ-26J	522E-CF-Ⓢ-Ⓢ-26J	522E-CJ-Ⓢ-Ⓢ-26J	522E-CC-Ⓢ-Ⓢ-26J	522E-CS-Ⓢ-Ⓢ-26J
		20	25	—	—	208...240	100	522E-DA-Ⓢ-Ⓢ-26R	522E-DF-Ⓢ-Ⓢ-26R	522E-DJ-Ⓢ-Ⓢ-26R	522E-DC-Ⓢ-Ⓢ-26R	522E-DS-Ⓢ-Ⓢ-26R
4	135	—	—	40	40	480...600	100	522E-DA-Ⓢ-Ⓢ-26R	522E-DF-Ⓢ-Ⓢ-26R	522E-DJ-Ⓢ-Ⓢ-26R	522E-DC-Ⓢ-Ⓢ-26R	522E-DS-Ⓢ-Ⓢ-26R
		20	25	—	—	208...240	200	522E-DA-Ⓢ-Ⓢ-27J	522E-DF-Ⓢ-Ⓢ-27J	522E-DJ-Ⓢ-Ⓢ-27J	522E-DC-Ⓢ-Ⓢ-27J	522E-DS-Ⓢ-Ⓢ-27J
		—	—	40	40	480...600	200	522E-DA-Ⓢ-Ⓢ-27J	522E-DF-Ⓢ-Ⓢ-27J	522E-DJ-Ⓢ-Ⓢ-27J	522E-DC-Ⓢ-Ⓢ-27J	522E-DS-Ⓢ-Ⓢ-27J
5	270	30	40	—	—	208...240	200	522E-EA-Ⓢ-Ⓢ-27R	522E-EF-Ⓢ-Ⓢ-27R	522E-EJ-Ⓢ-Ⓢ-27R	522E-EC-Ⓢ-Ⓢ-27R	—
		—	—	60	75	480...600	200	522E-EA-Ⓢ-Ⓢ-27R	522E-EF-Ⓢ-Ⓢ-27R	522E-EJ-Ⓢ-Ⓢ-27R	522E-EC-Ⓢ-Ⓢ-27R	—
		30	40	—	—	208...240	400	522E-EA-Ⓢ-Ⓢ-28J	522E-EF-Ⓢ-Ⓢ-28J	522E-EJ-Ⓢ-Ⓢ-28J	522E-EC-Ⓢ-Ⓢ-28J	—
5	270	—	—	60	75	480...600	400	522E-EA-Ⓢ-Ⓢ-28J	522E-EF-Ⓢ-Ⓢ-28J	522E-EJ-Ⓢ-Ⓢ-28J	522E-EC-Ⓢ-Ⓢ-28J	—
		30	40	—	—	208...240	200	522E-FA-Ⓢ-Ⓢ-27R	522E-FF-Ⓢ-Ⓢ-27R	522E-FJ-Ⓢ-Ⓢ-27R	522E-FC-Ⓢ-Ⓢ-27R	—
		—	—	60	75	480...600	200	522E-FA-Ⓢ-Ⓢ-27R	522E-FF-Ⓢ-Ⓢ-27R	522E-FJ-Ⓢ-Ⓢ-27R	522E-FC-Ⓢ-Ⓢ-27R	—
5	270	60	75	100	150	208...600	400	522E-FA-Ⓢ-Ⓢ-28R	522E-FF-Ⓢ-Ⓢ-28R	522E-FJ-Ⓢ-Ⓢ-28R	522E-FC-Ⓢ-Ⓢ-28R	—

Ⓢ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 522E-BA-Ⓢ-Ⓢ-24R** becomes **Cat. No. 522E-BAB-Ⓢ-Ⓢ-24R**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		AD	AD	CD	CD
120V Separate Control (without transformer)		AD	AD	CD	CD

Ⓢ-Ⓢ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select two overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: **Cat. No. 522E-BAB-Ⓢ-Ⓢ-24R** becomes **Cat. No. 522E-BAB-A2D-A2D-24R**.

* Non-Fusible Disconnect Type

Cat. Nos. listed above include a fusible disconnect switch with Class R or J fuse clips. To order a non-fusible disconnect switch, eliminate the fuse clip code from the Cat. No. Example: **Cat. No. 522E-BFB-24R** becomes **Cat. No. 522E-BFB**.

† Class H fuse clips can be supplied. Example: **Cat. No. 522E-BA-Ⓢ-Ⓢ-24R** becomes **Cat. No. 522E-BA-Ⓢ-Ⓢ-24H**. Class J fuse clips can be supplied. Example: **Cat. No. 522E-BA-Ⓢ-Ⓢ-24R** becomes **Cat. No. 522E-BA-Ⓢ-Ⓢ-24J**. Class HRC form II fuse clips can be supplied. Example: **Cat. No. 522E-BA-Ⓢ-Ⓢ-24R** becomes **Cat. No. 522E-BA-Ⓢ-Ⓢ-24E**.

‡ These starters are for wye connected motor windings. They may not be used with open delta connected motor windings. For starters to be used with open delta connected separate winding motors, use consequent pole starter, and furnish complete ordering information, see page 1-67.

2-Speed Consequent Pole, 5-Pole – 3-Pole, Single Winding, Constant or Variable Torque (Constant Horsepower — page 1-68)

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements for each speed. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Line Voltage (V)	Fuse Clip Rating Amperes (A) Fuses not included. Select per NEC	Type 1 General Purpose	Type 3R/4/12 Rainproof, Waterproof, Dusttight	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware)	Type 4/4X Watertight Corrosion-Resistant Stainless Steel	Type 4/4X Watertight Corrosion-Resistant Non-metallic
		Motor Voltage										
		60 Hz 200V	60 Hz 230V	50 Hz 380...415V	60 Hz 460...575V							
1	27	7-1/2	7-1/2	—	—	208...240	30	522F-BA-0-0-24R	522F-BF-0-0-24R	522F-BJ-0-0-24R	522F-BC-0-0-24R	522F-BS-0-0-24R
		—	—	10	10	480...600	30	522F-BA-0-0-24R	522F-BF-0-0-24R	522F-BJ-0-0-24R	522F-BC-0-0-24R	522F-BS-0-0-24R
		7-1/2	7-1/2	—	—	208...240	60	522F-BA-0-0-25R	522F-BF-0-0-25R	522F-BJ-0-0-25R	522F-BC-0-0-25R	522F-BS-0-0-25R
2	45	—	—	10	10	480...600	60	522F-CA-0-0-25R	522F-CF-0-0-25R	522F-CJ-0-0-25R	522F-CC-0-0-25R	522F-CS-0-0-25R
		10	15	—	—	208...240	60	522F-CA-0-0-25R	522F-CF-0-0-25R	522F-CJ-0-0-25R	522F-CC-0-0-25R	522F-CS-0-0-25R
		—	—	25	25	480...600	60	522F-CA-0-0-25R	522F-CF-0-0-25R	522F-CJ-0-0-25R	522F-CC-0-0-25R	522F-CS-0-0-25R
3	90	10	15	—	—	208...240	100	522F-CA-0-0-26J	522F-CF-0-0-26J	522F-CJ-0-0-26J	522F-CC-0-0-26J	522F-CS-0-0-26J
		—	—	25	25	480...600	100	522F-CA-0-0-26J	522F-CF-0-0-26J	522F-CJ-0-0-26J	522F-CC-0-0-26J	522F-CS-0-0-26J
		25	30	—	—	208...240	100	522F-DA-0-0-26R	522F-DF-0-0-26R	522F-DJ-0-0-26R	522F-DC-0-0-26R	522F-DS-0-0-26R
4	135	—	—	50	50	480...600	100	522F-DA-0-0-26R	522F-DF-0-0-26R	522F-DJ-0-0-26R	522F-DC-0-0-26R	522F-DS-0-0-26R
		25	30	—	—	208...240	200	522F-DA-0-0-27J	522F-DF-0-0-27J	522F-DJ-0-0-27J	522F-DC-0-0-27J	522F-DS-0-0-27J
		—	—	50	50	480...600	200	522F-DA-0-0-27J	522F-DF-0-0-27J	522F-DJ-0-0-27J	522F-DC-0-0-27J	522F-DS-0-0-27J
5	270	40	50	—	—	208...240	200	522F-EA-0-0-27R	522F-EF-0-0-27R	522F-EJ-0-0-27R	522F-EC-0-0-27R	—
		—	—	75	100	480...600	200	522F-EA-0-0-27R	522F-EF-0-0-27R	522F-EJ-0-0-27R	522F-EC-0-0-27R	—
		40	50	—	—	208...240	400	522F-EA-0-0-28J	522F-EF-0-0-28J	522F-EJ-0-0-28J	522F-EC-0-0-28J	—
5	270	—	—	75	100	480...600	400	522F-EA-0-0-28J	522F-EF-0-0-28J	522F-EJ-0-0-28J	522F-EC-0-0-28J	—
		40	50	—	—	208...240	200	522F-FA-0-0-27R	522F-FF-0-0-27R	522F-FJ-0-0-27R	—	—
		—	—	75	100	480...600	200	522F-FA-0-0-27R	522F-FF-0-0-27R	522F-FJ-0-0-27R	—	—
5	270	75	100	150	200	208...600	400	522F-FA-0-0-28R	522F-FF-0-0-28R	522F-FJ-0-0-28R	—	—

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 522F-BA-0-0-24R** becomes **Cat. No. 522F-BAB-0-0-24R**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		AD	AD	CD	CD
120V Separate Control (without transformer)		AD	AD	CD	CD

⊗-⊗ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select two overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: **Cat. No. 522F-BAB-0-0-24R** becomes **Cat. No. 522F-BAB-A2D-A2D-24R**.

* Non-Fusible Disconnect Type

Cat. Nos. listed above include a fusible disconnect switch with Class R or J fuse clips. To order a non-fusible disconnect switch, eliminate the fuse clip code from the Cat. No. Example: **Cat. No. 522F-BJB-24R** becomes **Cat. No. 522F-BJB**.

† Class H fuse clips can be supplied. Example: **Cat. No. 522F-BA-0-0-24R** becomes **Cat. No. 522F-BA-0-0-24H**. Class J fuse clips can be supplied. Example: **Cat. No. 522F-BA-0-0-24R** becomes **Cat. No. 522F-BA-0-0-24J**. Class HRC form II fuse clips can be supplied. Example: **Cat. No. 522F-BA-0-0-24R** becomes **Cat. No. 522F-BA-0-0-24E**.

NEMA Combination Multi-Speed Starters

Disconnect Type (Fusible with Class R Fuse Clips) (Non-Fusible)

2-Speed Consequent Pole, 5-Pole – 3-Pole, Single Winding, Constant Horsepower (Constant or Variable Torque — page 1-67)

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements for each overload. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Line Voltage (V)	Fuse Clip Rating Amperes (A) Fuses not included. Select per NEC	Type 1 General Purpose	Type 3R/4/12 Rainproof, Waterproof, Dusttight	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware)	Type 4/4X Watertight Corrosion-Resistant Stainless Steel	Type 4/4X Watertight Corrosion-Resistant Non-metallic
		Motor Voltage										
		60 Hz	60 Hz	50 Hz	60 Hz							
1	27	200V	230V	380...415V	460...575V	208...240	30	522G-BA [Ⓢ] - [Ⓢ] - [Ⓢ] -24R	522G-BF [Ⓢ] - [Ⓢ] - [Ⓢ] -24R	522G-BJ [Ⓢ] - [Ⓢ] - [Ⓢ] -24R	522G-BC [Ⓢ] - [Ⓢ] - [Ⓢ] -24R	522G-BS [Ⓢ] - [Ⓢ] - [Ⓢ] -24R
		—	—	7-1/2	7-1/2	480...600	30	522G-BA [Ⓢ] - [Ⓢ] - [Ⓢ] -24R	522G-BF [Ⓢ] - [Ⓢ] - [Ⓢ] -24R	522G-BJ [Ⓢ] - [Ⓢ] - [Ⓢ] -24R	522G-BC [Ⓢ] - [Ⓢ] - [Ⓢ] -24R	522G-BS [Ⓢ] - [Ⓢ] - [Ⓢ] -24R
		5	5	—	—	208...240	60	522G-BA [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-BF [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-BJ [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-BC [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-BS [Ⓢ] - [Ⓢ] - [Ⓢ] -25R
		—	—	7-1/2	7-1/2	480...600	60	522G-BA [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-BF [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-BJ [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-BC [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-BS [Ⓢ] - [Ⓢ] - [Ⓢ] -25R
2	45	7-1/2	10	—	—	208...240	60	522G-CA [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-CF [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-CJ [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-CC [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-CS [Ⓢ] - [Ⓢ] - [Ⓢ] -25R
		—	—	20	20	480...600	60	522G-CA [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-CF [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-CJ [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-CC [Ⓢ] - [Ⓢ] - [Ⓢ] -25R	522G-CS [Ⓢ] - [Ⓢ] - [Ⓢ] -25R
		7-1/2	10	—	—	208...240	100	522G-CA [Ⓢ] - [Ⓢ] - [Ⓢ] -26J	522G-CF [Ⓢ] - [Ⓢ] - [Ⓢ] -26J	522G-CJ [Ⓢ] - [Ⓢ] - [Ⓢ] -26J	522G-CC [Ⓢ] - [Ⓢ] - [Ⓢ] -26J	522G-CS [Ⓢ] - [Ⓢ] - [Ⓢ] -26J
		—	—	20	20	480...600	100	522G-CA [Ⓢ] - [Ⓢ] - [Ⓢ] -26J	522G-CF [Ⓢ] - [Ⓢ] - [Ⓢ] -26J	522G-CJ [Ⓢ] - [Ⓢ] - [Ⓢ] -26J	522G-CC [Ⓢ] - [Ⓢ] - [Ⓢ] -26J	522G-CS [Ⓢ] - [Ⓢ] - [Ⓢ] -26J
3	90	20	25	—	—	208...240	100	522G-DA [Ⓢ] - [Ⓢ] - [Ⓢ] -26R	522G-DF [Ⓢ] - [Ⓢ] - [Ⓢ] -26R	522G-DJ [Ⓢ] - [Ⓢ] - [Ⓢ] -26R	522G-DC [Ⓢ] - [Ⓢ] - [Ⓢ] -26R	522G-DS [Ⓢ] - [Ⓢ] - [Ⓢ] -26R
		—	—	40	40	480...600	100	522G-DA [Ⓢ] - [Ⓢ] - [Ⓢ] -26R	522G-DF [Ⓢ] - [Ⓢ] - [Ⓢ] -26R	522G-DJ [Ⓢ] - [Ⓢ] - [Ⓢ] -26R	522G-DC [Ⓢ] - [Ⓢ] - [Ⓢ] -26R	522G-DS [Ⓢ] - [Ⓢ] - [Ⓢ] -26R
		20	25	—	—	208...240	200	522G-DA [Ⓢ] - [Ⓢ] - [Ⓢ] -27J	522G-DF [Ⓢ] - [Ⓢ] - [Ⓢ] -27J	522G-DJ [Ⓢ] - [Ⓢ] - [Ⓢ] -27J	522G-DC [Ⓢ] - [Ⓢ] - [Ⓢ] -27J	522G-DS [Ⓢ] - [Ⓢ] - [Ⓢ] -27J
		—	—	40	40	480...600	200	522G-DA [Ⓢ] - [Ⓢ] - [Ⓢ] -27J	522G-DF [Ⓢ] - [Ⓢ] - [Ⓢ] -27J	522G-DJ [Ⓢ] - [Ⓢ] - [Ⓢ] -27J	522G-DC [Ⓢ] - [Ⓢ] - [Ⓢ] -27J	522G-DS [Ⓢ] - [Ⓢ] - [Ⓢ] -27J
4	135	30	40	—	—	208...240	200	522G-EA [Ⓢ] - [Ⓢ] - [Ⓢ] -27R	522G-EF [Ⓢ] - [Ⓢ] - [Ⓢ] -27R	522G-EJ [Ⓢ] - [Ⓢ] - [Ⓢ] -27R	522G-EC [Ⓢ] - [Ⓢ] - [Ⓢ] -27R	522G-ES [Ⓢ] - [Ⓢ] - [Ⓢ] -27R
		—	—	60	75	480...600	200	522G-EA [Ⓢ] - [Ⓢ] - [Ⓢ] -27R	522G-EF [Ⓢ] - [Ⓢ] - [Ⓢ] -27R	522G-EJ [Ⓢ] - [Ⓢ] - [Ⓢ] -27R	522G-EC [Ⓢ] - [Ⓢ] - [Ⓢ] -27R	—
		30	40	—	—	208...240	400	522G-EA [Ⓢ] - [Ⓢ] - [Ⓢ] -28J	522G-EF [Ⓢ] - [Ⓢ] - [Ⓢ] -28J	522G-EJ [Ⓢ] - [Ⓢ] - [Ⓢ] -28J	522G-EC [Ⓢ] - [Ⓢ] - [Ⓢ] -28J	—
		—	—	60	75	480...600	400	522G-EA [Ⓢ] - [Ⓢ] - [Ⓢ] -28J	522G-EF [Ⓢ] - [Ⓢ] - [Ⓢ] -28J	522G-EJ [Ⓢ] - [Ⓢ] - [Ⓢ] -28J	522G-EC [Ⓢ] - [Ⓢ] - [Ⓢ] -28J	—
5	270	30	40	—	—	208...240	200	522G-FA [Ⓢ] - [Ⓢ] - [Ⓢ] -27R	522G-FF [Ⓢ] - [Ⓢ] - [Ⓢ] -27R	522G-FJ [Ⓢ] - [Ⓢ] - [Ⓢ] -27R	—	—
		—	—	60	75	480...600	200	522G-FA [Ⓢ] - [Ⓢ] - [Ⓢ] -27R	522G-FF [Ⓢ] - [Ⓢ] - [Ⓢ] -27R	522G-FJ [Ⓢ] - [Ⓢ] - [Ⓢ] -27R	—	—
		60	75	—	150	208...600	400	522G-FA [Ⓢ] - [Ⓢ] - [Ⓢ] -28R	522G-FF [Ⓢ] - [Ⓢ] - [Ⓢ] -28R	522G-FJ [Ⓢ] - [Ⓢ] - [Ⓢ] -28R	—	—

Ⓢ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 522G-BA[Ⓢ]-[Ⓢ]-[Ⓢ]-24R** becomes **Cat. No. 522G-BAB[Ⓢ]-[Ⓢ]-[Ⓢ]-24R**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		AD	AD	BD	CD
120V Separate Control (without transformer)		AD	AD	BD	CD

Ⓢ-Ⓢ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select two overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: **Cat. No. 522G-BAB[Ⓢ]-[Ⓢ]-[Ⓢ]-24R** becomes **Cat. No. 522G-BAB-A2D-A2D-24R**.

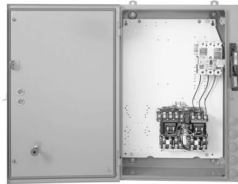
* Non-Fusible Disconnect Type

Cat. Nos. listed above include a fusible disconnect switch with Class R or J fuse clips. To order a non-fusible disconnect switch, eliminate the fuse clip code from the Cat. No. Example: **Cat. No. 522G-BJB-24R** becomes **Cat. No. 522G-BJB**.

† Class H fuse clips can be supplied. Example: **Cat. No. 522G-BA[Ⓢ]-[Ⓢ]-[Ⓢ]-24R** becomes **Cat. No. 522G-BA[Ⓢ]-[Ⓢ]-[Ⓢ]-24H**. Class J fuse clips can be supplied. Example: **Cat. No. 522G-BA[Ⓢ]-[Ⓢ]-[Ⓢ]-24R** becomes **Cat. No. 522G-BA[Ⓢ]-[Ⓢ]-[Ⓢ]-24J**. Class HRC form II fuse clips can be supplied. Example: **Cat. No. 522G-BA[Ⓢ]-[Ⓢ]-[Ⓢ]-24R** becomes **Cat. No. 522G-BA[Ⓢ]-[Ⓢ]-[Ⓢ]-24E**.

NEMA Combination Multi-Speed Starters

Circuit Breaker Type



Bulletin 523

- NEMA starter sizes 1...5
- Circuit Breaker magnetic only (instantaneous trip)
- 2-speed separate winding, constant or variable torque
- 2-speed separate winding, constant horsepower
- 2-speed Consequent Pole, single winding, constant or variable torque
- 2-speed Consequent Pole, single winding, constant horsepower
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

A Bulletin 523 combination multi-speed starter consists of a Bulletin 520 multi-speed starter and a circuit breaker magnetic only (instantaneous trip) mounted in a common enclosure.

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- Specifications 1-109
- Approximate Dimensions 1-127

Standards Compliance and Certifications

cULus Listed (File No. E3125)
Guide No. (NLDX) per UL 508 and CSA 22.2 No. 14

2-Speed Separate Winding, 3-Pole – 3-Pole, Constant or Variable Torque (Constant Horsepower — page 1-70)

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements for each overload. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Type 1 General Purpose Cat. No.*†	Type 3R/4/12 Rainproof, Waterproof, Dusttight Cat. No.*†	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware) Cat. No.*†	Type 4/4X Watertight Corrosion- Resistant Stainless Steel Cat. No.*†	Type 4/4X Watertight Corrosion- Resistant Non-metallic Cat. No.*†
		Motor Voltage								
		200V	230V	460V	575V					
1	27	0...1/3	0...1/3	—	—	523E-BAⓈ-Ⓢ-Ⓢ-32	523E-BFⓈ-Ⓢ-Ⓢ-32	523E-BJⓈ-Ⓢ-Ⓢ-32	523E-BCⓈ-Ⓢ-Ⓢ-32	523E-BSⓈ-Ⓢ-Ⓢ-32
		1/2...1	1/2...1	0...1	0...1	523E-BAⓈ-Ⓢ-Ⓢ-35	523E-BFⓈ-Ⓢ-Ⓢ-35	523E-BJⓈ-Ⓢ-Ⓢ-35	523E-BCⓈ-Ⓢ-Ⓢ-35	523E-BSⓈ-Ⓢ-Ⓢ-35
		1-1/2...3	1-1/2...3	1-1/2...3	1-1/2...3	523E-BAⓈ-Ⓢ-Ⓢ-38	523E-BFⓈ-Ⓢ-Ⓢ-38	523E-BJⓈ-Ⓢ-Ⓢ-38	523E-BCⓈ-Ⓢ-Ⓢ-38	523E-BSⓈ-Ⓢ-Ⓢ-38
		—	—	1-1/2...3	5	523E-BAⓈ-Ⓢ-Ⓢ-39	523E-BFⓈ-Ⓢ-Ⓢ-39	523E-BJⓈ-Ⓢ-Ⓢ-39	523E-BCⓈ-Ⓢ-Ⓢ-39	523E-BSⓈ-Ⓢ-Ⓢ-39
		5‡	—	—	—	523E-BAⓈ-Ⓢ-Ⓢ-39	523E-BFⓈ-Ⓢ-Ⓢ-39	523E-BJⓈ-Ⓢ-Ⓢ-39	523E-BCⓈ-Ⓢ-Ⓢ-39	523E-BSⓈ-Ⓢ-Ⓢ-39
		7-1/2	5...7-1/2‡	7-1/2‡	7-1/2‡	523E-BAⓈ-Ⓢ-Ⓢ-40	523E-BFⓈ-Ⓢ-Ⓢ-40	523E-BJⓈ-Ⓢ-Ⓢ-40	523E-BCⓈ-Ⓢ-Ⓢ-40	523E-BSⓈ-Ⓢ-Ⓢ-40
2	45	—	—	10	10	523E-BAⓈ-Ⓢ-Ⓢ-41	523E-BFⓈ-Ⓢ-Ⓢ-41	523E-BJⓈ-Ⓢ-Ⓢ-41	523E-BCⓈ-Ⓢ-Ⓢ-41	523E-BSⓈ-Ⓢ-Ⓢ-41
		10	10	—	—	523E-CAⓈ-Ⓢ-Ⓢ-41	523E-CFⓈ-Ⓢ-Ⓢ-41	523E-CJⓈ-Ⓢ-Ⓢ-41	523E-CCⓈ-Ⓢ-Ⓢ-41	523E-CSⓈ-Ⓢ-Ⓢ-41
		—	15	15	15	523E-CAⓈ-Ⓢ-Ⓢ-42	523E-CFⓈ-Ⓢ-Ⓢ-42	523E-CJⓈ-Ⓢ-Ⓢ-42	523E-CCⓈ-Ⓢ-Ⓢ-42	523E-CSⓈ-Ⓢ-Ⓢ-42
3	90	—	—	20...25	20...25	523E-CAⓈ-Ⓢ-Ⓢ-44	523E-CFⓈ-Ⓢ-Ⓢ-44	523E-CJⓈ-Ⓢ-Ⓢ-44	523E-CCⓈ-Ⓢ-Ⓢ-44	523E-CSⓈ-Ⓢ-Ⓢ-44
		15...25	20...25	—	—	523E-DAⓈ-Ⓢ-Ⓢ-44	523E-DFⓈ-Ⓢ-Ⓢ-44	523E-DJⓈ-Ⓢ-Ⓢ-44	523E-DCⓈ-Ⓢ-Ⓢ-44	523E-DSⓈ-Ⓢ-Ⓢ-44
		—	30	—	30	523E-DAⓈ-Ⓢ-Ⓢ-45	523E-DFⓈ-Ⓢ-Ⓢ-45	523E-DJⓈ-Ⓢ-Ⓢ-45	523E-DCⓈ-Ⓢ-Ⓢ-45	523E-DSⓈ-Ⓢ-Ⓢ-45
4	135	—	—	30...50	40...50	523E-DAⓈ-Ⓢ-Ⓢ-47	523E-DFⓈ-Ⓢ-Ⓢ-47	523E-DJⓈ-Ⓢ-Ⓢ-47	523E-DCⓈ-Ⓢ-Ⓢ-47	523E-DSⓈ-Ⓢ-Ⓢ-47
		30	—	—	—	523E-EAⓈ-Ⓢ-Ⓢ-45	523E-EFⓈ-Ⓢ-Ⓢ-45	523E-EJⓈ-Ⓢ-Ⓢ-45	523E-ECⓈ-Ⓢ-Ⓢ-45	—
		40	40	—	—	523E-EAⓈ-Ⓢ-Ⓢ-46	523E-EFⓈ-Ⓢ-Ⓢ-46	523E-EJⓈ-Ⓢ-Ⓢ-46	523E-ECⓈ-Ⓢ-Ⓢ-46	—
		—	50	—	—	523E-EAⓈ-Ⓢ-Ⓢ-47	523E-EFⓈ-Ⓢ-Ⓢ-47	523E-EJⓈ-Ⓢ-Ⓢ-47	523E-ECⓈ-Ⓢ-Ⓢ-47	—
		—	—	—	60	523E-EAⓈ-Ⓢ-Ⓢ-48	523E-EFⓈ-Ⓢ-Ⓢ-48	523E-EJⓈ-Ⓢ-Ⓢ-48	523E-ECⓈ-Ⓢ-Ⓢ-48	—
		—	—	60...75	—	523E-EAⓈ-Ⓢ-Ⓢ-49	523E-EFⓈ-Ⓢ-Ⓢ-49	523E-EJⓈ-Ⓢ-Ⓢ-49	523E-ECⓈ-Ⓢ-Ⓢ-49	—
5	270	—	—	100	75...100	523E-EAⓈ-Ⓢ-Ⓢ-50	523E-EFⓈ-Ⓢ-Ⓢ-50	523E-EJⓈ-Ⓢ-Ⓢ-50	523E-ECⓈ-Ⓢ-Ⓢ-50	—
		50...60	—	—	—	523E-FAⓈ-Ⓢ-Ⓢ-48	523E-FFⓈ-Ⓢ-Ⓢ-48	523E-FJⓈ-Ⓢ-Ⓢ-48	523E-FCⓈ-Ⓢ-Ⓢ-48	—
		75	60...75	—	—	523E-FAⓈ-Ⓢ-Ⓢ-49	523E-FFⓈ-Ⓢ-Ⓢ-49	523E-FJⓈ-Ⓢ-Ⓢ-49	523E-FCⓈ-Ⓢ-Ⓢ-49	—
		—	100	—	—	523E-FAⓈ-Ⓢ-Ⓢ-50	523E-FFⓈ-Ⓢ-Ⓢ-50	523E-FJⓈ-Ⓢ-Ⓢ-50	523E-FCⓈ-Ⓢ-Ⓢ-50	—
		—	—	—	125	523E-FAⓈ-Ⓢ-Ⓢ-51	523E-FFⓈ-Ⓢ-Ⓢ-51	523E-FJⓈ-Ⓢ-Ⓢ-51	523E-FCⓈ-Ⓢ-Ⓢ-51	—
		—	—	125...150	—	523E-FAⓈ-Ⓢ-Ⓢ-52	523E-FFⓈ-Ⓢ-Ⓢ-52	523E-FJⓈ-Ⓢ-Ⓢ-52	523E-FCⓈ-Ⓢ-Ⓢ-52	—
—	—	200	150...200	523E-FAⓈ-Ⓢ-Ⓢ-54	523E-FFⓈ-Ⓢ-Ⓢ-54	523E-FJⓈ-Ⓢ-Ⓢ-54	523E-FCⓈ-Ⓢ-Ⓢ-54	—		

Ⓢ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 523E-BAⓈ-Ⓢ-Ⓢ-40** becomes **Cat. No. 523E-BAB-Ⓢ-Ⓢ-40**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

Ⓢ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select two overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: **Cat. No. 523E-BAB-Ⓢ-Ⓢ-40** becomes **523E-BAB-A2D-A2D-40**.

* These starters are for wye connected motor windings. They may not be used with open delta connected motor windings. For starters to be used with open delta connected separate winding motors, use consequent pole starter prices, and furnish complete ordering information, see page 1-71.

† To order Visa-Window Breakers for certain mining applications (Canada only), add the letter "V" to the Cat. No. Example: **Cat. No. 523E-BAⓈ-Ⓢ-Ⓢ-40V**.

‡ State horsepower if less than listed.



NEMA Combination Multi-Speed Starters

Circuit Breaker Type

2-Speed Separate Winding, 3-Pole – 3-Pole, Constant Horsepower (Constant or Variable Torque — page 1-69)

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements for each overload. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Type 1 General Purpose	Type 3R/4/12 Rainproof, Waterproof, Dusttight	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware)	Type 4/4X Watertight Corrosion- Resistant Stainless Steel	Type 4/4X Watertight Corrosion- Resistant Non-metallc
		Motor Voltage								
		200V	230V	460V	575V					
1	27	0...1/3	0...1/3	—	—	523E-BA-32	523E-BF-32	523E-BJ-32	523E-BC-32	523E-BS-32
		1/2...1	1/2...1	0...1	0...1	523E-BA-35	523E-BF-35	523E-BJ-35	523E-BC-35	523E-BS-35
		1-1/2...2	1-1/2...2	—	—	523E-BA-37	523E-BF-37	523E-BJ-37	523E-BC-37	523E-BS-37
		—	—	1-1/2...3	1-1/2...3	523E-BA-38	523E-BF-38	523E-BJ-38	523E-BC-38	523E-BS-38
		3‡	3‡	—	—	523E-BA-38	523E-BF-38	523E-BJ-38	523E-BC-38	523E-BS-38
		5	5	—	—	523E-BA-39	523E-BF-39	523E-BJ-39	523E-BC-39	523E-BS-39
2	45	—	—	5...7-1/2‡	5...7-1/2‡	523E-BA-40	523E-CF-40	523E-BJ-40	523E-BC-40	523E-BS-40
		7-1/2	7-1/2	—	—	523E-CA-40	523E-CF-40	523E-CJ-40	523E-CC-40	523E-CS-40
		—	10	—	—	523E-CA-41	523E-CF-41	523E-CJ-41	523E-CC-41	523E-CS-41
		—	—	10...15	10...15	523E-CA-42	523E-CF-42	523E-CJ-42	523E-CC-42	523E-CS-42
3	90	—	—	20	20	523E-CA-43	523E-DF-43	523E-CJ-43	523E-CC-43	523E-CS-43
		10	10	—	—	523E-DA-41	523E-DF-41	523E-DJ-41	523E-DC-41	523E-DS-41
		15...20	—	—	—	523E-DA-43	523E-DF-43	523E-DJ-43	523E-DC-43	523E-DS-43
		—	15...25	25	—	523E-DA-44	523E-DF-44	523E-DJ-44	523E-DC-44	523E-DS-44
4	135	—	—	—	25...30	523E-DA-45	523E-DF-45	523E-DJ-45	523E-DC-45	523E-DS-45
		—	—	30...40	40	523E-DA-46	523E-EF-46	523E-EJ-46	523E-EC-46	523E-ES-46
		25	—	—	—	523E-EA-44	523E-EF-44	523E-EJ-44	523E-EC-44	—
		30	—	—	—	523E-EA-45	523E-EF-45	523E-EJ-45	523E-EC-45	—
		—	30...40	—	—	523E-EA-46	523E-EF-46	523E-EJ-46	523E-EC-46	—
		—	—	50	—	523E-EA-47	523E-EF-47	523E-EJ-47	523E-EC-47	—
5	270	—	—	—	50...60	523E-EA-48	523E-EF-48	523E-EJ-48	523E-EC-48	—
		—	—	60...75	75	523E-EA-49	523E-EF-49	523E-EJ-49	523E-EC-49	—
		40	—	—	—	523E-FA-46	523E-FF-46	523E-FJ-46	523G-FC-46	—
		—	50	—	—	523E-FA-47	523E-FF-47	523E-FJ-47	523G-FC-47	—
		50...60	—	—	—	523E-FA-48	523E-FF-48	523E-FJ-48	523E-FC-48	—
		—	60...75	—	—	523E-FA-49	523E-FF-49	523E-FJ-49	523E-FC-49	—
—	—	100	—	523E-FA-50	523E-FF-50	523E-FJ-50	523E-FC-50	—		
—	—	—	100...125	523E-FA-51	523E-FF-51	523E-FJ-51	523E-FC-51	—		
—	—	125...150	150	523E-FA-52	523G-FF-52	523E-FJ-52	523E-FC-52	—		

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 523E-AC-32-40** becomes **Cat. No. 523E-ACB-32-40**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

⊗ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select two overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: **Cat. No. 523E-BAB-32-40** becomes **Cat. No. 523E-BAB-A2D-A2D-40**.

* These starters are for wye connected motor windings. They may not be used with open delta connected motor windings. For starters to be used with open delta connected separate winding motors, use consequent pole starter prices, and furnish complete ordering information, see page 1-71.

† To order Visa-Window Breakers for certain mining applications (Canada only), add the letter "V" to the Cat. No. Example: **Cat. No. 523E-BA-32-40V**.

‡ State horsepower if less than listed.

NEMA Combination Multi-Speed Starters

Circuit Breaker Type

2-Speed Consequent Pole, Single Winding, 5-Pole – 3-Pole, Constant or Variable Torque (Constant Horsepower — Page 1-72)

Heater Elements —Starters with eutectic alloy overload relays require 3 heater elements for each overload. Located on page 1-152.

NEMA Size	Con- tinuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Type 1 General Purpose	Type 3R/4/12 Rainproof, Waterproof, Dusttight	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware)	Type 4/4X Watertight Corrosion- Resistant Stainless Steel	Type 4/4X Watertight Corrosion- Resistant Non-metallic
		Motor Voltage								
		200V	230V	460V	575V					
1	27	0...1/3	0...1/3	—	—	523F-BA-0-0-32	523F-BF-0-0-32	523F-BJ-0-0-32	523F-BC-0-0-32	523F-BS-0-0-32
		1/2...1	1/2...1	0...1	0...1	523F-BA-0-0-35	523F-BF-0-0-35	523F-BJ-0-0-35	523F-BC-0-0-35	523F-BS-0-0-35
		1-1/2...3	1-1/2...3	1-1/2...3	1-1/2...3	523F-BA-0-0-38	523F-BF-0-0-38	523F-BJ-0-0-38	523F-BC-0-0-38	523F-BS-0-0-38
		—	—	5	5	523F-BA-0-0-39	523F-BF-0-0-39	523F-BJ-0-0-39	523F-BC-0-0-39	523F-BS-0-0-39
		—†	—	5	5	523F-BA-0-0-39	523F-BF-0-0-39	523F-BJ-0-0-39	523F-BC-0-0-39	523F-BS-0-0-39
		7-1/2	5...7-1/2†	5...7-1/2†	5...7-1/2†	523F-BA-0-0-40	523F-BF-0-0-40	523F-BJ-0-0-40	523F-BC-0-0-40	523F-BS-0-0-40
2	45	—	—	10	10	523F-BA-0-0-41	523F-BF-0-0-41	523F-BJ-0-0-41	523F-CC-0-0-41	523F-CS-0-0-41
		10	10	—	—	523F-CA-0-0-41	523F-CF-0-0-41	523F-CJ-0-0-41	523F-CC-0-0-41	523F-CS-0-0-41
		—	15	15	15	523F-CA-0-0-42	523F-CF-0-0-42	523F-CJ-0-0-42	523F-CC-0-0-42	523F-CS-0-0-42
3	90	—	—	20...25	20...25	523F-CA-0-0-44	523F-CF-0-0-44	523F-CJ-0-0-44	523F-DC-0-0-44	523F-DS-0-0-44
		15...25	20...25	—	—	523F-DA-0-0-44	523F-DF-0-0-44	523F-DJ-0-0-44	523F-DC-0-0-44	523F-DS-0-0-44
		—	30	—	30	523F-DA-0-0-45	523F-DF-0-0-45	523F-DJ-0-0-45	523F-DC-0-0-45	523F-DS-0-0-45
4	135	—	—	30...50	40...50	523F-DA-0-0-47	523F-DF-0-0-47	523F-DJ-0-0-47	523F-EC-0-0-47	—
		30	—	—	—	523F-EA-0-0-45	523F-EF-0-0-45	523F-EJ-0-0-45	523F-EC-0-0-45	—
		40	40	—	—	523F-EA-0-0-46	523F-EF-0-0-46	523F-EJ-0-0-46	523F-EC-0-0-46	—
		—	50	—	—	523F-EA-0-0-47	523F-EF-0-0-47	523F-EJ-0-0-47	523F-EC-0-0-47	—
		—	—	—	60	523F-EA-0-0-48	523F-EF-0-0-48	523F-EJ-0-0-48	523F-EC-0-0-48	—
		—	—	60...75	—	523F-EA-0-0-49	523F-EF-0-0-49	523F-EJ-0-0-49	523F-EC-0-0-49	—
5	270	—	—	100	75...100	523F-EA-0-0-50	523F-EF-0-0-50	523F-EJ-0-0-50	523F-FC-0-0-50	—
		50...60	—	—	—	523F-FA-0-0-48	523F-FF-0-0-48	523F-FJ-0-0-48	523F-FC-0-0-48	—
		75	60...75	—	—	523F-FA-0-0-49	523F-FF-0-0-49	523F-FJ-0-0-49	523F-FC-0-0-49	—
		—	100	—	—	523F-FA-0-0-50	523F-FF-0-0-50	523F-FJ-0-0-50	523F-FC-0-0-50	—
		—	—	—	125	523F-FA-0-0-51	523F-FF-0-0-51	523F-FJ-0-0-51	523F-FC-0-0-51	—
		—	—	125...150	—	523F-FA-0-0-52	523F-FF-0-0-52	523F-FJ-0-0-52	523F-FC-0-0-52	—
—	—	200	150...200	523F-FA-0-0-54	523F-FF-0-0-54	523F-FJ-0-0-54	523F-FC-0-0-54	—		

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: Cat. No. 523F-BA-0-0-40 becomes Cat. No. 523F-BAB-0-0-40. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

⊗-⊗ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select two overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: **Cat. No. 523F-BAB-0-0-40** becomes **Cat. No. 523F-BAB-A2D-A2D-40**.

* To order Visa-Window Breakers for certain mining applications (Canada only), add the letter "V" to the Cat. No. Example: **Cat. No. 523E-BA-0-0-40V**.

† State horsepower if less than listed.

NEMA Combination Multi-Speed Starters

Circuit Breaker Type

2-Speed Consequent Pole, Single Winding, 5-Pole – 3-Pole, Constant Horsepower (Constant or Variable Torque — page 1-71)

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements for each overload. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"*				Type 1 General Purpose Cat. No.*	Type 3R/4/12 Rainproof, Waterproof, Dusttight Cat. No.*	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware) Cat. No.*	Type 4/4X Watertight Corrosion- Resistant Stainless Steel Cat. No.*	Type 4/4X Watertight Corrosion- Resistant Non-metallic Cat. No.*
		Motor Voltage								
		200V	230V	460V	575V					
1	27	0...1/3	0...1/3	—	—	523G-BA-0-0-32	523G-BF-0-0-32	523G-BJ-0-0-32	523G-BC-0-0-32	523G-BS-0-0-32
		1/2...1	1/2...1	0...1	0...1	523G-BA-0-0-35	523G-BF-0-0-35	523G-BJ-0-0-35	523G-BC-0-0-35	523G-BS-0-0-35
		1-1/2...2	1-1/2...2	—	—	523G-BA-0-0-37	523G-BF-0-0-37	523G-BJ-0-0-37	523G-BC-0-0-37	523G-BS-0-0-37
		—	—	1-1/2...3	1-1/2...3	523G-BA-0-0-38	523G-BF-0-0-38	523G-BJ-0-0-38	523G-BC-0-0-38	523G-BS-0-0-38
		3†	3†	—	—	523G-BA-0-0-38	523G-BF-0-0-38	523G-BJ-0-0-38	—	—
		5	5	—	—	523G-BA-0-0-39	523G-BF-0-0-39	523G-BJ-0-0-39	523G-BC-0-0-39	523G-BS-0-0-39
2	45	—	—	5...7-1/2†	5...7-1/2†	523G-BA-0-0-40	523G-BF-0-0-40	523G-BJ-0-0-40	523G-BC-0-0-40	523G-BS-0-0-40
		7-1/2	7-1/2	—	—	523G-CA-0-0-40	523G-CF-0-0-40	523G-CJ-0-0-40	523G-CC-0-0-40	523G-CS-0-0-40
		—	10	—	—	523G-CA-0-0-41	523G-CF-0-0-41	523G-CJ-0-0-41	523G-CC-0-0-41	523G-CS-0-0-41
		—	—	10...15	10...15	523G-CA-0-0-42	523G-CF-0-0-42	523G-CJ-0-0-42	523G-CC-0-0-42	523G-CS-0-0-42
3	90	—	—	20	20	523G-CA-0-0-43	523G-CF-0-0-43	523G-CJ-0-0-43	523G-CC-0-0-43	523G-CS-0-0-43
		10	—	—	—	523G-DA-0-0-41	523G-DF-0-0-41	523G-DJ-0-0-41	523G-DC-0-0-41	523G-DS-0-0-41
		15...20	—	—	—	523G-DA-0-0-43	523G-DF-0-0-43	523G-DJ-0-0-43	523G-DC-0-0-43	523G-DS-0-0-43
		—	15...25	25	—	523G-DA-0-0-44	523G-DF-0-0-44	523G-DJ-0-0-44	523G-DC-0-0-44	523G-DS-0-0-44
4	135	—	—	25...30	40	523G-DA-0-0-45	523G-DF-0-0-45	523G-DJ-0-0-45	523G-DC-0-0-45	523G-DS-0-0-45
		25	—	—	—	523G-EA-0-0-44	523G-EF-0-0-44	523G-EJ-0-0-44	523G-EA-0-0-44	—
		30	—	—	—	523G-EA-0-0-45	523G-EF-0-0-45	523G-EJ-0-0-45	523G-EC-0-0-45	—
		—	30...40	—	—	523G-EA-0-0-46	523G-EF-0-0-46	523G-EJ-0-0-46	523G-EC-0-0-46	—
		—	—	50	—	523G-EA-0-0-47	523G-EF-0-0-47	523G-EJ-0-0-47	523G-EC-0-0-47	—
		—	—	—	50...60	523G-EA-0-0-48	523G-EF-0-0-48	523G-EJ-0-0-48	523G-EC-0-0-48	—
5	270	—	—	60...75	—	523G-EA-0-0-49	523G-EF-0-0-49	523G-EJ-0-0-49	523G-EC-0-0-49	—
		40	—	—	—	523G-FA-0-0-46	523G-FF-0-0-46	523G-FJ-0-0-46	523G-FC-0-0-46	—
		—	50	—	—	523G-FA-0-0-47	523G-FF-0-0-47	523G-FJ-0-0-47	523G-FC-0-0-47	—
		50...60	—	—	—	523G-FA-0-0-48	523G-FF-0-0-48	523G-FJ-0-0-48	523G-FC-0-0-48	—
		—	60...70	—	—	523G-FA-0-0-49	523G-FF-0-0-49	523G-FJ-0-0-49	523G-FC-0-0-49	—
		—	—	100	—	523G-FA-0-0-50	523G-FF-0-0-50	523G-FJ-0-0-50	523G-FC-0-0-50	—
5	270	—	—	—	100...125	523G-FA-0-0-51	523G-FF-0-0-51	523G-FJ-0-0-51	523G-FC-0-0-51	—
		—	—	125...150	150	523G-FA-0-0-52	523G-FF-0-0-52	523G-FJ-0-0-52	523G-FC-0-0-52	—

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 523G-BA-0-0-40** becomes **Cat. No. 523G-BAB-0-0-40**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

⊗ Overload Relay Code

Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The Cat. No. as listed is incomplete. Select two overload relay codes from page 1-140 to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay. Example: **Cat. No. 523G-BAB-0-0-40** becomes **Cat. No. 523G-BAB-A2D-A2D-40**.

* To order Visa-Window Breakers for certain mining applications (Canada only), add the letter "V" to the Cat. No. Example: **Cat. No. 523E-BA-0-0-40V**.

† State horsepower if less than listed.

NEMA Pump Control Panels

Disconnect Type (Fusible with Class R Fuse Clips)



Bulletin 1232X

- NEMA starter sizes 1...7
- Fusible disconnect switch
- Painted metal extra capacity enclosures: Type 3R
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

A Bulletin 1232X (with fusible disconnect switch) consists of a Bulletin 509 starter mounted in an enclosure with extra panel space.

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Standards Compliance and Certifications

cULus Listed (File No. E125316)(Guide No. NKJH) per UL 508 and CSA 22.2 No. 14

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Line Voltage (V)	Fuse Clip Rating Amperes (A) Fuses not included. Select per NEC	Type 3R Rainproof with Extra Panel Space Cat. No.
		Motor Voltage						
		60 Hz 200V	60 Hz 230V	50 Hz 380...415V	60 Hz 460...575V			
1	27	7-1/2	7-1/2	—	—	208...240	30	1232X-BN-24R
		—	—	10	10	480...600	30	1232X-BN-24R
		7-1/2	7-1/2	—	—	208...240	60	1232X-BN-25R
2	45	—	—	10	10	480...600	60	1232X-BN-25R
		10	15	—	—	208...240	60	1232X-CN-25R
		—	—	25	25	480...600	60	1232X-CN-25R
3	90	—	—	25	25	480...600	100	1232X-CN-26J
		25	30	—	—	208...240	100	1232X-DN-26R
		—	—	50	50	480...600	100	1232X-DN-26R
4	135	25	30	—	—	208...240	200	1232X-DN-27J
		—	—	50	50	480...600	200	1232X-DN-27J
		40	50	—	—	208...240	200	1232X-EN-27R
5	270	—	—	75	100	480...600	200	1232X-EN-27R
		40	50	—	—	208...240	400	1232X-EN-28J
		—	—	75	100	480...600	400	1232X-EN-28J
6	540	75	100	—	—	208...240	400	1232X-FN-28R
		—	—	150	200	480...600	400	1232X-FN-28R
7	810	150	200	300	400	208...600	600*	1232X-GN-29R
		—	300	500	600	240...600	1200	1232X-HN-25L

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 1232X-BN-24** becomes **Cat. No. 1232X-BNA-24**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-49 Note)		AD	AD	CD	CD
120V Separate Control (without transformer)		AD	AD	CD	CD

⊕ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 1232X-BNA-24** becomes **Cat. No. 1232X-BNA-A2D-24**.

* For 230V and 460V Hp ratings, limit the maximum fuse sizing to 125% of motor full load current.

NEMA Pump Control Panels

Circuit Breaker Type



Bulletin 1233X

- NEMA starter sizes 1...7
- Circuit breaker magnetic only (instantaneous trip)
- Painted metal enclosures: Type 3R
- Overload relays: eutectic supplied as standard, solid-state offered as an option
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

A Bulletin 1233X with circuit breaker magnetic only (instantaneous trip) consists of a Bulletin 509 starter mounted in an enclosure with extra panel space. Starter sizes 6 & 7 consist of a thermal magnetic (inverse time) circuit breaker.

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Standards Compliance and Certifications

cULus Listed (File No. E125316)(Guide No. NKJH) per UL 508 and CSA 22.2 No. 14

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Type 3R Rainproof with Extra Panel Space Cat. No.
		Motor Voltage				
		200V	230V	460V	575V	
1	27	0...1/3	0...1/3	—	—	1233X-BN-32
		1/2...1	1/2...1	0...1	0...1	1233X-BN-35
		1-1/2...3	1-1/2...3	1-1/2...3	1-1/2...3	1233X-BN-38
		5	—	—	—	1233X-BN-39
		7-1/2	5...7-1/2	5...7-1/2	5...7-1/2	1233X-BN-40
2	45	—	—	10	10	1233X-BN-41
		10	10	—	—	1233X-CN-41
		—	15	15	15	1233X-CN-42
		—	—	20...25	20...25	1233X-CN-44
3	90	15...25	25	—	—	1233X-DN-44
		—	30	—	30	1233X-DN-45
		—	—	30...50	40...50	1233X-DN-47
4	135	30	—	—	—	1233X-EN-45
		40	40	—	—	1233X-EN-46
		—	50	—	—	1233X-EN-47
		—	—	—	60	1233X-EN-48
		—	—	60...75	—	1233X-EN-49
—	—	100	75...100	1233X-EN-50		

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 1233X-BN-35** becomes **Cat. No. 1233X-BNB-35**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

⊛ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 1233X-BNB-35** becomes **Cat. No. 1233X-BNB-A2D-35**.

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Type 3R Rainproof with Extra Panel Space Cat. No.
		Motor Voltage				
		200V	230V	460V	575V	
5	270	50...60	—	—	—	1233X-FN-3-48
		75	60...75	—	—	1233X-FN-3-49
		—	100	—	—	1233X-FN-3-50
		—	—	—	125	1233X-FN-3-51
		—	—	125...150	—	1233X-FN-3-52
		—	—	200	150...200	1233X-FN-3-54
6	540	100	—	—	—	1233X-GN-3-50T
		125	125	—	—	1233X-GN-3-51T
		150	150	—	—	1233X-GN-3-52T
		—	200	—	—	1233X-GN-3-54T
		—	—	250	250	1233X-GN-3-56T
		—	—	300	300	1233X-GN-3-57T
		—	—	—	350	1233X-GN-3-58T
—	—	350...400	400	1233X-GN-3-59T		
7	810	—	250	—	—	1233X-HN-3-56T
		—	300	—	—	1233X-HN-3-57T
		—	—	450...500	—	1233X-HN-3-61T
		—	—	—	450...600	1233X-HN-3-62T

⊗ **Voltage Suffix Code**

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 1233X-BN-3-35** becomes **Cat. No. 1233X-BNB-3-35**. For other voltages, consult your local Allen-Bradley distributor.

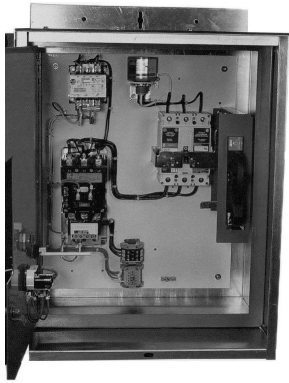
Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-50 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

⊗ **Overload Relay Code**

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 1233X-BNB-3-35** becomes **Cat. No. 1233X-BNB-A2D-35**.

NEMA Oil Well Pump Control Panels

Circuit Breaker Type



Bulletin 1223

- Bulletin 500 NEMA Starter
- Hand-Off-Auto Selector Switch
- Aluminum Enclosure: Type 3R with extra panel space
- Easy Operation Flange-Style Handle
- Lightning Arrestor
- Overload Relays: eutectic supplied as standard, solid-state available as an option
- Modifications — Factory-Installed
- Accessories — Field-Installed
- Circuit Breaker magnetic only (instantaneous)
- Control Transformer
- Manual Overload Reset mounted on Inner Door
- One pre-punched accessory port with removable plug

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 Approximate Dimensions this page

Certifications

cULus Listed (File No. E54866)
 (Guide No. NITW) per UL508
 and CSA C22.2 No. 14

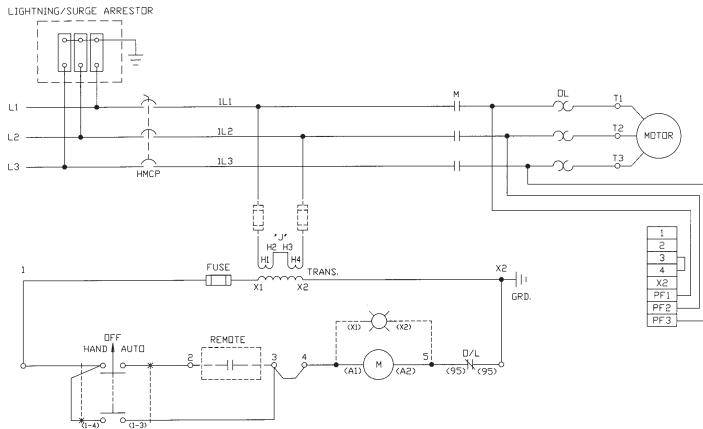
NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"	Type 3R*	
			Motor Voltage 480 V	Motor Voltage 600 V
			Cat. No.	Cat. No.
1	27	0...10	1223-BNB-☸	1223-BNC-☸
2	45	15...25	1223-CNB-☸	1223-CNC-☸
3	90	30...50	1223-DNB-☸	1223-DNC-☸
4	135	60...100	1223-ENB-☸	1223-ENC-☸

☸ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 1223-BNB-☸** becomes **Cat. No. 1223-BNB-A2E**.

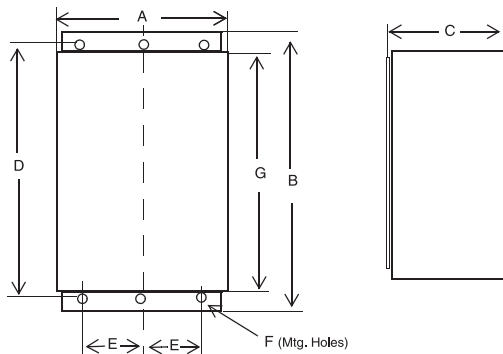
* If additional panel space is required, refer to publication 1223-BR001A-EN-P or contact your local Allen-Bradley distributor.

Typical Wiring Diagram



Approximate Dimensions

Dimensions in inches (millimeters). Dimensions are not intended to be used for manufacturing



NEMA Size	Dimensions mm (inches)						
	A	B	C	D	E	F	G
1 - 4	508 (20)	724 (28-1/4)	387 (15-1/4)	664 (26-1/8)	121 (4-3/4)	10 (3/4)	635 (25)

Configuration of a Basic Starter

The information below is for reference purposes. Not all combinations will produce a valid Cat. No. Refer to the tables on the following pages for product selection.

Example Cat. No.

530
L
A
B
- A2D -
1
- 90

a
b
c
d
e
f

a

Bulletin Number	
Code	Description
530	Part Winding Reduced Voltage Starter
532	Part Winding Reduced Voltage Combination Starter with Disconnect Switch
533	Part Winding Reduced Voltage Combination Starter with Circuit Breaker
540	Wye Delta Reduced Voltage Starter
542	Wye Delta Reduced Voltage Combination Starter with Disconnect Switch
543	Wye Delta Reduced Voltage Combination Starter with Circuit Breaker
570	Autotransformer Reduced Voltage Starter
572	Autotransformer Reduced Voltage Combination Starter with Disconnect Switch
573	Autotransformer Reduced Voltage Combination Starter with Circuit Breaker
1242	Wye Delta Reduced Voltage Pump Panel with Disconnect Switch
1243	Wye Delta Reduced Voltage Pump Panel with Circuit Breaker
1272	Autotransformer Reduced Voltage Pump Panel with Disconnect Switch
1273	Autotransformer Reduced Voltage Pump Panel with Circuit Breaker
1282	Part Winding Reduced Voltage Pump Panel with Disconnect Switch
1283	Part Winding Reduced Voltage Pump Panel with Circuit Breaker

b

Starter Size	
Suffix Code	NEMA Size
C	2
D	3
E	4
F	5
G	6
L	1YD or 1PW
M	2YD or 2PW
P	3YD or 3PW
S	4YD or 4PW
U	5YD or 5PW

c

Enclosure Code	
Code	Type
A	Type 1: General Purpose painted enclosure with screw fasteners, external overload relay reset
F	Type 3/4/12: Rainproof, watertight, dusttight, painted metal enclosure with screw fasteners, external overload relay reset
N	Type 3R: Rainproof, painted metal extra capacity enclosure with screw fasteners, external overload relay reset

d

Coil Voltage			
Voltage Code	Description	Line Voltage (V)	Coil Voltage (V)
H	Common Control (without a transformer)	208	208
A		240	240
B		480	480
C		600	600
H	Transformer Control*	208	120
A		240	120
B		280	120
C		600	120
HD		208	120
AD	Separate Control (without a transformer)	240	120
BD		480	120
CD		600	120

e

Overload Relay	
Code	Type
None	Eutectic Alloy
See page 1-140	Solid-State

f

Options	
See page 1-90	

*** Note:**

When selecting a factory-installed control circuit transformer use the Transformer Control Voltage Suffix Code to denote the transformer primary voltage. The transformer secondary voltage and starter coil will both be 120V AC by default. Example: Cat. No. 532-BAB-6P-24R will have a transformer with a 480V primary voltage, 120V secondary voltage and a 120V starter coil voltage. If a starter coil voltage other than 120V is desired, a second Voltage Suffix Code must be added to denote the coil and transformer secondary voltage. Example: 532-BABJ-6P-24R will have a transformer with a 480V primary voltage, 24V secondary voltage and a 24V starter coil voltage.

Part Winding Reduced Voltage Starter

Product Selection



Bulletin 530 NEMA Part Winding Starters

- Starter Sizes 1PW – 5PW
- Overload Relays: eutectic supplied as standard, solid-state available as an option
- Painted Metal Enclosures: Type 1, Type 3R/4/12
- Modifications — Factory installed
- Accessories — Field installed

Bulletin 530 part winding starters are used with squirrel cage motors having two separate parallel motor windings.

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 (File No. E54866) (Guide No. NITW) per UL 508 and CSA C22.2 No. 14

Heater Elements — Starters with eutectic alloy overload relays require 6 overload heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"			Type 1 General Purpose Cat. No.	Type 3R/4/12 Rainproof, watertight, dusttight Cat. No.
		Motor Voltage				
		200V	230V	460V...575V		
1PW	54	10	10	15	530-LA-Ⓢ-Ⓢ	530-LF-Ⓢ-Ⓢ
2PW	90	20	25	40	530-MA-Ⓢ-Ⓢ	530-MF-Ⓢ-Ⓢ
3PW	180	40	50	75	530-PA-Ⓢ-Ⓢ	530-PF-Ⓢ-Ⓢ
4PW	270	75	75	150	530-SA-Ⓢ-Ⓢ	530-SF-Ⓢ-Ⓢ
5PW	540	150	150	350	530-UA-Ⓢ-Ⓢ	530-UF-Ⓢ-Ⓢ

Ⓢ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 530-LA-Ⓢ-Ⓢ** becomes **Cat. No. 530-LAB-Ⓢ-Ⓢ**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-77 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

Ⓢ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 530-LAB-Ⓢ-Ⓢ** becomes **Cat. No. 530-LAB-A2D-A2D**.

NEMA Part Winding Combination Starters and Pump Panels

Disconnect Type (Fusible with Class R Fuse Clips)



Bulletin 532 & 1282

- Starter Sizes 1PW - 5PW
- Fusible disconnect switch
- Painted metal enclosure: Type 1 (Bul. 532)
- Painted metal enclosure: Type 3R/4/12 (Bul. 532)
- Painted metal extra capacity enclosure: Type 3R (Bul. 1282)
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

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 (Guide No. NITW) per UL 508 and CSA C22.2 No. 14

Heater Elements — Starters with eutectic alloy overload relays require 6 overload heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Type 1 General Purpose*	Type 3R/4/12 Rainproof, watertight, dusttight*	Type 3R Rainproof with extra panel space*
		Motor Voltage						
		200V	230V	460	575V	Cat. No.	Cat. No.	Cat. No.
1PW	54	—	—	15	15	532-LA--24R	532-LF--24R	1282-LN--24R
		10	10	—	—	532-LA--25R	532-LF--25R	1282-LN--25R
2PW	90	—	—	—	20	532-MA--24R	532-MF--24R	1282-MN--24R
		—	15	30	40	532-MA--25R	532-MF--25R	1282-MN--25R
3PW	180	20	25	40	—	532-MA--26J	532-MF--26J	1282-MN--26J
		—	—	50	60	532-PA--26R	532-PF--26R	1282-PN--26R
4PW	270	40	50	75	75	532-PA--27J	532-PF--27J	1282-PN--27J
		50	—	100	150	532-SA--27R	532-SF--27R	1282-SN--27R
5PW	540	75	75	150	—	532-SA--28J	532-SF--28J	1282-SN--28J
		100	100	200	300	532-UA--28R	532-UF--28R	1282-UN--28R
		150	150	350	350	532-UA--29J	532-UF--29J	1282-UN--29J

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 1282-LN--24R** becomes **Cat. No. 1282-LNB--24R**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-77 Note)		AD	AD	CD	CD
120V Separate Control (without transformer)					

⊗ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 1282-LNB--24R** becomes **Cat. No. 1282-LNB-A2D-A2D-24R**.

* Non-Fusible Disconnect Type

Cat. Nos. listed above include a fusible disconnect switch with Class R or J fuse clips. To order a non-fusible disconnect switch, eliminate the fuse clip code from the Cat. No. Example: **Cat. No. 532-MFB-24R** becomes **Cat. No. 532-MFB**.

NEMA Part Winding Combination Starters and Pump Panels

Circuit Breaker Type



Bulletin 533 & 1283

- Starter Sizes 1PW - 5PW
- Circuit breaker thermal magnetic (inverse time)
- Painted metal enclosure: Type 1 (Bul. 533)
- Painted metal enclosure: Type 3R/4/12 (Bul. 533)
- Painted metal extra capacity enclosure: Type 3R (Bul. 1283)
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

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cULus Listed (File No. E54866) (Guide No. NITW) per UL 508 and CSA C22.2 No. 14

Heater Elements — Starters with eutectic alloy overload relays require 6 overload heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"			Type 1 General Purpose Enclosure	Type 3R/4/12 General Purpose Enclosure	Type 3R General Purpose Enclosure
		Motor Voltage					
		200V	230V	460...575V	Cat. No.	Cat. No.	Cat. No.
1PW	54	10	10	10	533-LA-Ⓢ-Ⓢ-41T	533-LF-Ⓢ-Ⓢ-41T	1283-LN-Ⓢ-Ⓢ-41T
		—	—	15	533-LA-Ⓢ-Ⓢ-42T	533-LF-Ⓢ-Ⓢ-42T	1283-LN-Ⓢ-Ⓢ-42T
2PW	90	15	15	—	533-MA-Ⓢ-Ⓢ-42T	533-MF-Ⓢ-Ⓢ-42T	1283-MN-Ⓢ-Ⓢ-42T
		20	20	20	533-MA-Ⓢ-Ⓢ-43T	533-MF-Ⓢ-Ⓢ-43T	1283-MN-Ⓢ-Ⓢ-43T
		—	25	25	533-MA-Ⓢ-Ⓢ-44T	533-MF-Ⓢ-Ⓢ-44T	1283-MN-Ⓢ-Ⓢ-44T
		—	—	30	533-MA-Ⓢ-Ⓢ-45T	533-MF-Ⓢ-Ⓢ-45T	1283-MN-Ⓢ-Ⓢ-45T
		—	—	40	533-MA-Ⓢ-Ⓢ-46T	533-MF-Ⓢ-Ⓢ-46T	1283-MN-Ⓢ-Ⓢ-46T
3PW	180	25	—	—	533-PA-Ⓢ-Ⓢ-44T	533-PF-Ⓢ-Ⓢ-44T	1283-PN-Ⓢ-Ⓢ-44T
		30	30	—	533-PA-Ⓢ-Ⓢ-45T	533-PF-Ⓢ-Ⓢ-45T	1283-PN-Ⓢ-Ⓢ-45T
		40	40	—	533-PA-Ⓢ-Ⓢ-46T	533-PF-Ⓢ-Ⓢ-46T	1283-PN-Ⓢ-Ⓢ-46T
		—	50	50	533-PA-Ⓢ-Ⓢ-47T	533-PF-Ⓢ-Ⓢ-47T	1283-PN-Ⓢ-Ⓢ-47T
		—	—	60	533-PA-Ⓢ-Ⓢ-48T	533-PF-Ⓢ-Ⓢ-48T	1283-PN-Ⓢ-Ⓢ-48T
		—	—	75	533-PA-Ⓢ-Ⓢ-49T	533-PF-Ⓢ-Ⓢ-49T	1283-PN-Ⓢ-Ⓢ-49T
4PW	270	50	—	—	533-SA-Ⓢ-Ⓢ-47T	533-SF-Ⓢ-Ⓢ-47T	1283-SN-Ⓢ-Ⓢ-47T
		60	60	—	533-SA-Ⓢ-Ⓢ-48T	533-SF-Ⓢ-Ⓢ-48T	1283-SN-Ⓢ-Ⓢ-48T
		75	75	—	533-SA-Ⓢ-Ⓢ-49T	533-SF-Ⓢ-Ⓢ-49T	1283-SN-Ⓢ-Ⓢ-49T
		—	—	100	533-SA-Ⓢ-Ⓢ-50T	533-SF-Ⓢ-Ⓢ-50T	1283-SN-Ⓢ-Ⓢ-50T
		—	—	125	533-SA-Ⓢ-Ⓢ-51T	533-SF-Ⓢ-Ⓢ-51T	1283-SN-Ⓢ-Ⓢ-51T
		—	—	150	533-SA-Ⓢ-Ⓢ-52T	533-SF-Ⓢ-Ⓢ-52T	1283-SN-Ⓢ-Ⓢ-52T
5PW	540	100	100	—	533-UA-Ⓢ-Ⓢ-50T	533-UF-Ⓢ-Ⓢ-50T	1283-UN-Ⓢ-Ⓢ-50T
		125	125	—	533-UA-Ⓢ-Ⓢ-51T	533-UF-Ⓢ-Ⓢ-51T	1283-UN-Ⓢ-Ⓢ-51T
		150	150	—	533-UA-Ⓢ-Ⓢ-52T	533-UF-Ⓢ-Ⓢ-52T	1283-UN-Ⓢ-Ⓢ-52T
		—	—	200	533-UA-Ⓢ-Ⓢ-54T	533-UF-Ⓢ-Ⓢ-54T	1283-UN-Ⓢ-Ⓢ-54T
		—	—	250	533-UA-Ⓢ-Ⓢ-56T	533-UF-Ⓢ-Ⓢ-56T	1283-UN-Ⓢ-Ⓢ-56T
		—	—	300	533-UA-Ⓢ-Ⓢ-57T	533-UF-Ⓢ-Ⓢ-57T	1283-UN-Ⓢ-Ⓢ-57T
—	—	350	533-UA-Ⓢ-Ⓢ-58T	533-UF-Ⓢ-Ⓢ-58T	1283-UN-Ⓢ-Ⓢ-58T		

Ⓢ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 533-LA-Ⓢ-Ⓢ-42T** becomes **Cat. No. 533-LAB-Ⓢ-Ⓢ-42T**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-77 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

Ⓢ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 533-LAB-Ⓢ-Ⓢ-42T** becomes **Cat. No. 533-LAB-A2F-A2F-42T**.

NEMA Wye-Delta Starters

Open Type, Disconnect Switch Type, and Circuit Breaker Type



Bulletin 540 NEMA Wye-Delta Starters

- Starter sizes: 1YD...5YD
- Open circuit transition
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Painted metal enclosures: Type 1, Type 3R/4/12
- Modifications — factory-installed
- Accessories — field-installed

Bulletin 540 wye-delta starters are used with delta-wound squirrel cage motors which have all leads brought out to facilitate a wye connection for reduced voltage starting.

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Heater Elements — Starters with eutectic alloy overload relays require 3 overload heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"			Type 1 General Purpose	Type 3R/4/12 Rainproof, watertight, dusttight
		Motor Voltage			Open Circuit Transition	Open Circuit Transition
		200V	230V	460... 575V	Cat. No.	Cat. No.
1YD	47	10	10	10...15	540-LA⊗-⊕	540-LF⊗-⊕
2YD	78	15...20	15...25	20...40	540-MA⊗-⊕	540-MF⊗-⊕
3YD	156	25...40	30...50	50...75	540-PA⊗-⊕	540-PF⊗-⊕
4YD	233	50...60	60...75	100...150	540-SA⊗-⊕	540-SF⊗-⊕
5YD	467	75...150	100...150	200...300	540-UA⊗-⊕	540-UF⊗-⊕

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 540-LA⊗-⊕** becomes **Cat. No. 540-LAB-⊕**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-77 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

⊕ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 540-LAB-⊕** becomes **Cat. No. 540-LAB-A2D**.

NEMA Wye-Delta Starters and Pump Panels

Disconnect Type with Class R Fuses



Bulletin 542 & 1242

- Starter Sizes 1PW...5PW
- Fusible disconnect switch
- Painted metal enclosure: Type 1 (Bul. 542)
- Painted metal enclosure: Type 3R/4/12 (Bul. 542)
- Painted metal enclosure: Type 3R (Bul. 1242)
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

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Heater Elements — Starters with eutectic alloy overload relays require 3 overload heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed “Continuous Ampere Rating”				Type 1 General Purpose*	Type 3R/4/12 Rainproof, watertight, dusttight*	Type 3R Rainproof with extra panel space
		Motor Voltage				Open Circuit Transition	Open Circuit Transition	Open Circuit Transition
		200V	230V	460V	575V	Cat. No.	Cat. No.	Cat. No.
1YD	47	71/2	71/2	15	15	542-LA⊗-⊕-24R	542-LF⊗-⊕-24R	1242-LN⊗-⊕-24R
		10	10	—	—	542-LA⊗-⊕-25R	542-LF⊗-⊕-25R	1242-LN⊗-⊕-25R
2YD	78	—	—	—	20	542-MA⊗-⊕-24R	542-MF⊗-⊕-24R	1242-MN⊗-⊕-24R
		15	15	—	40	542-MA⊗-⊕-25R	542-MF⊗-⊕-25R	1242-MN⊗-⊕-25R
		20	25	40	—	542-MA⊗-⊕-26R	542-MF⊗-⊕-26R	1242-MN⊗-⊕-26R
3YD	156	25	30	60	75	542-PA⊗-⊕-26R	542-PF⊗-⊕-26R	1242-PN⊗-⊕-26R
		40	50	75	—	542-PA⊗-⊕-27J	542-PF⊗-⊕-27J	1242-PN⊗-⊕-27J
4YD	233	50	60	125	150	542-SA⊗-⊕-27R	542-SF⊗-⊕-27R	1242-SN⊗-⊕-27R
		60	75	150	—	542-SA⊗-⊕-28J	542-SF⊗-⊕-28J	1242-SN⊗-⊕-28J
5YD	467	100	125	200	300	542-UA⊗-⊕-28R	542-UF⊗-⊕-28R	1242-UN⊗-⊕-28R
		150	150	300	—	542-UA⊗-⊕-29J	542-UF⊗-⊕-29J	1242-UN⊗-⊕-29J

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the **Cat. No.** Example: **Cat. No. 542-LA⊗-⊕-24R** becomes **Cat. No. 542-LAB-⊕-24R**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-77 Note)		AD	AD	CD	CD
120V Separate Control (without transformer)		AD	AD	CD	CD

⊕ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 542-LAB-⊕-24R** becomes **Cat. No. 542-LAB-A2D-24R**.

* Non-Fusible Disconnect Type

Cat. Nos. listed above include a fusible disconnect switch with Class R or J fuse clips. To order a non-fusible disconnect switch, eliminate the fuse clip code from the Cat. No. Example: **Cat. No. 542-MFB-24R** becomes **Cat. No. 542-MFB**.

NEMA Wye-Delta Combination Starters and Pump Panels

Circuit Breaker Type



Bulletin 543 & 1243

- Starter Sizes 1YD...5YD
- Circuit breaker thermal magnetic (inverse time)
- Painted metal enclosure: Type 1 (Bul. 542)
- Painted metal enclosure: Type 3R/4/12 (Bul. 542)
- Painted metal enclosure: Type 3R (Bul. 1242)
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

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Heater Elements — Starters with eutectic alloy overload relays require 3 overload heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"			Type 1 General Purpose	Type 3R/4/12 Rainproof, watertight, dusttight	Type 3R Rainproof with extra panel space
		Motor Voltage			Open Circuit Transition	Open Circuit Transition	Open Circuit Transition
		200V	230V	460...575V	Cat. No.	Cat. No.	Cat. No.
1YD	47	10	10	10	543-LA-41T	543-LF-41T	1243-LN-41T
		—	—	15	543-LA-42T	543-LF-42T	1243-LN-42T
2YD	78	15	15	—	543-MA-42T	543-MF-42T	1243-MN-42T
		20	20	20	543-MA-43T	543-MF-43T	1243-MN-43T
		—	25	25	543-MA-44T	543-MF-44T	1243-MN-44T
		—	—	30	543-MA-45T	543-MF-45T	1243-MN-45T
		—	—	40	543-MA-46T	543-MF-46T	1243-MN-46T
3YD	156	25	—	—	543-PA-44T	543-PF-44T	1243-PN-44T
		30	30	—	543-PA-45T	543-PF-45T	1243-PN-45T
		40	40	—	543-PA-46T	543-PF-46T	1243-PN-46T
		—	50	50	543-PA-47T	543-PF-47T	1243-PN-47T
		—	—	60	543-PA-48T	543-PF-48T	1243-PN-48T
4YD	233	—	—	75	543-PA-49T	543-PF-49T	1243-PN-49T
		50	—	—	543-SA-47T	543-SF-47T	1243-SN-47T
		60	60	—	543-SA-48T	543-SF-48T	1243-SN-48T
		—	75	—	543-SA-49T	543-SF-49T	1243-SN-49T
		—	—	100	543-SA-50T	543-SF-50T	1243-SN-50T
5YD	467	—	—	125	543-SA-51T	543-SF-51T	1243-SN-51T
		—	—	150	543-SA-52T	543-SF-52T	1243-SN-52T
		75	—	—	543-UA-49T	543-UF-49T	1243-UN-49T
		100	100	—	543-UA-50T	543-UF-50T	1243-UN-50T
		125	125	—	543-UA-51T	543-UF-51T	1243-UN-51T
		150	150	—	543-UA-52T	543-UF-52T	1243-UN-52T
—	—	200	543-UA-54T	543-UF-54T	1243-UN-54T		
—	—	250	543-UA-56T	543-UF-56T	1243-UN-56T		
—	—	300	543-UA-57T	543-UF-57T	1243-UN-57T		

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 543-LA-42T** becomes **Cat. No. 543-LAB-42T**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-77 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

⊗ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 543-LAB-42T** becomes **Cat. No. 543-LAB-A2D-42T**.



Nema Autotransformer Starters

Open and Enclosed Type



Bulletin 570 NEMA Autotransformer Starters

- Starter sizes: 2...6
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Painted metal enclosures: Type 1, Type 3R/4/12
- Modifications — factory-installed
- Accessories — field-installed

Bulletin 570 autotransformer starters provide the highest starting torque per ampere of line current which makes it an effective means of motor starting where the inrush current must be reduced with a minimum sacrifice of starting torque.

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Heater Elements — Starters with eutectic alloy overload relays require 3 overload heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed “Continuous Ampere Rating”			Type 1 General Purpose Cat. No.	Type 3R/4/12 Rainproof Watertight Dusttight Enclosure Cat. No.
		Motor Voltage				
		200V	230V	460...575V		
2	45	10	—	—	570-CA⊗-41	570-CF⊗-41
		—	15	15	570-CA⊗-42	570-CF⊗-42
		—	—	25	570-CA⊗-44	570-CF⊗-44
3	90	15	—	—	570-DA⊗-42	570-DF⊗-42
		25	25	—	570-DA⊗-44	570-DF⊗-44
		—	30	30	570-DA⊗-45	570-DF⊗-45
4	135	30	—	—	570-EA⊗-45	570-EF⊗-45
		40	—	—	570-EA⊗-46	570-EF⊗-46
		—	50	—	570-EA⊗-47	570-EF⊗-47
5	270	—	—	100	570-EA⊗-50	570-EF⊗-50
		50	—	—	570-FA⊗-47	570-FF⊗-47
		75	75	—	570-FA⊗-49	570-FF⊗-49
5	270	—	100	—	570-FA⊗-50	570-FF⊗-50
		—	—	150	570-FA⊗-52	570-FF⊗-52
		—	—	200	570-FA⊗-54	570-FF⊗-54
6	540	100	—	—	570-GA⊗-50	570-GF⊗-50
		125	125	—	570-GA⊗-51	570-GF⊗-51
		150	150	—	570-GA⊗-52	570-GF⊗-52
		—	200	—	570-GA⊗-54	570-GF⊗-54
		—	—	250	570-GA⊗-56	570-GF⊗-56
		—	—	300	570-GA⊗-57	570-GF⊗-57
—	—	400	570-GA⊗-59	570-GF⊗-59		

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 570-CA⊗-41** becomes **Cat. No. 570-CAB-⊗-41**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-77 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

⊛ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 570-CAB-⊗-41** becomes **Cat. No. 570-CAB-A2D-41**.

NEMA Autotransformer Combination Starters & Pump Panels

Disconnect Type (Fusible with Class R Fuse Clips)



Bulletin 572 & 1272

- Starter Sizes 2...6
- Fusible disconnect switch
- Painted metal enclosure: Type 1 (Bul. 572)
- Painted metal enclosure: Type 3R/4/12 (Bul. 572)
- Painted metal enclosure: Type 3R (Bul. 1272)
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

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Heater Elements — Starters with eutectic alloy overload relays require 3 overload heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"			Type 1 General Purpose*	Type 3R/4/12 Rainproof, watertight, dusttight*	Type 3R Rainproof with extra panel space
		Motor Voltage					
		200V	230V	460...575V	Cat. No.	Cat. No.	Cat. No.
2	45	5	10	7.5	572-CA-24R	572-CF-24R	1272-CN-24R
		10	15	25	572-CA-25R	572-CF-25R	1272-CN-25R
3	90	15	—	30	572-DA-25R	572-DF-25R	1272-DN-25R
		25	30	50	572-DA-26R	572-DF-26R	1272-DN-26R
4	135	—	—	—	572-EA-25R	572-EF-25R	1272-EN-25R
		—	30	60	572-EA-26R	572-EF-26R	1272-EN-26R
		40	50	100	572-EA-27J	572-EF-27J	1272-EN-27J
5	270	50	60	125	572-FA-27R	572-FF-27R	1272-FN-27R
		75	100	200	572-FA-28J	572-FF-28J	1272-FN-28J
6	540	125	125	—	572-GA-27R	572-GF-27R	1272-GN-27R
		100	125	—	572-GA-28R	572-GF-28R	1272-GN-28R
		150	200	400	572-GF-29J	572-GF-29J	1272-GN-29J

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 572-CA-24R** becomes **Cat. No. 572-CAB-24R**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control					
120V Separate Control (without transformer)		AD	AD	CD	CD

⊗ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 572-CAB-24R** becomes **Cat. No. 572-CAB-A2D-24R**.

* Non-Fusible Disconnect Type

Cat. Nos. listed above include a fusible disconnect switch with Class R fuse clips. To order a non-fusible disconnect switch, eliminate the fuse clip code from the Cat. No. Example: **Cat. No. 572-DFB-24R** becomes **Cat. No. 572-DFB**.

NEMA Autotransformer Combination Starters and Pump Panels

Circuit Breaker Type



Bulletin 573 & 1273

- Starter Sizes 2...6
- Circuit breaker thermal magnetic (inverse time)
- Painted metal enclosure: Type 1 (Bul. 573)
- Painted metal enclosure: Type 3R/4/12 (Bul. 573)
- Painted metal enclosure: Type 3R (Bul. 1273)
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Modifications — Factory installed
- Accessories — Field installed
- Service entrance rated

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Standards Compliance and Certifications

cULus Listed (File No. E54866) (Guide No. NITW) per UL 508 and CSA C22.2 No. 14

Heater Elements — Starters with eutectic alloy overload relays require 3 overload heater elements. Located on page 1-152.

NEMA Size	Continuous Ampere Rating (A)	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"			Type 1 General Purpose Cat. No.	Type 3R/4/12 Rainproof, watertight, dusttight Cat. No.	Type 3R Rainproof with extra panel space Cat. No.
		Motor Voltage					
		200V	230V	460...575V			
2	45	10	—	—	573-CA-41T	573-CF-41T	1273-CN-41T
		—	15	15	573-CA-42T	573-CF-42T	1273-CN-42T
		—	—	25	573-CA-44T	573-CF-44T	1273-CN-44T
3	90	15	—	—	573-DA-42T	573-DF-42T	1273-DN-42T
		25	25	—	573-DA-44T	573-DF-44T	1273-DN-44T
		—	30	30	573-DA-45T	573-DF-45T	1273-DN-45T
		—	—	50	573-DA-47T	573-DF-47T	1273-DN-47T
4	135	30	—	—	573-EA-45T	573-EF-45T	1273-EN-45T
		40	—	—	573-EA-46T	573-EF-46T	1273-EN-46T
		—	50	—	573-EA-47T	573-EF-47T	1273-EN-47T
		—	—	100	573-EA-50T	573-EF-50T	1273-EN-50T
5	270	50	—	—	573-FA-47T	573-FF-47T	1273-FN-47T
		75	75	—	573-FA-49T	573-FF-49T	1273-FN-49T
		—	100	—	573-FA-50T	573-FF-50T	1273-FN-50T
		—	—	150	573-FA-52T	573-FF-52T	1273-FN-52T
		—	—	200	573-FA-54T	573-FF-54T	1273-FN-54T
6	540	100	—	—	573-GA-50T	573-GF-50T	1273-GN-50T
		125	125	—	573-GA-51T	573-GF-51T	1273-GN-51T
		150	150	—	573-GA-52T	573-GF-52T	1273-GN-52T
		—	200	—	573-GA-54T	573-GF-54T	1273-GN-54T
		—	—	250	573-GA-56T	573-GF-56T	1273-GN-56T
		—	—	300	573-GA-57T	573-GF-57T	1273-GN-57T
		—	—	400	573-GA-59T	573-GF-59T	1273-GN-59T

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 573-CA-42T** becomes **Cat. No. 573-CAB-42T**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		208V	230...240V	460...480V	575...600V
Common Control	60 Hz	H	A	B	C
Transformer Control (See page 1-77 Note)		HD	AD	BD	CD
120V Separate Control (without transformer)					

⊗ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The Cat. No. as listed is incomplete. Select an overload relay code from page 1-140 to complete the Cat. No. Example: **Cat. No. 573-CAB-42T** becomes **Cat. No. 573-CAB-A2H-42T**.

For Use on Bulletins 500, 500F, 500L, 500LP, 505, 505V, 509, 520, and 520V

Listed on this and the following pages are factory installed modifications and special features which are available for the low voltage (600 volt maximum) contactors/starters listed in this catalog. To order, add a dash followed by the suffix number listed in these tables to the end of the product Cat. No. Example: **509-BAD-A2E-1**.

Bulletin 500	Size Rating	0	1	2	3	4	5	6	7	8	9
Bulletin 500L	Ampere Rating	15/20	30	60	100	200	300	540	810	1215	2250

Description of Modification	Suffix No.	Enclosure Type	NEMA Size											
			00	0	1	2	3	4	5	6	7	8	9	
Pilot Devices in Cover or Flange Full Voltage Non-Reversing Single Speed Contactors or Starters (500, 500F, 500L, 500LP, 509)														
	1	1*	A	A	A	A	A	A	A	A	A	A	A	A
START-STOP Push Button	1	3R/4/12, 4/4X	NA	A	A	A	A	A	A	A	A	A	A	NA
I/O (Canada only)	1	Bolted†	NA	A	A	A	A	A	A	A	A	A	A	NA
	1	Unilock‡	NA	A	A	A	A	A	A	A	A	A	A	NA
ON-OFF Push Button	1E	1*	A	A	A	A	A	A	A	A	A	A	A	A
	1E	3R/12, 4/4X	NA	A	A	A	A	A	A	A	A	A	A	NA
	1E	Bolted†	NA	A	A	A	A	A	A	A	A	A	A	NA
	1E	Unilock‡	NA	A	A	A	A	A	A	A	A	A	A	NA
HAND-OFF-AUTO Selector Switch	3	1*	A	A	A	A	A	A	A	A	A	A	A	A
	3	3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	A	A	A	A	NA
	3	Bolted†	NA	A	A	A	A	A	A	A	A	NA	NA	NA
	3	Unilock‡	NA	A	A	A	A	A	A	A	A	A	A	NA
OFF-ON Selector Switch	3E	1*	A	A	A	A	A	A	A	A	A	A	A	A
	3E	3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	A	A	NA	NA	NA
	3E	Bolted†	NA	A	A	A	A	A	A	A	A	NA	NA	NA
	3E	Unilock‡	NA	A	A	A	A	A	A	A	A	NA	NA	NA
HAND-OFF-AUTO Selector Switch (For Permanent Magnet Latch Type Contactor Only)	3	All Listed*	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
PILOT LIGHT (Red Lens)	4R	1, 3R/12, 4/4X, 4X*§	NA	A	A	A	A	A	A	A	A	A	A	A
PUSH-TO-TEST PILOT LIGHT (Red Lens)	4R	Bolted†	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
	4R	Unilock‡	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
	5R	1, 3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
	5R	Bolted†	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
Full Voltage Reversing and Multi-Speed Starters (505, 505V, 520, 520V)														
FOR-REV-STOP Push Button	1	1, 3R/12, 4/4X, 4X	A	A	A	A	A	A	A	A	A	A	A	A
	1	Bolted†	NA	A	A	A	A	A	A	A	A	NA	NA	NA
	1	Unilock‡	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FOR-OFF-REV Selector Switch	3	1, 3R/12, 4/4X, 4X	A	A	A	A	A	A	A	A	A	A	A	A
	3	Bolted†	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
	3	Unilock‡	NA	A	A	NA	NA	NA	NA	NA	NA	NA	NA	NA
HIGH-LOW-STOP Push Button	1	1, 3R/12, 4/4X, 4X	A	A	A	A	A	A	A	A	A	A	A	A
	1	Bolted†	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
HIGH-OFF-LOW Selector Switch	3	1, 3R/12, 4/4X, 4X	A	A	A	A	A	A	A	A	A	A	A	A
	3	Bolted†	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
HIGH-LOW-OFF-AUTO Selector Switch	3J	1, 3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	A	A	A	A	A
PILOT LIGHTS (2)	4R	1, 3R/12, 4/4X, 4X*♣	NA	A	A	A	A	A	A	A	A	A	A	A

* Bulletin 500L and 500FL require a normally open auxiliary contact when used with a push button. See page 1-94. Only one push button or one selector switch (not both) may be added to a Bulletin 509 for NEMA Type 1 without transformers. Only one pilot light may be added to a Bulletin 509 Type 1 without transformers.

† Bolted suitable for Type 7 & 9 or Type 3R, 7 & 9.

‡ Unilock suitable for Type 7 & 9 or Type 3R, 7 & 9 with the addition of a drain or breather and drain.

§ OFF pilot lights for non-reversing and non-multi-speed applications require a normally closed auxiliary contact add -91 to Cat. No. Red and amber are the only colors available on Type 1 non-combination starters. On Type 3R/12 non-combination starters, specify other lens colors by changing the letter to: **A** = Amber; **B** = Blue; **C** = Clear; **G** = Green; **W** = White.

♣ For multi-speed and reversing starters, one pilot light for each contactor. Add additional letters to identify two lens colors. The first letter specifies FORWARD, HIGH, or ON; the second letter specifies REVERSE, LOW, or OFF; e.g., **4AG**.

A = Available NA = Not Available

Bulletin 500 Line
Modifications — Factory-Installed
NEMA Non-Combination Contactors/Starters

For Use on Bulletins 500, 500F, 500L, 500LP, 505, 505V, 509, 520, and 520V, Continued

Description of Modification	Suffix No.	Enclosure Type	NEMA Size											
			00	0	1	2	3	4	5	6	7	8	9	
Control Circuit Transformer*														
Includes 2 Primary Fuses and 1 Secondary Fuse With Standard Capacity 60 or 50 Hz	6P†	1, 3R/12, 4/4X, 4X Bolted‡ Unilock§	NA	A	A	A	A	A	A	A	STD	STD	STD	STD
	6P†		NA	A	A	A	A	A	A	A	STD	NA	NA	NA
	6P†		NA	A	A	A	A	A	A	A	A	STD	NA	NA
With 100 W Extra Capacity 60 or 50 Hz	6XP	1, 3R/12, 4/4X, 4X Bolted‡ Unilock§	NA	A	A	A	A	A	A	A	STD	STD	STD	STD
	6XP		NA	A	A	A	A	A	A	A	STD	NA	NA	NA
	6XP		NA	A	A	A	A	A	A	A	A	STD	NA	NA
Control Circuit														
Auxiliary Contact installed on contactor	N.O.	All Listed	NA	A	A	A	A	A	A	A	A	A	A	A
	N.C.		91▶	NA	A	A	A	A	A	A	A	A	A	A
Fused Control Circuit for Applications Less Transformer (1 Fuse — Fuse Included)	21	1, 3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
(2 Fuses — Fuses Included)	22	1, 3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
Surge Suppression for 120 or 240V AC Coil	17	All Listed	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
Terminal Blocks (Cat. No. 1492-CA1 or similar) Per Block	⌘	1, 3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	A	A	NA	NA	NA
DC operation of control circuit (Power Circuit remains AC) Add letters "DC" to Bulletin No. (Add per Solenoid)	⌘	Open 1, 4/4X, 4X, 12	NA	A	A	A	A	A	A	NA	NA	NA	NA	NA
			NA	⌘	⌘	⌘	⌘	⌘	⌘	NA	NA	NA	NA	NA
Overload Relays (Eutectic Alloy)														
N.O. Alarm Contact Adder (Bulletin 592)	9	All Listed	NA	A	A	A	A	A	A	A	A	NA	NA	NA
N.C. Alarm Contact Adder (Bulletin 592)	9A	All Listed	NA	A	A	A	A	A	A	A	A	NA	NA	NA
Omit 3 Overload Relays (For Bulletins 505 and 520 only)	23+	All Listed	A	A	A	A	A	A	A	A	A	NA	NA	NA
Auxiliary Relays (Indicate Contact Arrangement and Coil Voltage)														
3Ø Powermonitor (Timemark Model 258)	400	1, 3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
Control Relay (4 Pole Maximum)⌘	❖	1, 3R/12	NA	NA	A	A	A	A	A	A	A	NA	NA	NA
		4/4X, 4X	NA	NA	A	A	A	A	A	A	A	NA	NA	NA
		Unilock§	NA	NA	A	A	A	A	A	A	NA	NA	NA	NA
Addition of Timing Relay⌘	❖	1, 3R/12	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
		4/4X, 4X	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
		Unilock§	NA	NA	NA	NA	A	A	A	A	NA	NA	NA	NA
Add Bulletin 813S⌘ (Line Voltage Monitor)	❖	—	NA	NA	A	A	A	A	A	A	A	A	A	A
		(Line Current Monitor)	NA	NA	A	A	A	A	A	A	A	A	A	A
Bulletin 596 (Used on Bulletin 500...509 3-Pole Maximum) (Coil - 180 sec Timing Range)														
ON Delay	87A	Open Type	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
	87B	Open Type	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
Extra strong coil for addition of power pole adders required for sizes 2...4	88	All Listed	NA	NA	NA	A	A	A	A	NA	NA	NA	NA	NA
Form A Compelling Relay⌘ (Used on Bulletin 520)	70	1, 3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	A	A	NA	NA	NA
Form B Auto. Seq. Accelerating Relay for each higher speed -Controls the sequence of acceleration from low to high speed. (Used on Bulletin 520)	71	1, 3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	A	A	NA	NA	NA
Form C Auto. Seq. Decelerating Relay for each lower speed -Interposes a time delay between each lower speed. (Used on Bulletin 520)	72	1, 3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	A	A	NA	NA	NA
Enclosure														
Breather	136	Bolted‡	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
Breather and Drain	137	Unilock§	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
		and Bolted‡	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
Drain	138	Unilock§	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
		and Bolted‡	NA	A	A	A	A	A	A	A	NA	NA	NA	NA
Protective Covers for Contactors and Starters	426	1, 3R/12, 4/4X, 4	NA	A	A	A	A	A	A	A	NA	NA	NA	NA

* If the transformer secondary is to be grounded, add the suffix letter "G" at no additional charge. Example: **6GP**.

† When ordering in Canada, use suffix 6. Primary fusing is not required by the Canadian Electrical Code.

‡ Bolted suitable for Type 7 & 9 or Type 3R, 7 & 9.

§ Unilock suitable for Type 7 & 9 or Type 3R, 7 & 9.

▶ Multiple auxiliary contacts are to be group coded: e.g. use 9 followed by second digit for each auxiliary used: 90-91-98 group coded to "9018". Maximum quantity of auxiliary contacts (any type) group coded shall be 5.

➤ For Bulletins 505 and 520 devices, one auxiliary contact is installed on each of the two contactors.

⌘ Order by description.

‡ Contactors provided on short mounting plate, consult your local Allen-Bradley distributor for dimensions.

❖ Only one relay per starter.

⌘ Through control wiring the starter is forced to operate in the low speed before switching to high speed.

A = Available NA = Not Available

STD = Standard

Modifications — Factory-Installed

NEMA Combination Contactors/Starters

For Use on Bulletins 502, 502L, 503, 503L, 506, 506X, 507, 507X, 512, 512M, 513, 513M, 522, 522E, 522F, 522G, 523, 523E, 523F, 523G, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1232X, and 1233X

Description of Modification	Suffix No.	Enclosure Type	NEMA Size								
			0	1	2	3	4	5	6	7	
Pilot Devices in Cover or Flange											
START-STOP- Push Button	1	1	A	A	A	A	A	A	A	NA	NA
	1	3R/4/12, 4/4X	A	A	A	A	A	A	A	A	A
	1	Bolted	A	A	A	A	A	A	A	NA	NA
	1	Unilock	A	A	A	A	A	A	A	NA	NA
ON-OFF Push Button	1E	1	A	A	A	A	A	A	A	A	NA
	1E	3R/4/12, 4/4X	A	A	A	A	A	A	A	A	A
	1E	Bolted	A	A	A	A	A	A	A	NA	NA
	1E	Unilock	A	A	A	A	A	A	A	NA	NA
START-STOP Illuminated Push Button	1L	1	A	A	A	A	A	A	A	A	NA
	1L	3R/4/12, 4/4X	A	A	A	A	A	A	A	NA	NA
HAND-OFF-AUTO Selector Switch	3	1	A	A	A	A	A	A	A	NA	NA
	3	3R/4/12, 4/4X	A	A	A	A	A	A	A	A	A
	3	Bolted	A	A	A	A	A	A	A	NA	NA
	3	Unilock	A	A	A	A	A	A	A	NA	NA
OFF-ON Selector Switch	3E	1	A	A	A	A	A	A	A	NA	NA
	3E	3R/4/12, 4/4X	A	A	A	A	A	A	A	A	A
	3E	Bolted	A	A	A	A	A	A	A	NA	NA
	3E	Unilock	A	A	A	A	A	A	A	NA	NA
HAND-AUTO Selector Switch	3H	1	A	A	A	A	A	A	A	NA	NA
	3H	3R/4/12, 4/4X	A	A	A	A	A	A	A	A	A
	3H	Bolted	A	A	A	A	A	A	A	NA	NA
	3H	Unilock	A	A	A	A	A	A	A	NA	NA
PILOT LIGHT	Transformer Type — Incandescent Bulb	4*†	1, 3R/4/12, 4/4X, 3R	A	A	A	A	A	A	A	A
		4*†	Bolted	A	A	A	A	A	A	NA	NA
		4*†	Unilock	A	A	A	A	A	A	NA	NA
	Transformer Type—LED Bulb	4L*†	1, 3R/4/12, 4/4X, 3R	A	A	A	A	A	A	A	
PUSH-TO-TEST PILOT LIGHT Trans.—Incandescent Bulb		5*†	1, 3R/4/12, 4/4X, 3R	A	A	A	A	A	A	A	A
		5*†	Bolted	A	A	A	A	A	A	A	A
		5L*†	1, 3R/4/12, 4/4X, 3R	A	A	A	A	A	A	A	A
START-STOP Push Button and HAND-OFF-AUTO Selector Switch (Unwired)		13	1	A	A	A	A	A	A	A	A
		13	3R/4/12, 4/4X	A	A	A	A	A	A	A	A
FOR-REV-STOP Push Button	Bulletin 506...507	1	1, 3R/4/12, 4/4X	A	A	A	A	A	A	A	NA
	Bulletin 507	1	Bolted (7 & 9)	A	A	A	A	A	A	A	NA
FOR-OFF-REV Selector Switch (Bulletin 506...507)		3	1, 3R/4X12, 4/4X, 3R	A	A	A	A	A	A	A	NA
		3	Bolted	A	A	A	A	A	A	NA	NA
		3	Unilock	A	A	A	A	A	A	NA	NA
HAND-AUTO		3H	1	A	A	A	A	A	A	A	NA
		3H	3R/4/12, 4/4X,	A	A	A	A	A	A	NA	NA
		3H	Bolted	A	A	A	A	A	A	NA	NA
		3H	Unilock	A	A	A	A	A	A	NA	NA
HIGH-LOW-STOP Push Button	Bulletin 522...523	1	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	
	Bulletin 523	1	Bolted	A	A	A	A	A	A	NA	
HIGH-OFF-LOW Selector Switch	Bulletin 522...523	3	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	
	Bulletin 523	3	Bolted	A	A	A	A	A	A	NA	
HIGH-LOW-OFF-AUTO Selector Switch		3J	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	
PILOT LIGHT (2)	Transformer Type — Incandescent Bulb	4†‡	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	
		4L†‡	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	
PUSH-TO-TEST PILOT LIGHT	Trans.— Incandescent Bulb	5†	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	
		5L*	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	

* "OFF" pilot lights for non-reversing and non-multi-speed applications require a normally closed auxiliary contact (-91)

† The suffix number is incomplete. Specify the lens with the following letters: **A** = Amber; **B** = Blue; **C** = Clear; **G** = Green; **W** = White

‡ For multi-speed and reversing starters, one pilot light for each container. Add additional letter to identify two lens colors. The first letter specifies "FORWARD" or "HIGH", or "ON"; the second letter specifies "REVERSE" or "LOW", or "OFF"; e.g. **4AG**

A = Available, NA = Not Available, S = Standard

Modifications — Factory-Installed

NEMA Combination Contactors/Starters

For Use on Bulletins 502, 502L, 503, 503L, 506, 506X, 507, 507X, 512, 512M, 513, 513M, 522, 522E, 522F, 522G, 523, 523E, 523F, 523G, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1232X, and 1233X, Continued

Description of Modification	Suffix No.	Enclosure Type	NEMA Size									
			0	1	2	3	4	5	6	7		
Control Circuit Transformers Includes 2 Primary Fuses and 1 Secondary Fuse	With Standard Capacity 60 or 50 Hz	6P	1, 3R/4X/12, 4/4X, 3R	A	A	A	A	A	A	A	A	
	With Standard Capacity with Fuse Covers	6PC	1, 3R/4X/12, 4/4X, 3R	A	A	A	A	A	A	A	A	
	With Standard Capacity 60 or 50 Hz	6P	Bolted*	A	A	A	A	A	A	NA	NA	
	With Standard Capacity 60 or 50 Hz	6P	Unilock†	A	A	A	A	A	A	NA	NA	
	With 100 Watt Extra Capacity 60 or 50 Hz	6XP	1, 3R/4X/12, 4/4X 3R	A	A	A	A	A	A	A	A	
	With 100 Watt Extra Capacity with Fuse Covers	6XPC	1, 3R/4X/12, 4/4X 3R	A	A	A	A	A	A	A	A	
	With 100 Watt Extra Capacity 60 or 50 Hz	6XP	Bolted*	A	A	A	A	A	A	NA	NA	
	With 100 Watt Extra Capacity 60 or 50 Hz	6XP	Unilock†	A	A	A	A	A	A	NA	NA	
	With 200 VA Capacity	6XYP	1, 3R/4X/12, 4/4X 3R	A	A	A	NA	NA	NA	NA	NA	
	With 200 VA Capacity with Fuse Covers	6XXPC	1, 3R/4X/12, 4/4X 3R	A	A	A	NA	NA	NA	NA	NA	
	With 200 Watt Extra Capacity 60 or 50 Hz	6YP	1, 3R/4X/12, 4/4X 3R	A	A	A	A	A	A	NA	NA	
	With 200 Watt Extra Capacity with Fuse Covers	6YPC	1, 3R/4X/12, 4/4X 3R	A	A	A	A	A	A	NA	NA	
	With 300 Watt Extra Capacity 60 or 50 Hz	6XYP	1, 3R/4X/12, 4/4X 3R	A	A	A	A	A	A	NA	NA	
	With 300 Watt Extra Capacity with Fuse Covers	6XYPC	1, 3R/4X/12, 4/4X 3R	A	A	A	A	A	A	NA	NA	
With 400 Watt Extra Capacity 60 or 50 Hz	6YYP	1, 3R/4X/12, 4/4X 3R	A	A	A	A	A	A	NA	NA		
With 400 Watt Extra Capacity with Fuse Covers	6YYPC	1, 3R/4X/12, 4/4X 4X	A	A	A	A	A	A	NA	NA		
Auxiliary Contacts	Auxiliary Contact installed on contactors	N.O. 90‡ N.C. 91‡	1, 3R/4X/12, 4/4X Bolted	A	A	A	A	A	A	A	A	
	Auxiliary Contact — Contactor (Four Maximum) — Late Break	97	1, 3R/4/12, 4/4X 3R	A	A	A	A	A	A	NA	NA	
	Auxiliary Contact installed on disconnect	N.O. 98 N.C. 99	1, 3R/4/12, 4/4X 3R	A	A	A	A	A	A	A	A	
	Auxiliary Contact installed on circuit breaker (external to breaker) to operate with handle (two maximum)	N.O. 98	1, 3R/4X/12, 4/4X 3R Bolted*	A	A	A	A	A	A	A	NA	NA
		N.O. 98	Unilock†	A	A	A	A	A	A	A	NA	NA
		N.C. 99	1, 3R/4X/12, 4/4X 3R Bolted*	A	A	A	A	A	A	A	NA	NA
		N.C. 99	Unilock†	A	A	A	A	A	A	A	NA	NA
	Control Circuit	1 Fuse — Fuse Included	21	1, 3R/4X/12, 4/4X 3R	A	A	A	A	A	A	A	A
1 Fuse with Protective Cover — Fuse Included		21C	1, 3R/4X/12, 4/4X 3R	A	A	A	A	A	A	A	A	
Control Circuit Fuse Block Less Transformer		2 Fuses — Fuses Included	22	1, 3R/4X/12, 4/4X 3R	A	A	A	A	A	A	A	
2 Fuse with Protective Cover — Fuse Included		22C	1, 3R/4X/12, 4/4X 3R	A	A	A	A	A	A	A	A	
Surge Suppression for 120V or 240V AC Coil		17	1, 3R/4X/12, 4/4X, 3R Bolted* Unilock†	A	A	A	A	A	A	NA	NA	
Terminal Blocks (Cat No. 1492-HC6)	6-Point Block	TB6	1, 3R/4X/12, 4/4X, 3R	A	A	A	A	A	A	A		
Terminal Blocks (Cat No. 1492-HC12)	12-Point Block	TB12	1, 3R/4X/12, 4/4X, 3R	A	A	A	A	A	A	A		
Overload Relays (Eutectic Alloy)	N.O. Alarm Contact Adder (Bulletin 592)	9	1, 3R/4X/12, 4/4X 3R	A	A	A	A	A	A	NA	NA	
	N.C. Alarm Contact Adder (Bulletin 592)	9A	Bolted* Unilock†	A	A	A	A	A	A	NA	NA	
	Omit Three Overload Relays	For Bulletins 506, 506X, 507, 507X Deduct	23	1, 3R/4X/12, 4/4X 3R Bolted* Unilock†	A	A	A	A	A	A	NA	
		For Bulletins 522, 523 Deduct	23		A	A	A	A	A	A	NA	
Accessories	3Ø Powermonitor (Timemark Model 258)	400	1, 3R/4X/12, 4/4X 3R Bolted (3R, 7 & 9) Unilock (7 & 9)	A	A	A	A	A	A	A	A	
	Bulletin 596 (Used on Bulletin 500...509, 3-Pole Maximum)	On Delay 87A Off Delay 87B		A	A	A	A	A	A	A	NA	
	Form A Compelling Relay (Used on Bulletin 522...523)	70	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	NA	
	Form B Auto. Seq. Accelerating Relay for each higher speed (used on Bulletin 522...523)	71	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	NA	
	Form C Auto. Seq. Decelerating Relay for each higher speed (used on Bulletin 522...523)	72	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	NA	

* Bolted suitable for Type 7 & 9 or Type 3R, 7 & 9.
 † Unilock suitable for Type 7 & 9 or Type 3R, 7 & 9 with the addition of a drain or a breather and drain.
 ‡ For Bulletins 506, 507, 522 and 523 devices. One auxiliary contact is installed on each of the two contactors.

A = Available, NA = Not Available, S = Standard

Modifications — Factory-Installed

NEMA Combination Contactors/Starters

For Use on Bulletins 502, 502L, 503, 503L, 506, 506X, 507, 507X, 512, 512M, 513, 513M, 522, 522E, 522F, 522G, 523, 523E, 523F, 523G, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1232X, and 1233X, Continued

Description of Modification	Suffix No.	Enclosure Type	NEMA Size								
			0	1	2	3	4	5	6	7	
Marine Requirements	345	—	A	A	A	A	A	A	A	NA	NA
Circuit Breakers											
Current Limiters	Add the letter "C" to the instantaneous circuit breaker no. code.	C	1, 3R/4X/12, 4/4X 3R	A	A	A	A	A	A	NA	NA
Thermal Magnetic Circuit Breakers	Add the letter "T" to the circuit breaker no. code.	T	1, 3R/4X/12, 4/4X 3R	A	A	A	A	A	A	S	S
Current Limiters	Add the letter "D" to the inverse time circuit breaker no. code.	D	1, 3R/4X/12, 4/4X 3R	A	A	A	A	A	A	NA	NA
Accessories											
Breather		136	Bolted*	A	A	A	A	A	A	NA	NA
Enclosure	Breather and Drain	137	Unilock and Bolted*†	A	A	A	A	A	A	NA	NA
	Drain	138	Bolted and Unilock*†	A	A	A	A	A	A	NA	NA
Enclosure Door Viewing Window		203W	1, 3R/4/12, 3R	A	A	A	A	A	A	NA	NA
Handles For Disconnect Switch or Circuit Breaker	Painted Metal	412	1, 3R/4/12, 3R	A	A	A	A	A	S	S	S
	Stainless Steel	413	4/4X	A	A	A	A	A	S	S	S
	Molded Plastic (Deduct)	419	1, 3R/4/12, 4/4X, 3R	A	A	A	A	A	NA	NA	NA
Fuse Cover	Protective Fuse Cover for Disconnect Switch	414	1, 3R/4/12, 4/4X 3R	A	A	A	A	A	A	NA	NA
Control Relay (Plug-In)	2-Pole	415	1, 3R/4/12, 4/4X, 3R	A	A	A	A	A	A	A	A
	3-Pole	416		A	A	A	A	A	A	A	A
Timing Relay (Plug-In)	On-Delay	417	1, 3R/4/12, 4/4X, 3R	A	A	A	A	A	A	A	A
	Off-Delay	418		A	A	A	A	A	A	A	A
Electrical Interlock	Early Break (1N.O. and 1N.C.)	420	1, 3R/4/12, 4/4X, 3R	A	A	A	A	A	A	NA	NA
	Early Break (2N.O. and 2N.C.)	421	1, 3R/4/12, 4/4X, 3R	A	A	A	A	A	A	NA	NA
Bracket Mounting Feet for Pump Panels		424	3R	NA	A	A	A	A	A	NA	NA
Elapsed Time Meter (ENM - Series T50)		425	3R	NA	A	A	A	A	A	A	A
Protective Covers for Contactors and Starters		426	1, 3R/12, 4/4X, 4	NA	A	A	A	A	A	NA	NA

* Bolted suitable for Type 7 & 9 or Type 3R, 7 & 9.

† Unilock suitable for Type 7 & 9 or Type 3R, 7 & 9 with the addition of a drain or a breather and drain.

A = Available, NA = Not Available, S = Standard

Accessories

NEMA Non-Combination Contactors/Starters and Combination Contactors/Starters

Contactor/Starter Accessories

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Overload Relay Accessories

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Circuit Breaker Accessories

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System Accessories


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NEMA Non-Combination Contactors/Starters and Combination Contactors/Starters, Continued



Contactor Accessories

For use on Bulletins 500, 500F, 500L, 500FL, 500LP, 502, 502L, 503, 503L, 505, 505V, 506, 506X, 507, 507X, 509, 512, 512M, 513, 513M, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, and 1233X

Description	NEMA Size	Cat. No.	
	Coils (60 Hz)	115...120V	CB-236
		200...208V	CB-249
		230...240V	CB-254
		460...480V	CB-273
		575...600V	CB-278
	2	115...120V	CC-236
		200...208V	CC-249
		230...240V	CC-254
		460...480V	CC-273
		575...600V	CC-278
	3	115...120V	CD-236
		200...208V	CD-249
		230...240V	CD-254
		460...480V	CD-273
		575...600V	CD-278
	4	115...120V	CE-236
		200...208V	CE-249
		230...240V	CE-254
		460...480V	CE-273
		575...600V	CE-278
	5 (SER.)	115...120V	CF-236
		200...208V	AF-249
		230...240V	AF-254
	460...480V	AF-273	
	575...600V	AF-278	

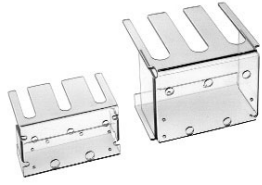


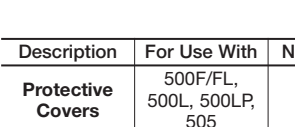

Note: For Complete Listing of Coils Available See page 1-110

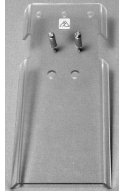
Surge Suppressor — Made to be easily mounted directly across the coil terminals of contactors and starters with 120V or 240V AC coils. The purpose of the suppressor is to limit voltage transients for applications requiring interface with solid-state components. One suppressor is required per coil.

	RC Module AC Operating Mechanism 24...48V AC, 50/60 Hz	00*	100-FSC48
	110...280V AC, 50/60 Hz		100-FSC280
	380...480V AC, 50/60 Hz		100-FSC480
	Varistor Module AC/DC Operating Mechanism 12...55V AC/ 12...77V DC	00*	100-FSV55
	56...136V AC/ 78...180V DC		100-FSV136
137...277V AC/ 181...350V DC	100-FSV277		
278...575V AC	100-FSV575		
	12...120V AC RC	0...5	599-K04
	12...240V AC Varistor		599-KA04
	12...120V AC RC mod	6	199-FSMA1†
	12...120V AC Varistor		199-GSMA1‡
	120V AC		700-N24

Cat. No. 100-FSC280

Cat. No. 599-K04

Description	NEMA Size	Cat. No.	
	Terminal and Lug Covers Line side terminal covers	0...1	599-TC01N
		2	599-TC2N
		3	599-TC3N
		4	599-TC4N
		5	599-TC5N
	Line side terminal covers (reversing)	0...1	599-TC01R
		3	599-LC-3-L
	Line side lug covers (set of 3)	4	599-LC-4-L
		5	599-LC-5-L
		3	599-LC-3-T
	Line side lug covers (set of 3)	4	599-LC-4-T
		5	599-LC-5-T
	Tie Point Terminal	0...2	599-TP02
		3...5	599-TP34

Description	For Use With	No. of Poles	NEMA Size	Cat. No.
	500F/FL, 500L, 500LP, 505	3	0...1	599-PC01
				509, 505, 520E (2), 520F/G
	500L, 500LP	5	0...1	599-PC01-5*
				520F/G
	500F/FL, 500L, 500LP, 505	3	2	599-PC2
				509, 505, 520E (2), 520F/G
	500L, 500LP	5	2	599-PC2-5*
				520F/G
	500F/FL, 500L, 500LP, 505	3	3	599-PC3
				509, 505, 520E (2), 520F/G
	500L, 500LP	5	3	599-PC3-5*
				520F/G
	500F/FL, 500L, 500LP, 505	3	4	599-PC4
				509, 505, 520E (2), 520F/G
	500L, 500LP	5	4	599-PC4-5*
520F/G				599-PS4-5†
500F/FL, 500L, 500LP	3	5	599-PC5	
			509	599-PS5†

* Used on 5-pole Contactors and Starters.
† 592 Eutectic or Solid State Overload Relays.


* For non-combination starters only.
† For use on the interposing relay.
‡ For use on the contactor or starter.

Accessories — Field Installed

NEMA Non-Combination Contactors/Starters and Combination Contactors/Starters, Continued

Contactors Accessories

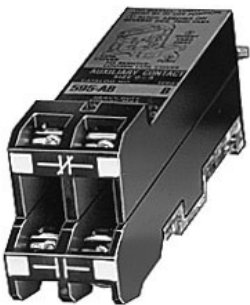
For use on Bulletins 500, 500F, 500L, 500LP, 502, 502L, 503, 503L, 505, 505V, 506, 506X, 507, 507X, 509, 512, 512M, 513, 513M, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, and 1233X, Continued


Description	NEMA Size	Cat. No.
Timer Attachment Kit — A pneumatic timer attachment may be field installed in the space of two adjacent auxiliary contact blocks. Timing units are available for either ON Delay or OFF Delay operation with a timed set of one (1) N.O. and one (1) N.C. snap action contacts that are electrically isolated. Repetitive accuracy within the timer range is approximately ±10% provided a minimum reset time of 75 milliseconds is allowed.		
Note: <ul style="list-style-type: none"> Sizes 0...5: Timers can be added to the left- or right-hand side of the contactor body. On Size 00 they can be mounted to the front of the contactor. Size 0, 1 and 2: Timers cannot be used on the same side as power pole adders. Size 2 Devices: The operating coil must be changed. See page 1-136 and refer to the size 2 operating coil listing. Order the coil listed for a 4...5-pole device. 		
Note: These coils can also be factory-installed.		
Enclosed Devices: Consult your local Allen-Bradley distributor.		
Contact Ratings: NEMA A600 (10 A, 600V AC max.) NEMA P300 (5 A, 300V DC max.)		
	On-Delay	100-FPTA30
	On-Delay	100-FPTA180
	Off-Delay	100-FPTB30
	Off-Delay	100-FPTB180
	Left-hand ON Delay	596-TL32
	Left-hand OFF Delay	596-TL33
	Right-hand ON Delay	596-TR32
	Right-hand OFF Delay	596-TR33

Cat No. 596-TR32

§ For open type, non-combination starters only.

Description	NEMA Size	Cat. No.
Auxiliary Contact — Contactors		
1 N.O.	0...5	595-A
2 N.O.	0...5	595-AA
1 N.C.	0...5	595-B
2 N.C.	0...5	595-BB
1 N.O. and N.C.	0...5	595-AB
1 N.C.L.B.	0...5	595-BL
Single Pole N.O. Auxiliary Contact for Disconnect Switch 1 N.O.	6	195-GA10
1 N.O.	7	1495-J6
Two-Pole N.O. Auxiliary Contact for Disconnect Switch 2 N.O.	6	195-GA20
2 N.O.	7...8	1495-K6
2 N.O.	9	1495-K8
1 N.C.	6	195-GB01
1 N.C.	7...9	1495-J6
2 N.C.	6	195-GB02
2 N.C.	7...8	1495-K6
2 N.C.	9	1495-K8
1 N.O. and N.C.	6	195-GB11
2 N.O.	7...8	1495-K6
2 N.O.	9	1495-K8
1 N.C.L.B.	6	195-GL01



Description	NEMA Size	Cat. No.	
Power Pole Adders — The 1 N.O. and 1 N.C. power poles may be field added to all Size 0 through 4 Bulletin 500 line contactors and starters except the Bulletin 500L and 500FL. Two and three pole contactors will accept a maximum of two adder poles and four pole devices will accept one adder pole. Each adder pole kit includes a mechanical load balancer to be used when only one power pole is added. Note: When power poles are added to Size 2, 3 or 4 (2- or 3-pole devices) the operating coil must be changed. Refer to the listing for the size of your contactor or starter. Order the operating coil listed for a 4...5 pole device.			
Note: These coils can also be factory installed.			
	1 N.O.	0...1	599-P01A
	1 N.C.		599-P01B
	1 N.C. Late Break		599-P01BL
	1 N.O.	2	599-P2A
	1 N.C.		599-P2B
	1 N.C. Late Break		599-P2BL
	1 N.O.	3	599-P3A
	1 N.C.		599-P3B
1 N.O.	4	599-P4A	
1 N.C.		599-P4B	

Cat. No. 599-P01A (1 N.O.)
Size 0...1, 27 Amps.

Contactors Kick-off Springs — For horizontal mounting of 2- or 3-pole Bulletin 500 contactors and starters. **Note:** When kick-off springs are added to Size 2, 3 or 4, the operating coil must be changed. Refer to the listing for the size of your contactor or starter. Order the operating coil listed for a 4-pole device. **Note:** These coils can also be factory installed.

	0...1	599-N11
	2	599-N12
	3	599-N13
	4...5	599-N14

* For non-combination starters only.

Description	NEMA Size	Cat. No.
Lug Connectors (3 per package)		
Wire Size		
# 14...8 AWG Wire	0...1	*
# 14...4 AWG Wire	2	1494R-N1
# 8...1/0 AWG Wire	3	1494R-N2
# 6...4/0 AWG Wire	4	1494R-N3
Cat. No. 1494R-N3 2 of # 1/0...350 MCM Wire	5	1494R-N10


* All terminals of the 30 A switches are furnished with self-lifting pressure plate connectors as standard.

Description	NEMA Size	Cat. No.
Terminal Lug Kit	6	199-LJ1
Terminal Lug Kit	7...8	199-LG1


NEMA Non-Combination Contactors/Starters and Combination Contactors/Starters, Continued


Contactor Accessories

For use on Bulletins 500, 500F, 500FL, 500L, 500LP, 502, 502L, 503, 503L, 505, 505V, 506, 506X, 507, 507X, 509, 512, 512M, 513, 513M, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, and 1233X, Continued

Description	NEMA Size	Cat. No.
 <p>Single-Pole Kit — Bulletin 500 Line Controller Mounted (Class CC Fuses)</p>	0...5	599-FR04

Note: One cover per pole is required. Example: Transformer with top-mounted fuse block requires three covers. Fuse block kit for separate control requires two covers.


Description	Enclosure Type	NEMA Size	Cat. No.
 <p>Adapter Plates — For replacement of:</p> <ul style="list-style-type: none"> Allen-Bradley (Bulletin 709 Series K) Cutler Hammer (Citation & Freedom Series) Furnas (Class 14 and ESP 100) General Electric (Series 300) Joslyn-Clark (Type HP) Square D (Type S) Westinghouse (A200 and W200 Advantage) 	1 (hinged), 3R, 3R/4/12, 4/4X (stainless)	0, 1	599-CP01
		2	599-CP2

Description	NEMA Size	Cat. No.
 <p>Auxiliary Contact Adder Decks — The same 2- and 4-pole auxiliary contact blocks in various combinations of normally open and normally closed will slide and snap onto the front of the contactor. Adder decks have convenient backed out wire clamps to make lugging of control wires unnecessary. Fits on Open Type devices only.</p>	2 N.O.	100-FA20
	1 N.O. -1 N.C.	100-FA11
	2 N.C.	100-FA02
	4 N.O.	100-FA40
	3 N.O.-1 N.C.	100-FA31
	2 N.O. -2 N.C.	100-FA22
	4 N.O.	100-FA04

24 Volt DC Interface Module — Mounts to the top of the contactor. It provides a 24V DC, 0.5 watt input signal which can be used to operate the 24 through 240V AC coil of the contactor. **Fits on Open Type devices only.**

	—	00†	100-JE
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Latch Attachment — On the front of the contactor. **Fits on Open Type devices only.**

	—	00†	100-FL11⊗
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Interposing Contactor — For Open Type Bulletin 500 and 500L.	120V 60 Hz	6	500-NX100D
	240V 60 Hz	6	500-NX100A

Device Markers — Snap easily into the coil cover of contactors and starters for component identification. A maximum of five markers will fit on each contactor or starter. (Standard: 50 Device Markers per Package)

	—	0...5	599-DM ‡ 5
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Bulletin 500 With Device Markers

Top Wiring Kit — Consists of (3) power lugs for the purpose of making extra connections to the load side of the contactor. A second set of overload relays can be wired to these lugs if two motors are being controlled by a single contactor. (Pkg. Qty 1)

	—	0...1	599-TW01
	—	2	599-TW2
	—	3	599-TW3
	—	4	599-TW4
	—	5	599-TW5P

Cat No. 599-TW01

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: 120V, 60 Hz: **Cat. No. 100-FL11⊗** becomes **Cat. No. 100-FL11D**. For other voltages, consult your local Allen-Bradley Distributor

Voltage	24V	48V	100V	110V	120V	230V... 240V	240V	277V	380... 400V	400... 415V	400V	480V
50 Hz	K	Y	KP	D	—	VA	T	—	N	G	B	—
60 Hz	J	—	—	—	D	—	A	T	—	—	N	B


‡ To complete Cat. No. insert in the third position the desired numeric symbol (0...5) or one of the following letters — A, B, C, D, E, F, H, L, M, P, R, S, T, U, or W.

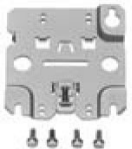
Accessories — Field Installed

NEMA Non-Combination Contactors/Starters and Combination Contactors/Starters, Continued

Overload Accessories

For use on Bulletins 500, 500F, 500FL, 500L, 500LP, 502, 502L, 503, 503L, 505, 505V, 506, 506X, 507, 507X, 509, 512, 512M, 513, 513M, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, and 1233X, Continued

Description		NEMA Size	Cat. No.
 <p>Auxiliary Contact — For Eutectic Alloy Overload Relays Only*</p> <p>Contact Ratings — NEMA A600 (10 A, 600V AC max.) NEMA P300 (5 A, 300V DC max.)</p>	Auxiliary Contact — For Eutectic Alloy Overload Relays Only*		
	1 N.O.	00 3-phase†	595-A00
	1 N.C.	00 3-phase†	595-B00
	1 N.O.	0...2, 5...9	595-A02
	1 N.C.		595-B02
	1 N.O.	3...4	595-A34‡
1 N.C.	595-B34§		

Description	Enclosure Type	NEMA Size	Cat. No.
 <p>DIN Rail Mounting Adapter for Bulletin 592 Compact Type Overload Relays For 3-pole Overload Relays</p> <p>DIN Rail Mounting Adapter for Bulletin 592 Compact Type Overload Relays For 1-pole Overload Relays</p>	1 (hinged), 3R, 3R/4/12, 4/4X (stainless)	40 A	599-MP1
		62 A	599-MP2

* Auxiliary contact for solid-state overload relays is included in the product.

† Non-combination starters only.

‡ Auxiliary mounted on right-hand side of overload relay provides N.O. contact function. Auxiliary mounted on left-hand side of overload relay provides N.C. contact function.

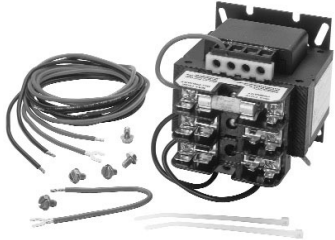
§ To be mounted on right-hand side of overload to provide additional AC contact function.

NEMA Non-Combination Contactors/Starters and Combination Contactors/Starters, Continued

Voltage Control Accessories


For use on Bulletins 500, 500F, 500L, 500LP, 502, 502L, 503, 503L, 505, 505V, 506, 506X, 507, 507X, 509, 512, 512M, 513, 513M, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, and 1233X

Control Circuit Transformer with Top Mounted Fuse Block Kits (Pre-Wired)*†

	NEMA Size	Primary Voltage	Capacity – 120V Secondary Voltage									
			Standard		100 W Extra		200 W Extra		300 W Extra		400 W Extra	
			VA	Cat. No.	VA	Cat. No.	VA	Cat. No.	VA	Cat. No.	VA	Cat. No.
	0...2	208V	80	1497-N1PK	130	1497-N15PK	250	1497-N7PK	350	1497-N10PK	500	1497-N18PK
		240V & 480V	80	1497-N2PK	130	1497-N16PK	250	1497-N8PK	350	1497-N11PK	500	1497-N19PK
		600V	80	1497-N3PK	130	1497-N17PK	250	1497-N9PK	350	1497-N12PK	500	1497-N20PK
	3	208V	200	1497-N4PK	250	1497-N7PK	350	1497-N10PK	500	1497-N18PK	500	1497-N18PK
		240V & 480V	200	1497-N5PK	250	1497-N8PK	350	1497-N11PK	500	1497-N19PK	500	1497-N19PK
		600V	200	1497-N6PK	250	1497-N9PK	350	1497-N12PK	500	1497-N20PK	500	1497-N20PK
	4	208V	250	1497-N7PK	350	1497-N10PK	500	1497-N18PK	350	1497-N10PK	500	1497-N18PK
		240V & 480V	250	1497-N8PK	350	1497-N11PK	500	1497-N19PK	350	1497-N11PK	500	1497-N19PK
		600V	250	1497-N9PK	350	1497-N12PK	500	1497-N20PK	350	1497-N12PK	500	1497-N20PK
	5	208V	350	1497-N10PK	500	1497-N18PK	250	1497-N7PK	350	1497-N10PK	500	1497-N18PK
		240V & 480V	350	1497-N11PK	500	1497-N19PK	250	1497-N8PK	350	1497-N11PK	500	1497-N19PK
		600V	350	1497-N12PK	500	1497-N20PK	250	1497-N9PK	350	1497-N12PK	500	1497-N20PK
6	208V	500	1497-N18PK	—	—	—	—	—	—	—	—	
	240V & 480V	500	1497-N19PK	—	—	—	—	—	—	—	—	
	600V	500	1497-N20PK	—	—	—	—	—	—	—	—	

* Transformers for NEMA sizes 7...9 are included as standard.

Control Circuit Transformers with Top Mounted Fuse Blocks*†

	NEMA Size	Primary Voltage/ 3 Pole Fuse Block	Capacity – 120V Secondary Voltage	
			Standard	
			VA	Cat. No.
	0...2	208V	80	1497-B-HXDX-3-N
		240V & 480V		1497-B-BASX-3-N
		600V		1497-B-CXSX-3-N
	3	208V	200	1497-D-HXDX-3-N
		240V & 480V		1497-D-BASX-3-N
		600V		1497-D-CXSX-3-N
	4	208V	250	1497-E-HXDX-3-N
		240V & 480V		1497-E-BASX-3-N
		600V		1497-E-CXSX-3-N
	5	208V	350	1497-F-HXDX-3-N
		240V & 480V		1497-F-BASX-3-N
		600V		1497-F-CXSX-3-N

* Transformers can be installed in Type 1, 3R, 3R/4/12 painted enclosures and Type 4/4X stainless steel enclosures.

† Type 4/4X non-metallic enclosures and Type 7 & 9 hazardous location enclosures require transformers with separately mounted fuse blocks. For a complete listing of transformers see page 8-13.

Accessories — Field Installed

NEMA Non-Combination Contactors/Starters and Combination Contactors/Starters, Continued

Voltage Control Accessories

For use on Bulletins 500, 500F, 500L, 500LP, 502, 502L, 503, 503L, 505, 505V, 506, 506X, 507, 507X, 509, 512, 512M, 513, 513M, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, and 1233X, Continued

For Use When Fuse Block Is Not Integrated With The Transformers



Cat. No. 1491-R165
1-Pole Fuse Block



Cat. No. 1491-R167
2-Pole Fuse Block



Cat. No. 1491-R171
3-Pole Fuse Block



Cat. No. 1491-R169
3-Pole Fuse Block



Cat. No. 1491-R150
Fuse Cover with Fuse

These control circuit fusing kits are intended to be used for control circuit transformer protection and protection of control circuits capable of delivering no more than 200 000 RMS symmetrical amperes, 600V maximum. (Fuses not included)

Description*	Cat. No.
One-Pole Kit — Panel-Mounted (Midget Fuse)†	1491-R165
Control Circuit Fuse Block For Class CC Rejection Type Fuses (Fuses Not Included)†	1491-R162
Two-Pole Kit — Panel-Mounted (Two Midget Fuses)†	1491-R167
Three-Pole Kit — Panel-Mounted (One Midget Fuse/Two Class CC Fuses)†	1491-R169
Three-Pole Kit — Panel-Mounted (Three Class CC Fuses)	1491-R171
Single-Pole Kit — Bulletin 500 Line Controller Mounted (Class CC Fuses)‡	599-FR04
One-Pole Kit — Panel-Mounted (31...60 A Class J Fuse)	1491-R173
One-Pole Kit — Panel-Mounted (61...100 A Class J Fuse)	1491-R175
One-Pole Kit — Transformer Mounting Only 30 A/250V§	1491-N100

* For control circuit transformers with a 350 VA or larger rating, it is recommended that Bussmann Type FNQ-R, Ferraz-Shawmut Type ATDR, Littelfuse Type KLDR time delay fuses, or equivalent be used for primary fusing.

† These kits use only Class CC or Midget fuses (rated 0.5...30 A) such as those offered by the following manufacturers:

- Bussmann KTK-R
- Ferraz-Shawmut ATM R
- Littelfuse KLK

‡ Cat. No. 599-FR04 is rated for 6 A fuse maximum. Controller mounting applies to size 0...5 devices only.



§ Fuse block only mounts to A-B 1497-N- Transformers of 500VA and below.

◆ Note: One cover per pole is required. Example: Transformer with top-mounted fuse block requires three covers. Fuse block kit for separate control requires two covers. Fuses not included.

NEMA Non-Combination Contactors/Starters and Combination Contactors/Starters, Continued

Pilot Device Accessories

For use on Bulletins 500, 500F, 500L, 500LP, 502, 502L, 503, 503L, 505, 505V, 506, 506X, 507, 507X, 509, 512, 512M, 513, 513M, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, and 1233X

Description	Enclosure Type	NEMA Size	Cat. No.	
Selector Switch Kits				
	OFF-ON/HAND-OFF-AUTO*†	1 (Lift-off)	00 599-SS00	
			0...2 599-SS02	
	HAND-OFF-AUTO	1, 3R/4/12	0...5	599-SS09HJ
		4, 4X (stainless steel and non-metallic)		599-SS09HS
	OFF-ON	1, 3R/4/12		599-SS09OJ
		4, 4X (stainless steel and non-metallic)		599-SS09OS
	FOR-OFF-REV	1, 3R/4/12		599-SS09RJ
		4, 4X (stainless steel and non-metallic)		599-SS09RS
	TEST-OFF-AUTO (spring return from TEST)	1, 3R/4/12		599-SS09TJ
		4, 4X (stainless steel and non-metallic)		599-SS09TS
	OFF-ON/ HAND-OFF-AUTO*†	1 (Lift-off)		3...5 599-SS34
	FOR-OFF-REV (Unilock)†	3R, 7 & 9		0...2
	OFF-ON (Unilock)†		1481-N54	
	HAND-OFF-AUTO (Unilock)†		1481-N55	
OFF-ON (Unilock)†	3...5		1481-N59	
HAND-OFF-AUTO (Unilock)†			1481-N60	
FOR-OFF-REV (Unilock)†			1481-N62	
Push Button Kits				
	START-STOP*†		1 (Lift-off)	00 599-PB00
			0...2 599-PB02	
			3...5 599-PB34	
	START-STOP	1, 3R/4/12	0...5	599-PB09SJ
		4, 4X (stainless steel and non-metallic)		599-PB09SS
	FOR-REV-STOP	1, 3R/4/12		599-PB09RJ
		4, 4X (stainless steel and non-metallic)		599-PB09RS
	HIGH-LOW-STOP	1, 3R/4/12		599-PB09WJ
		4, 4X (stainless steel and non-metallic)		599-PB09WS
	START-STOP (Unilock)†	7 & 9		0...2 1481-N53
	3...5 1481-N58			
START-STOP (Bolted)†	2...9 Use 800H-DPH16AAXX64			

* Bulletins 500, 505, 509, 520 with control transformer are supplied from the factory in Type 1 (Hinged) enclosures.



† For non-combination starters only.

Accessories — Field Installed

NEMA Non-Combination Contactors/Starters and Combination Contactors/Starters, Continued

Pilot Device Accessories

For use on Bulletins 500, 500F, 500L, 500LP, 502, 502L, 503, 503L, 505, 505V, 506, 506X, 507, 507X, 509, 512, 512M, 513, 513M, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, and 1233X, Continued

Description	Enclosure Type	NEMA Size	Cat. No.	
	Pilot Light Kits†			
	120V	1, 3R/4/12	599-PL09DJ	
	120V	4, 4X (stainless steel and non-metallic)	599-PL09DS	
	240V	1, 3R/4/12	599-PL09AJ	
	240V	4, 4X (stainless steel and non-metallic)	599-PL09AS	
	480V	1, 3R/4/12	599-PL09BJ	
	480V	4, 4X (stainless steel and non-metallic)	599-PL09BS	
	600V	1, 3R/4/12	599-PL09CJ	
	600V	4, 4X (stainless steel and non-metallic)	599-PL09CS	
	ON*†‡	1 (Lift-off)	00	599-PL00⊗
			0...2	599-PL02⊗
			3...9	599-PL34⊗
	Optional Pilot Light Lens Covers			
	Red	All	0...5	800T-N26R
	Green			800T-N26G
Amber	800T-N26A			
Blue	800T-N26B			
Clear	800T-N26C			
White	800T-N26W			
ON (Unilock 120V) — Red†§	3R, 7 & 9 (Unilock)	0...5	1481-N56A120R	
ON (Unilock 120V) — Green†§			1481-N56A120G	
	Push-to-Test Pilot Light Kits‡			
	120V	1, 3R/4/12	599-PT09DJ	
	120V	4, 4X (stainless steel and non-metallic)	599-PT09DS	
	240V	1, 3R/4/12	599-PT09AJ	
	240V	4, 4X (stainless steel and non-metallic)	599-PT09AS	
	480V	1, 3R/4/12	599-PT09BJ	
	480V	4, 4X (stainless steel and non-metallic)	599-PT09BS	
	600V	1, 3R/4/12	599-PT09CJ	
	600V	4, 4X (stainless steel and non-metallic)	599-PT09CS	
	Optional Push-to-Test Pilot Light Lens Covers			
	Red	All	0...5	800T-N40
	Green			800T-N41
	Amber			800T-N42
	Blue			800T-N43
	Clear			800T-N45
White	800T-N44			

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 599-PL02⊗** becomes **Cat. No. 599-PL02B**. For other voltages, consult your local Allen-Bradley Distributor.

Voltage	115...120V	230...240V	460...480V	575...600V
60 Hz	D	A	B	C

* For non-combination starters only.

† Bulletins 500, 505, 509, 520 with control transformer are supplied from the factory in Type 1 (Hinged) enclosures.

‡ Pilot light kits and push-to-test pilot light kits include one green and one red cover as standard.

§ An adapter (Cat. No. 1481-N61) is required for each pilot light added to Size 3, 4 and 5 Unilock enclosures.


⊗ Supplied with Red Lens Only.

Note: Bulletins 505, 520 with 2 pilot lights are supplied in hinged enclosures, with or without control circuit transformers.

NEMA Non-Combination Contactors/Starters and Combination Contactors/Starters, Continued

Pilot Device Accessories

For use on Bulletins 500, 500F, 500L, 500LP, 502, 502L, 503, 503L, 505, 505V, 506, 506X, 507, 507X, 509, 512, 512M, 513, 513M, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, and 1233X, Continued

Description	Enclosure Type	NEMA Size	Cat. No.	
ON † (Unilock) — Red Lens (120V)	3R, 7 & 9 (Unilock)	0...5	1481-N56A120R	
ON † (Unilock) — Green Lens (120V)			1481-N56A120G	
Transformers for Pilot Lights 240V, 60 Hz and 220V, 50 Hz*		00...5	1481-NX1	
480V, 60 Hz and 440V, 50 Hz			1481-NX2	
600V, 60 Hz and 550V, 50 Hz			1481-NX3	
 Replacement Bulbs for all Pilot Lights 120V Coil Voltage - Incandescent Amber, Green, Red or Blue Lens Color		—	—	800T-N169
	120V Coil Voltage - LED Amber Lens Color	—	—	800T-N320A
	Green Lens Color	—	—	800T-N320G
	Red Lens Color	—	—	800T-N320R
	Blue Lens Color	—	—	800T-N320B
	240/480/600V Coil Voltage - Incandescent Amber, Green, Red, or Blue Lens Color	—	—	800T-N65
	240/480/600V Coil Voltage - LED Amber Lens Color	—	—	800T-N318A
	Green Lens Color	—	—	800T-N318G
	Red Lens Color	—	—	800T-N318R
	Blue Lens Color	—	—	800T-N318B
Additional Pilot Devices Additional Pilot Devices	1, 3R/4/12	0...9	Use Bulletin 800T devices (See page 10-50)	
Additional Pilot Devices	4/4X, 4X	0...9	Use Bulletin 800H Type 4X devices (See page 10-50)	
Additional Pilot Devices (Bolted)	3R, 7 & 9	0...9	Use Bulletin 800H Type 7 & 9 devices (See page 10-133)	

* When the control voltage is other than 120V, 60 Hz or 110V, 50 Hz it is necessary to also use one of the following transformers.






† An adaptor (Cat. No. 1481-N61) is required for each pilot light added to size 3, 4 and 5 Unilock enclosures.

Accessories — Field Installed

NEMA Non-Combination Contactors/Starters and Combination Contactors/Starters, Continued

Enclosure Accessories

For use on Bulletins 500, 500F, 500L, 500LP, 502, 502L, 503, 503L, 505, 505V, 506, 506X, 507, 507X, 509, 512, 512M, 513, 513M, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, and 1233X

Description	Enclosure Type	NEMA Size	Cat. No.		
 <p>Metallic Conduit Connectors 1 in. (24.5 mm) 1-1/4 in. (31.75 mm) 1-1/2 in. (38.1 mm) 2-1/2 in. (63.5 mm) 3 in. (76.2 mm)</p>	1, 3R/4/12, 3R	0...1	1232-N11		
		2	1232-N12		
		3	1232-N13		
		4	1232-N14		
		5	1232-N15		
 <p>Non-metallic Conduit Connectors 1/2 in. (12.7 mm) 3/4 in. (19 mm) 1 in. (24.5 mm) 1-1/4 in. (31.75 mm) 1-1/2 in. (38.1 mm) 2 in. (50.8 mm) 2-1/2 in. (63.5 mm) 3 in. (76.2 mm)</p>	4, 4X (stainless steel and non-metallic)	0...1	1490-N1 1490-N9 1490-N10		
		2	1490-N11		
		3	1490-N5		
		4	1490-N6 1490-N7		
		5	1490-N8		
		 <p>Grounding Adapters 1/2 in. (12.7 mm), #14...10 AWG 3/4 in. (19 mm), #14...8 AWG 1 in. (24.5 mm), #14...8 AWG 1-1/4 in. (31.75 mm), #14...4 AWG 1-1/2 in. (38.1 mm), #8...1/0 AWG 2 in. (50.8 mm), #8...1/0 AWG 2-1/2 in. (63.5 mm), #6...2/0 AWG 3 in. (76.2 mm), #6...4/0 AWG</p>	4, 4X (stainless steel and non-metallic)†	0...1	1490-N19 1490-N20 1490-N21
				2	1490-N22
				3	1490-N23
4	1490-N24 1490-N25				
5	1490-N26				
 <p>Handle Kits with Universal Link for Switch and Breaker Painted Metal 5-1/2 in. base Stainless Steel 5-1/2 in. base Non-Metallic Handle 5-1/2 in. base</p>	1, 3R, 3R/4/12*			0...4	1494F-M1
	4/4X (stainless steel)				1494F-S1
	1, 3R, 3R/4/12, 4/4X (stainless steel)				1494F-P1
 <p>Hole Plugs 30.5mm hole plug for pilot devices 19.5 mm hole plug for resets and door safety hardware</p>	All	0...5	800T-N1		
			598-N1		


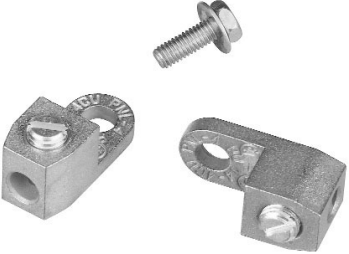
* For combination starters only.

† Bulletin 1490 grounding adapters are available for use with these conduit hubs. These bushings provide a convenient method of connecting a ground wire to the conduit system. See conduit connector (hub) above proper size.

NEMA Non-Combination Contactors/Starters and Combination Contactors/Starters, Continued

Enclosure Accessories

For use on Bulletins 500, 500F, 500L, 500LP, 502, 502L, 503, 503L, 505, 505V, 506, 506X, 507, 507X, 509, 512, 512M, 513, 513M, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, and 1233X, Continued

Description	Enclosure Type	NEMA Size	Cat. No.
 <p>Door Safety Hardware Kits Enclosure Size (H x W x D) 27 in. x 10 in. x 8.2 in.</p>	3R/4/12†	0...2	1494F-V1
		0...4	1494F-V2
		3...4	1494F-V3
		56 in. x 30 in. x 14 in.	5
<p>Breather Bulletin 505, 507, 509, and 513 — Unilock and Bolted Class I, Groups C and D Class II, Groups E, F and G*‡</p> <p>Drain Bulletin 505, 507, 509, and 513 — Unilock and Bolted Class I, Groups C and D Class II, Groups E, F and G*‡</p> <p>Breather Drain Combination§ Bulletin 505, 507, 509, and 513 — Unilock and Bolted Class I, Groups C and D Class II, Groups E, F and G*‡</p>	0...5		1401-N1
			1401-N2
			1401-N3
 <p>Ground Lug Kits</p>		0...2	599-GR1
		3...5	599-GR2
		6...7	599-GR3

Description of Accessory Kit	Size 0...2	Size 3	Size 4	Size 5	Size 6...9
	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.
Reset Buttons (Each Kit Contains One Reset)					
Type 1, 3R/12 Bulletin 506...507 — One Kit Required Per Starter Bulletin 512...513 — One Kit Required Per Starter Bulletin 522...523 — Two Kits Required Per Starter	1493-N15	1493-N16	1493-N17	—	—
	1493-N15	1493-N16	1493-N17	1493-N20▶	—
	1493-N15	1493-N16	1493-N17	—	—
Pneumatic Timer Mounting Plate Adapter (For Mtg. Bulletin 849A Timer) Bulletin 509 and 513 — Unilock+	1401-N4	—	—	—	—

† Converts combination starter enclosure "F" to enclosure code "D" or "J" with Door Safety Hardware.

‡ Standard on bolted Type 3R, 7 & 9.

§ The breather-drain combination can be in enclosure top as a breather or bottom as a drain. Specify (2) when both functions are required.

* Unilock suitable for Types 7 & 9 or Types 3R, 7 & 9 with the addition of a drain or a breather and drain.




▶ For bulletins 512...513 only.

Accessories — Field Installed

NEMA Non-Combination Contactors/Starters and Combination Contactors/Starters, Continued

Disconnect Switch Accessories

For use on Bulletins 500, 500F, 500L, 500LP, 502, 502L, 503, 503L, 505, 505V, 506, 506X, 507, 507X, 509, 512, 512M, 513, 513M, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, and 1233X

	Description	NEMA Size	Cat. No.	
	Fuse Clips			
	0...30 A, 250V AC, Class H	0...2	1401-N41	
	0...30 A, 250V AC, Class J 0...30 A, 600V AC, Class H 0...30 A, 600V AC, Class J 31...60 A, 250V AC, Class H	1...3	1401-N42	
	31...60 A, 250V AC, Class J 31...60 A, 600V AC, Class H 31...60 A, 600V AC, Class J	1...3	1401-N43	
	61...100 A, 250V AC, Class H 61...100 A, 250V AC, Class J 61...100 A, 600V AC, Class H 61...100 A, 600V AC, Class J	2...4	1401-N44	
	101...200 A, 250V AC, Class H 101...200 A, 250V AC, Class J 101...200 A, 600V AC, Class H 101...200 A, 600V AC, Class J	3...5	1401-N45	
	201...400 A, 250V AC, Class H 201...400 A, 250V AC, Class J 201...400 A, 600V AC, Class H 201...400 A, 600V AC, Class J	4...5	1401-N46	
	0...30 A, 250V AC, Class R 0...30 A, 600V AC, Class R 31...60 A, 250V AC, Class R 31...60 A, 600V AC, Class R	0...2† 1...3	1401-N50 1401-N51 1401-N52	
	61...100 A, 250V AC, Class R 61...100 A, 600V AC, Class R	2...4	1401-N53	
	101...200 A, 250V AC, Class R 101...200 A, 600V AC, Class R	3...5	1401-N54	
	201...400 A, 250V AC, Class R 201...400 A, 600V AC, Class R	5...6	1401-N55	
	0...30 A, 250V AC HRC Form II Fusing* 0...30 A, 600V AC HRC Form II Fusing* 31...60 A, 250V AC HRC Form II Fusing* 31...60 A, 600V AC HRC Form II Fusing*	0...2† 1...3	1401-N70	
	61...100 A, 250V AC HRC Form II Fusing* 61...100 A, 600V AC HRC Form II Fusing*	2...4	1401-N71	
	101...200 A, 250V AC HRC Form II Fusing* 101...200 A, 600V AC HRC Form II Fusing*	3...5	1401-N72	
	201...400 A, 250V AC HRC Form II Fusing* 201...400 A, 600V AC HRC Form II Fusing*	4...5	1401-N73	
		Auxiliary Contacts for Disconnect Switches		
		1 N.O.	0...5	1495-N8
		1 N.C.	0...5	1495-N9
		Protective Fuse Covers		
			0...3	1495-N56
		4	1495-N57	
Protective Fuse Cover with Door		5	1495-N58	
		6	1495-N61	




* HRC Form II fusing for Canada only.

† For 0...30 A only.

NEMA Non-Combination Contactors/Starters and Combination Contactors/Starters, Continued

Circuit Breaker Accessories

For use on Bulletins 500, 500F, 500L, 500LP, 502, 502L, 503, 503L, 505, 505V, 506, 506X, 507, 507X, 509, 512, 512M, 513, 513M, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, and 1233X

	Description	NEMA Size	Cat. No.	
	Circuit Breaker Kits			
	3 A, 0...1/3 Hp @ 200V and 230V 3 A, 0...1 Hp @ 460V and 575V	0...1	1401-N60	
	7 A, 0.5...1 Hp @ 200V and 230V 7 A, 1.5...3 Hp @ 460V and 575V	0...1	1401-N61	
	15 A, 1.5...3 Hp @ 200V and 230V 15 A, 5...7.5 Hp @ 460V and 575V	0...1	1401-N62	
	30 A, 5 Hp @ 200V 30 A, 5...7.5 Hp @ 230V 30 A, 10...15 Hp @ 460V and 575V	1...2	1401-N63	
	50 A, 5...10 Hp @ 200V 50 A, 10 Hp @ 230V 50 A, 20...25 Hp @ 460V 50 A, 20...30 Hp @ 575V	1...3	1401-N64	
	100A, 15...25 Hp @ 200V and 230V 100A, 30...50 Hp @ 460V 100A, 40...50 Hp @ 575V	2...4	1401-N65	
	150A, 30 Hp @ 200V 150 A, 30...40 Hp @ 230V 150 A, 60...75 Hp @ 460V 150A 75...100 Hp @ 575 V	3...4	1401-N66	
	250 A, 125 Hp @ 575V	5	1401-N68	
	250 A, 50...60 Hp @ 200V 250 A, 60...75 Hp @ 230V		1401-N69	
		Auxiliary Contacts for Disconnect Switches		
		One Normally Open (1 N.O.) Adapter kit may be required. * Bolted — One Normally Open (1 N.O.)† Unilock — One Normally Closed (1 N.C.)†	0...5‡ 4...5§	1495-N8
		One Normally Closed (1 N.C.) Adapter kit may be required.* Bolted — One Normally Open (1 N.O.)† Unilock — One Normally Open (1 N.O.)†	0...5	1495-N9
		Unilock — One Normally Open (1 N.O.)†	0...2	1495-N14
Unilock — One Normally Closed (1 N.C.)†		0...2	1495-N15	
HMCP Circuit Breaker Adapter Kits (for mounting 1 or 2 auxiliary contacts)		5	1495-N16	
400 A Frame†				
150 A Frame		3...4	1495-N21	
250 A Frame - Enclosure Type 1, 3R/4/12, 3R, and 4/4X (Stainless Steel)		4...5♣	1495-N22	
250 A Frame - Enclosure Type 7 & 9 (Bolted & Unilock) and 4/4X (Non-Metallic)		0...5➤		
250 A Frame - Enclosure Type 1, 3R/4/12, 3R, and 4/4X (stainless Steel)		4	1495-N23	
Unilock — 150 A Frame†	3...4	1495-N21		
Unilock — 250 A Frame†	4...5	1495-N22		

* Contact Ratings — NEMA B600 and NEMA P600.

† Not available on larger sizes 6...9.

‡ For Bolted and 1 N.O.

§ For Unilock 1 N.C.

♣ For Enclosure Type 1






➤ For Enclosure Types 7 & 9

Accessories — Field Installed

NEMA Non-Combination Contactors/Starters and Combination Contactors/Starters, Continued

System Accessories

For use on Bulletins 500, 500F, 500L, 500LP, 502, 502L, 503, 503L, 505, 505V, 506, 506X, 507, 507X, 509, 512, 512M, 513, 513M, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, and 1233X

	Description	Enclosure Type	NEMA Size	Cat. No.
	Power Monitor Kit*† 3-phase, 240V AC — (Time Mark Model A258)	1 (hinged), 3R, 3R/4/12, 4/4X (stainless)	0...7	599-PM1
	3-phase, 480V AC — (Time Mark Model A258B)			599-PM2
	Terminal Block* Panel Mount (6 point)‡	1 (hinged), 3R, 3R/4/12, 4/4X (stainless)	0...7	1492-HC6
	Timing Relays* 120V AC, ON Delay — 8-pin socket (Cat. No. 700-HN125) required 0.1...10 s	1 (hinged), 3R, 3R/4/12, 4/4X (stainless)	0...7	700-HT12AA1
	120V AC, ON Delay — 8-pin socket (Cat. No. 700-HN125) required 1.0...180 s			700-HT12BA1
	120V AC, Off-Delay — 11-pin socket (Cat. No. 700-HN126) required 0.1...10 s			700-HT22AA1
	120V AC, OFF Delay — 11-pin socket (Cat. No. 700-HN126) required 1.0...180 s			700-HT22BA1
	Control Relays* DPDT 2-pole 2 Form C Single AgNi Contact	1 (hinged), 3R, 3R/4/12, 4/4X (stainless)	0...7	700-HA32A1
	3PDT 3-pole 3 Form C Single AgNi Contact			700-HA33A1
	Relay Sockets* 8-pin socket	1 (hinged), 3R, 3R/4/12, 4/4X (stainless)	0...7	700-HN125
	11-pin socket			700-HN126

* For combination starters only.

† 3-Phase Power Monitor Kit includes the time mark phase monitor and socket.

‡ Up to two 6-point terminal blocks may be added to each combination starter.

NEMA Non-Combination and Combination Contactors/Starters

Electrical Ratings

NEMA Size	Load Voltage (V)	Continuous Current (Amps.) (A)	Service Limit Current Amps.) (A)*	Maximum HP Rating (Nonplugging and Nonjogging Duty)		Maximum HP Rating (Plugging and Jogging Duty) †		Transformer Primary kVa Rating (Inrush Current <= 20 times Continuous Current)		Transformer Primary Switching kVa Rating (Inrush Current = 20 to 40 times Continuous Current)		Capacitor Switching kVAR‡	Maximum Circuit Closing Inrush Current (A) Peak Including Offset	
				1Ø	3Ø	1Ø	3Ø	1Ø	3Ø	1Ø	3Ø			3Ø
00	115	9	11	1/3	—	1/4	—	—	—	—	—	—	87	
	200			—	1-1/2	1	—	—	—	—	—	—		
	230			1	1-1/2	1/2	1	—	—	—	—	—		
	380			—	1-1/2	—	1	—	—	—	—	—		
	460			—	2	—	1-1/2	—	—	—	—	—		
575	—	2	—	1-1/2	—	—	—	—	—	—	—			
0	115	18	21	1	—	1/2	—	0.6	—	0.3	—	—	140	
	200			—	3	1-1/2	—	1.8	—	0.9	—	—		
	230			2	3	1	1-1/2	1.2	2.1	0.6	1	—		—
	380			—	5	—	1-1/2	—	—	—	—	—		—
	460			—	5	—	2	2.4	4.2	1.2	2.1	—		—
575	—	5	—	2	3	5.2	1.5	2.6	—	—	—			
1	115	27	32	2	—	1	—	1.2	—	0.6	—	—	288	
	200			—	7-1/2	3	—	3.6	—	1.8	—	—		
	230			3	7-1/2	2	3	2.4	4.3	1.2	2.1	6		—
	380			—	10	—	5	—	—	—	—	—		—
	460			—	10	—	5	4.9	8.5	2.5	4.3	13.5		—
575	—	10	—	5	6.2	11	3.1	5.3	17	—	—			
1P	115	36	42	3	—	1-1/2	—	—	—	—	—	—	—	
	230			5	—	3	—	—	—	—	—	—	—	
2	115	45	52	3	—	2	—	2.1	—	1	—	—	483	
	200			—	10	7-1/2	—	6.3	—	3.1	—	—		
	230			7-1/2	15	5	10	4.1	7.2	2.1	3.6	12		—
	380			—	25	—	15	—	—	—	—	—		—
	460			—	25	—	15	8.3	14	4.2	7.2	25		—
575	—	25	—	15	10	18	5.2	8.9	31	—	—			
3	115	90	104	7-1/2	—	7-1/2	—	4.1	—	2	—	—	947	
	200			—	25	15	—	12	—	6.1	—	—		
	230			15	30	15	20	8.1	14	4.1	7.0	27		—
	380			—	50	—	30	—	—	—	—	—		—
	460			—	50	—	30	16	28	8.1	14	53		—
575	—	50	—	30	20	35	10	18	67	—	—			
4	115	135	156	—	—	—	—	6.8	—	3.4	—	—	1581	
	200			—	40	—	25	—	20	—	10	—		
	230			—	50	—	30	14	23	6.8	12	40		—
	380			—	75	—	50	—	—	—	—	—		—
	460			—	100	—	60	27	47	14	23	80		—
575	—	100	—	60	34	59	17	29	100	—	—			
5	115	270	311	—	—	—	—	14	—	6.8	—	—	3163	
	200			—	75	—	60	—	41	—	20	—		
	230			—	100	—	75	27	47	14	24	80		—
	380			—	150	—	125	—	—	—	—	—		—
	460			—	200	—	150	54	94	27	47	160		—
575	—	200	—	150	68	117	34	59	200	—	—			
6	115	540	621	—	—	—	—	27	—	14	—	—	6326	
	200			—	150	—	125	—	81	—	41	—		
	230			—	200	—	150	54	94	27	47	160		—
	380			—	300	—	250	—	—	—	—	—		—
	460			—	400	—	300	108	188	54	94	320		—
575	—	400	—	300	135	234	68	117	400	—	—			
7	230	810	932	—	300	—	—	—	—	—	—	240	9470	
	460			—	600	—	—	—	—	—	—	480		
	575			—	600	—	—	—	—	—	—	600		
8	230	1215	1400	—	450	—	—	—	—	—	—	360	14205	
	460			—	900	—	—	—	—	—	—	720		
	575			—	900	—	—	—	—	—	—	900		
9	230	2250	2590	—	800	—	—	—	—	—	—	665	25380	
	460			—	1600	—	—	—	—	—	—	1325		
	575			—	1600	—	—	—	—	—	—	1670		

* **Service-Limit Current Ratings** — The service-limit current ratings shown represent the maximum rms current, in amperes, which the controller shall be permitted to carry for protracted periods in normal service. At service-limit current ratings, temperature rises shall be permitted to exceed those obtained by testing the controller at its continuous current rating. The current rating of overload relays or the trip current of other motor protective devices used shall not exceed the service-limit current rating of the controller.

† **Plugging or Jogging Service** — The listed horsepower ratings are recommended for those applications requiring repeated interruption of stalled motor current encountered in rapid motor reversal in excess of five openings or closings per minute and shall not be more than ten in a ten minute period.

‡ If maximum available current (at capacitor terminals) is greater than 3,000 amperes, consult your local Allen-Bradley distributor or NEMA ICS-2 Standard.

NEMA Specifications

NEMA Non-Combination and Combination Contactors/Starters

Mechanical Ratings

NEMA Size	Mechanical Life (Millions of Operations)	Maximum Number of Auxiliary Contacts	Operating Time (Milliseconds)	
			Pick-up (Average)	Drop-out (Average)
0	10	8	21	16
1	10	8	22	14
1P	10	8	22	14
2	10	8	27	13
3	5	8	37	20
4	5	8	27	20
5	5	8	25	18
6	5	4	25...79	10...22
7	—	8	88	40
8	—	8	88	45
9	—	8	118	84
00	10	5	20	16

Construction

NEMA Size	Contact Material		Type of Power Terminal	Wire Size for Power Terminals	Required Torque on Power Terminal Wire Clamps and Pressure Connectors or Lugs	Requirements for Sizing of Wire	
	Power Contacts	Auxiliary Contacts					
0	Silver Alloy	Silver	Saddle or Wire Clamps	14...10 AWG	20 lb•in	All wire rated (167 °F) 75 °C or higher must be sized per the local Electrical Code for (167 °F) 75 °C wire.	
1				14...8 AWG	20 lb•in		
1P			Pressure Terminals	14...8 AWG	20 lb•in		
2				14...4 AWG	45 lb•in		
3				8...1/0 AWG	150 lb•in		
4				6...4/0 AWG	275 lb•in		
5				4...500MCM AWG	375 lb•in		
6			Lugs sold separately. See page 1-95.				
7			Direct Bus connections only.				
8							
9							
00			Pressure Terminals	16...10 AWG	9 lb•in		

Environmental

NEMA Size	Operating Temperature Range	Altitude	Corrosion-Resistance	Operating Position
0	Starters with Eutectic Alloy Overload Relay (-13...+149 °F) -25...+65 °C	10,000 Feet Before Derating	All Metal Parts Are Treated for Corrosion-Resistance	Vertical
1				
1P				
2				
3	Starters with SMP Overload Relay (-13...+131 °F) -25...+55 °C			Horizontal
4				
5				
6				
7				
8	(provided condensation is prevented)			Vertical
9				
00				

Short Circuit Rating

Combination Contactors and Starters with Disconnect Switch: Bulletin 502, 506, 512, 522E, 522F, 522G and 1232X			
NEMA Size	Fuse Type	Available Short Circuit Amperes RMS Symmetrical (A)	Maximum Voltage (V)
0...3	H, K	5000	600
4...5	H, K	10000	
0...5	J, R	100000	
6	J, R, L	18000	
7	L	18000	
Combination Lighting Contactors with Disconnect Switch: Bulletin 502L			
Lighting Contactor Rating (A)	Fuse Type	Available Short Circuit Amperes RMS Symmetrical (A)	Maximum Voltage (V)
20...100	H, K	5000	600
200...300	H, K	10000	
20...300	J, R	100000	
Combination Contactors and Starters with Circuit Breaker: Bulletin 503, 507, 513, 523E, 523F, 523G and 1233X			
Enclosure Type	NEMA Size	Available Short Circuit Amperes RMS Symmetrical (A)	Maximum Voltage (V)
1, 3R, 3R/4/12, 4/4X (stainless)	0...5	65000	480
4/4X (non-metallic)	0...5	22000	
Unilock 3R, 7 & 9	0...5	65000	
Bolted 3R, 7 & 9	0...2	65000	
1, 3R, 3R/4/12, 4/4X (stainless)	0...5	25000	
4/4X (non-metallic)	0...3	5000	600
4/4X (non-metallic)	4...5	10000	
Unilock 3R, 7 & 9	0...3	5000	
Unilock 3R, 7 & 9	4...5	10000	
Bolted 3R, 7 & 9	0...2	5000	
3R, 3R/4/12	6...7	10000	
Combination Lighting Contactors with Circuit Breaker: Bulletin 503L			
Enclosure Type	Lighting Contactor Rating (A)	Available Short Circuit Amperes RMS Symmetrical (A)	Maximum Voltage (V)
1, 3R, 3R/4/12, 4/4X (stainless)	20...300	65000	480
4/4X (non-metallic)	20...300	22000	
Unilock 3R, 7 & 9	20...300	65000	
Bolted 3R, 7 & 9	20...300	65000	
1, 3R, 3R/4/12, 4/4X (stainless)	20...300	25000	
4/4X (non-metallic)	20...100	5000	600
4/4X (non-metallic)	20...300	10000	
Unilock 3R, 7 & 9	20...100	5000	
Unilock 3R, 7 & 9	20...300	10000	
Bolted 3R, 7 & 9	20...300	5000	

AC Coil Data

NEMA Size	Operating Volt Amperes Burden (VA)		Heat Dissipation (Watts)	Coil Operating Limits
	60 Hz Coils			
	Inrush	Sealed		
00	70	8	2.7	85...110%
0	192	29	5.9	
1 & 1P	192	29	5.9	
2 (2...3 poles)	240	29	5.9	
2 (4...5 poles)	315	38	5.9	
3 (2...3 poles)	660	45	10	
3 (4...5 poles)	840	58	10	
4 (2...3 poles)	1225	69	14.8	
4 (4...5 poles)	1490	96	14.8	
5 (Series L)	1490	96	19.8	
6*	4860	254	65.7	
6 (Interposing relay)	52.44	3.96	—	
7†	Economized DC Coil		—	
7 (Interposing relay)	74.40	9.84	—	
8‡	Economized DC Coil		—	
8 (Interposing relay)	74.40	9.84	—	
9§	Economized DC Coil		—	
9 (Interposing relay)	144	19.20	—	

Auxiliary Contacts (NEMA A600 and P300) — Bulletin 595, 596

Maximum AC Contact Rating Per Pole						
AC Rating Designation	Maximum Voltage 60 or 50 Hz	Amperes		Continuous Carrying Current (Amperes)	Volt Amperes	
		Make	Break		Make	Break
A600	120	60	6	10	7200	720
	240	30	3	10	7200	720
	480	15	1.5	10	7200	720
	600	12	1.2	10	7200	720
Maximum DC Contact Rating Per Pole for 595, 596 Auxiliary Contacts (Maximum Continuous Carrying Current is 5 Amperes)						
DC Rating Designation	125 Volts — DC		250 Volts — DC		600 Volts — DC	
P300	0.55 Amperes		0.55 Amperes (Requires 2 Contacts in Series)		—	
	1.1 Amperes (Requires 2 Contacts in Series)					

* This rating is for the size 6 contactor coil only. All starters are shipped with an interposing relay as standard.

† Size 7 starters are shipped with a 250 VA control circuit transformer and an interposing relay with a 120V coil. Voltage is then rectified to DC for the contactor coil.

‡ Size 8 starters are shipped with a 350 VA control circuit transformer and an interposing relay with a 120V coil. Voltage is then rectified to DC for the contactor coil.

§ Size 9 starters are shipped with a 750 VA control circuit transformer and an interposing relay with a 120V coil. Voltage is then rectified to DC for the contactor coil.

Load-Life Curves

Bulletin 500 Line contactors and starters are designed to provide superior performance in a variety of applications. These load-life curves are based on Allen-Bradley tests according to the requirements defined in IEC 947-4. Actual contact life may vary based on the application, duty cycle and environmental conditions from that indicated by the curves.

To find the contactor's estimated electrical life, follow these guidelines:

- Choose the appropriate graph that most closely approximates the utilization category of the application.
- Locate the intersection of the life-load curve of the appropriate contactor with the application's operational current (I_e) found on the horizontal axis.
- Read the estimated contact life in millions of operations along the vertical axis.

Utilization Categories

Category	Typical Duty
AC3	Starting of squirrel cage motors and switching off only after the motor is up to speed
AC4	Starting of squirrel cage motors with inching and plugging duty.

Contact Life for Mixed Utilization Categories AC3 and AC4

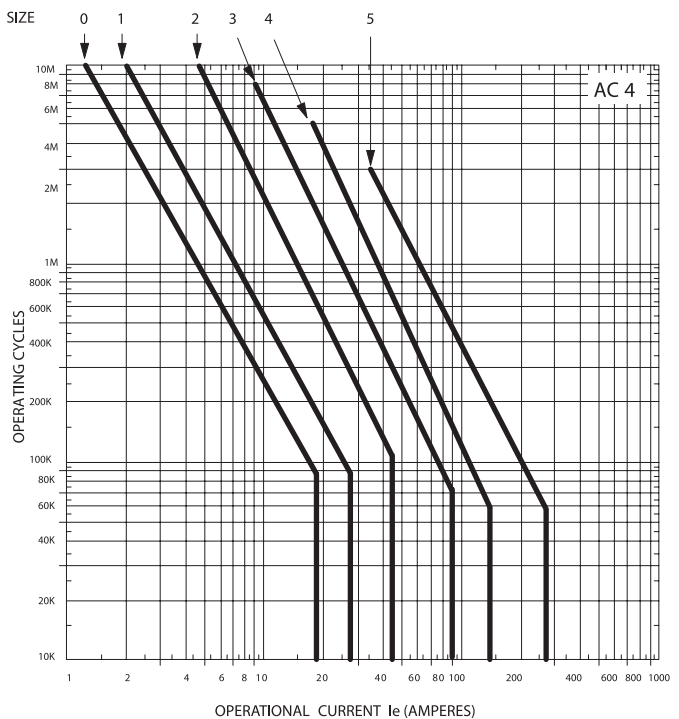
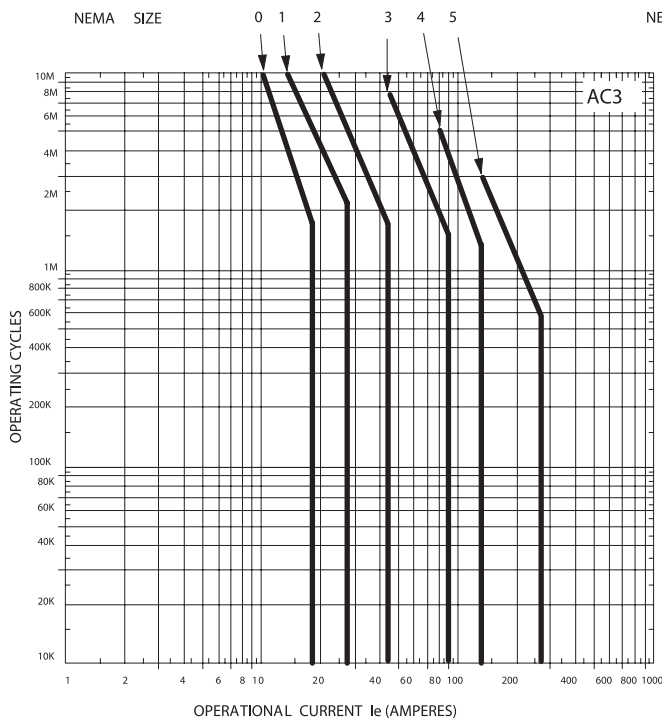
In many applications, the utilization category cannot be defined as either purely AC3 or AC4. In those applications, the electrical life of the contactor can be estimated from the following equation

$$L_{mixed} = \frac{L_{AC3}}{1 + P_{AC4} \left(\frac{L_{AC3}}{L_{AC4}} - 1 \right)}$$

Where

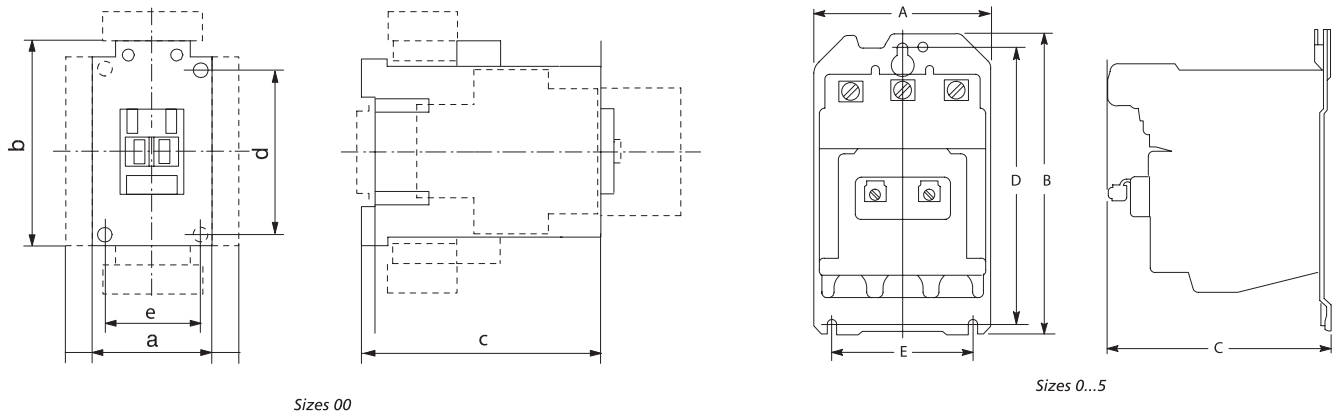
- L_{mixed}** Approximate contact life for a mixed AC3/AC4 utilization category application.
- L_{AC3}** Approximate contact life in operations for AC3 utilization category (from AC3 life-load curves below).
- L_{AC4}** Approximate contact life in operations for AC4 utilization category (from AC4 life-load curves below).
- P_{AC4}** Percentage of AC4 operations.

Bulletin 500 Load/ Life Curves — AC3 and AC4



Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Open Type without Enclosure for Bulletin 500-500F-500FL-500L-500LP Contactors



Note: Top mounting hole on Size 00 is 1/4 in (6.35) to the left of centerline on Open Type. Mounting screws: 3 - #10 for sizes 0...2; 1/4 - #20 or 5/16 - #18 for sizes 3...5.

NEMA Size	Number of Switching Poles		Dimensions in Inches (Millimeters)					Approximate Shipping Weight in lbs (kg)
	Bul. 500 500F-500FL	Bul. 500L-500LP	A Width	B Height	C Depth	D	E	
00 5/10A	1-2-3	2...3	1-25/32 (45)	3-3/16 (81)	3-11/64 (80.5)	2-23/64 (60)	1-25/64 (35)	1 (0.45)
0...1 15/20A 30A	2...3	2...3	3-9/16 (90.5)	6 (152)*	4-15/32 (113)	5-1/2 (140)	2-3/4 (70)	3 (1.4)
	4	—	4-3/8 (111)					3-1/2 (1.6)
	5	4	4-15/16 (125)					4-3/4 (2.2)
2 60A	2...3	2...3	3-15/16 (100)	6-27/32 (173)*	4-23/32 (120)	6-5/16 (160)	3-5/32 (80)	4 (1.8)
	4	—	4-31/32 (126)					4-3/4 (2.2)
	5	4	5-1/2 (140)					6-1/4 (2.8)
3 100A	2...3	2...3	6-1/8 (155.5)	10-3/64 (255)	6-19/32 (167.4)	8-21/32 (220)	5-33/64 (140)	14.5 (6.5)
	4	—	7-15/16 (201.6)					16 (7.25)
	5	4	8-13/16 (223.8)					18 (8)
4 200A	2...3	2...3	7 (178)	12-11/64 (309)†	7-13/16 (198.4)	9-27/32 (250)	6-5/16 (160)	22 (10)
	4	—	9-1/16 (230.2)					25.5 (11.5)
	5	4	10-7/16 (265.1)					28.5 (13)
5 300A	2...3	2...3	7 (178)	13-25/64 (340)‡	8-17/32 (217)	9-27/32 (250)	6-5/16 (160)	24 (10.9)

* For Feed-Through Wiring this dimension is 6-15/16 in (176).
 † For Feed-Through Wiring this dimension is 11-11/16 in (297).
 ‡ For Feed-Through Wiring this dimension is 12-37/64 in (320).

Bulletin 500 Line
Approximate Dimensions
NEMA Reversing Starters

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Open Type without Enclosure for Bulletin 505 Full Voltage Reversing Starters with Eutectic Alloy Overload Relay

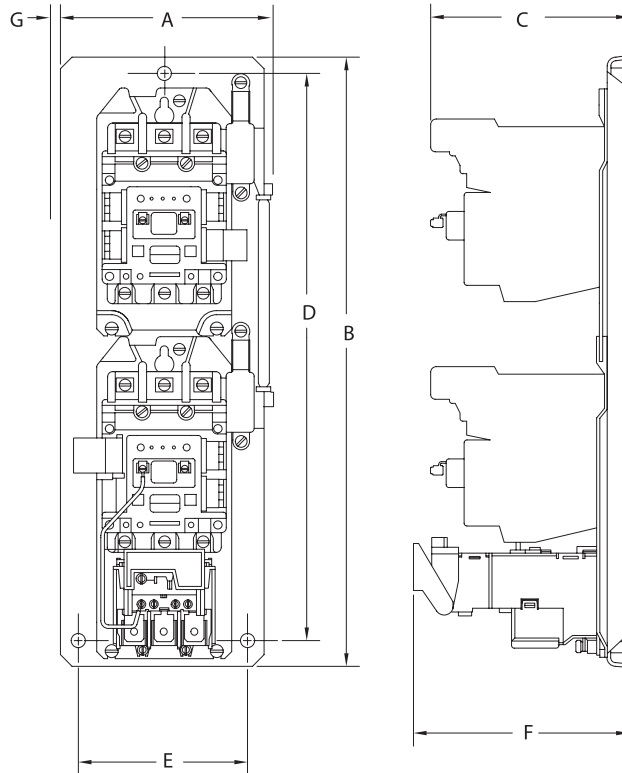


NEMA Size	Style	Dimensions in Inches (Millimeters)							Approx. Shipping Weight in lbs (kg)
		A Width	B Height	C Relay Reset Depth	D	E	F	G Depth	
00	With Eutectic Alloy Overload Protection	4-7/8 (124)	6-9/16 (167)	3-27/32 (98)	6-1/64 (153)	4-3/8 (111)	—	—	4 (1.8)
0...1		8 (203)	9-5/32 (233)	4-11/16 (119)	8-21/32 (220)	7-3/32 (180)	—	4-5/8 (117)	10 (4.5)
2		9-1/16 (230)	10-11/32 (263)	4-11/16 (119)	9-27/32 (250)	7-7/8 (200)	—	4-29/32 (125)	12-3/4 (5.8)
3		12-7/8 (327)	12-29/64 (316)	6-21/64 (161)	9-27/32 (250)	11-13/16 (300)	11-13/16 (300)	6-55/64 (174)	34 (15.5)
4		14-27/32 (377)	14-5/8 (371)	6-23/32 (171)	11-13/16 (300)	13-25/32 (350)	13-25/32 (350)	8-5/64 (205)	52 (24)
5		14-27/32 (377)	17-55/64 (453)	8-35/64 (217)	16-15/16 (430)	13-25/32 (350)	13-25/32 (350)	8-13/16 (224)	65 (29.5)
6		23-13/32 (594.5)	25-5/64 (637)	10-9/16 (268.5)	—	—	—	11-27/64 (290)	—
7		31-1/2 (800)	32-13/16 (833.4)	12-9/32 (311.9)	—	—	—	—	—
8		35-1/4 (896)	36-7/8 (937)	12-9/32 (311.9)	—	—	—	—	—
9	For dimensions, consult factory.								
00	Without Overload Protection	4-7/8 (124)	4-5/16 (110)	2-3/16 (55.6)	3-3/4 (95.3)	4-3/8 (111)	—	—	2-3/4 (1.2)
0...1		8 (203)	7-19/32 (193)	—	7-3/32 (180)	7-3/32 (180)	—	4-5/8 (117)	8-3/4 (4)
2		9-1/16 (230)	8-3/8 (213)	—	7-7/8 (200)	7-7/8 (200)	—	4-29/32 (125)	11 (5)
3		12-7/8 (327)	10-21/32 (271)	—	9-27/32 (250)	11-13/16 (300)	11-13/16 (300)	6-55/64 (174)	30 (13.5)
4		14-27/32 (377)	12-23/32 (323)	—	11-13/16 (300)	13-25/32 (350)	13-25/32 (350)	8-5/64 (205)	47 (21.3)
5		14-27/32 (377)	12-23/32 (323)	—	11-13/16 (300)	13-25/32 (350)	13-25/32 (350)	8-13/16 (224)	47 (21.3)
6		23-13/32 (594.5)	17-1/16 (433)	—	—	—	—	11-27/64 (290)	—
7		31-1/2 (800)	32-13/16 (833.4)	—	—	—	—	11-11/32 (288.1)	—
8		35-1/4 (896)	36-7/8 (937)	—	—	—	—	11-13/16 (300)	—
9	For dimensions, consult your local Allen-Bradley distributor.								

* Sizes 00 through 2 only.
† Sizes 3 through 5 only.

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Open Type without Enclosure for Bulletin 505V Full Voltage Reversing Starters with Solid State Overload Relay



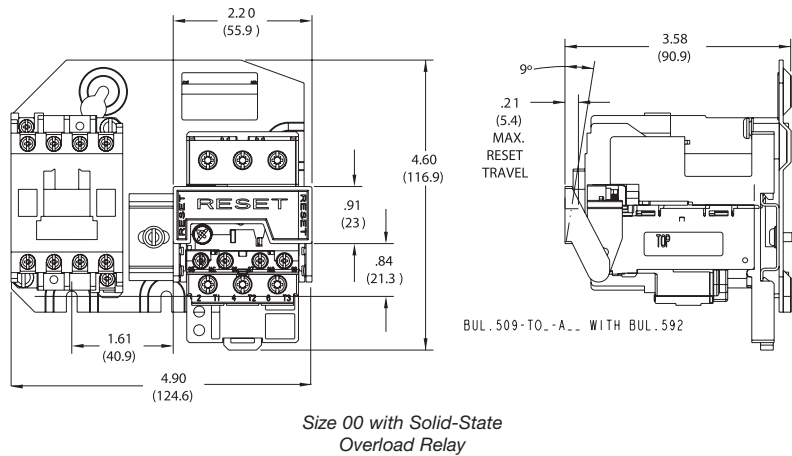
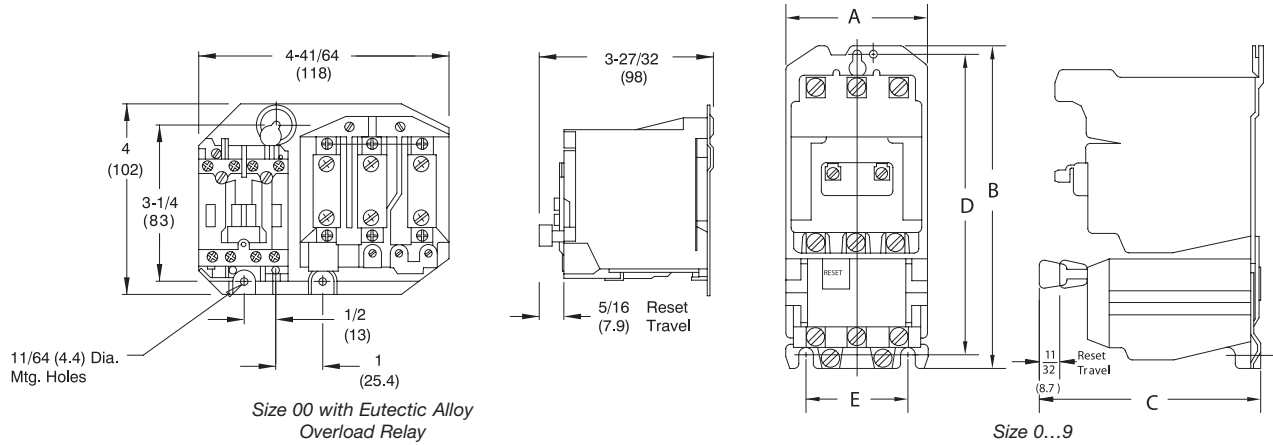
NEMA Size	Overload Relay	Dimensions in Inches (Millimeters)							Approx. Shipping Weight in lbs (kg)
		A Width	B Height	C Depth	D	E	F Relay Reset Depth	G*	
0...1	Solid-State	5-11/16 (144)	14-11/16 (373)	4-31/32 (126)	13-25/32 (350)	4-5/16 (109)	5 (127)	1/16 (1.6)	0-11.5 (5.2) 1-12.2 (5.5)
	Solid-State	5-11/16 (144)	16-27/32 (428)	4-31/32 (126)	13-25/32 (350)	4-11/32 (110)	5-9/32 (134)	1/16 (1.6)	
2	Solid-State	6-1/8 (156)	17-1/16 (434)	5-7/32 (133)	15-3/4 (400)	4-23/32 (120)	5 (127)	1/4 (6.4)	14.5 (6.6)
	Solid-State	6-1/8 (156)	18-7/8 (479)	5-7/32 (133)	15-3/4 (400)	4-23/32 (120)	5-9/32 (134)	1/4 (6.4)	
3	Solid-State	7-17/32 (192)	25-1/8 (639)	7-19/32 (193)	21-21/32 (550)	5-29/32 (150)	7-1/16 (179)	1-3/32 (28)	57.4 (26.0)
	Solid-State	7-17/32 (192)	27-13/32 (696)	7-19/32 (193)	21-21/32 (550)	5-29/32 (150)	7-5/32 (182)	1-3/32 (28)	
4	Solid-State	8-5/32 (208)	29-3/32 (739)	8-13/16 (224)	25-19/32 (650)	6-23/32 (171)	7-15/32 (190)	2 (51)	86.0 (39.0)
	Solid-State	8-5/32 (208)	29-3/32 (739)	8-13/16 (224)	25-19/32 (650)	6-23/32 (171)	8-11/16 (221)	2-5/32 (55)	
5	Solid-State	8-7/16 (215)	37-7/8 (962)	9-17/32 (242)	36-31/32 (939)	6-11/16 (170)	9-9/32 (236)	2 (51)	112 (50.8)
	Solid-State	8-7/16 (215)	37-7/8 (962)	9-17/32 (242)	36-31/32 (939)	6-11/16 (170)	9-29/32 (252)	2 (51)	

* Allow additional space for internal wiring.

Bulletin 500 Line
Approximate Dimensions
NEMA Starters

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

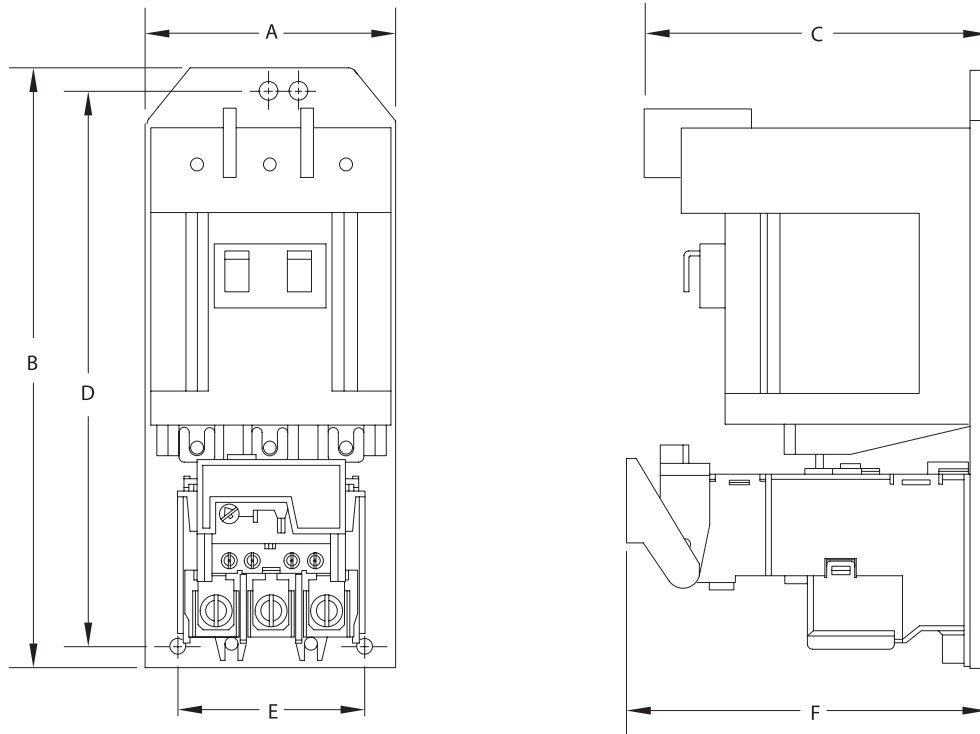
Open Type without Enclosure for Bulletin 509 Full Voltage Starters with Eutectic Alloy and Solid-State Overload Relay



NEMA Size	Dimensions in Inches (Millimeters)					Approx. Shipping Weight in lbs (kg)
	A Width	B Height	C Relay Reset Depth	D	E	
00	—	—	—	—	—	0.9 (0.4)
0...1	3-9/16 (90.5)	7-5/8 (194)	4-1/2 (114)	7-3/32 (180)	2-3/4 (70)	4-1/4 (1.9)
2	3-15/16 (100)	9-5/32 (233)	4-1/2 (114)	8-21/32 (220)	3-5/32 (80)	5-3/4 (2.6)
3	6-11/64 (157)	12-29/64 (316)	6-1/16 (154)	8-21/32 (220)	5-33/64 (140)	15 (6.8)
4	7 (178)	14-21/32 (372)	7-13/16 (198)	9-27/32 (250)	6-5/16 (160)	23-1/5 (10.6)
5	7-3/8 (187)	16-7/6 (429)	8-17/32 (217)	14-32/32 (380)	6-5/16 (160)	35 (15.9)
6	13-1/4 (337)	25-3/32 (637)	11-7/16 (291)	17-23/32 (450)	11-13/16 (300)	160 (72)
7	16-1/2 (419)	30-27/32 (783)	12-9/32 (312)	18-5/16 (465)	15 (381)	247 (112)
8	21-1/2 (546)	39-1/2 (1003)	15-19/32 (396)	22-5/8 (575)	20 (508)	370 (168)
9	34 (864)	53-11/16 (1364)	28 (711)	—	—	—

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Open Type without Enclosure for Bulletin 509 Full Voltage Starters with solid state OverloadRelay



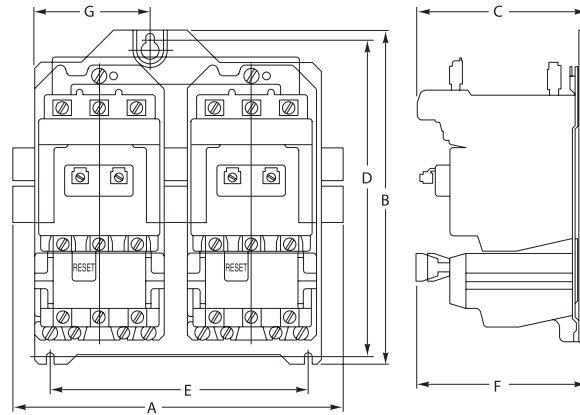
NEMA Size	Overload Relay	Dimensions in Inches (Millimeters)						Approx. Shipping Weight in lbs (kg)
		A Width	B Height	C Depth	D	E	F Relay Reset Depth	
0...1	Solid-State	3-9/16 (91)	7-5/8 (193)	4-15/32 (113)	7-1/16 (180)	2-3/4 (70)	4-1/2 (114)	4.3 (1.9)
	Solid-State	3-9/16 (91)	9-25/32 (248)	4-15/32 (113)	9-1/4 (235)	2-3/4 (70)	4-5/8 (118)	
2	Solid-State	3-15/16 (100)	9-5/32 (233)	4-11/16 (119)	8-5/8 (219)	3-5/32 (80)	4-1/2 (114)	6.0 (2.7)
	Solid-State	3-15/16 (100)	10-25/32 (274)	4-23/32 (120)	10-1/4 (260)	3-5/32 (80)	4-5/8 (118)	
3	Solid-State	6-1/8 (156)	12-7/16 (316)	6-19/32 (168)	8-21/32 (220)	5-1/2 (140)	6-1/16 (154)	16.0 (7.3)
	Solid-State	6-1/8 (156)	14-9/16 (370)	6-19/32 (168)	8-21/32 (220)	5-1/2 (140)	5-61/64 (151)	
4	Solid-State	7 (178)	14-5/32 (360)	7-13/16 (199)	9-27/32 (250)	6-5/16 (160)	6-7/16 (164)	24.6 (11.2)
	Solid-State	7 (178)	15-13/32 (391)	7-13/16 (199)	9-27/32 (250)	6-5/16 (160)	7-1/2 (190)	
5	Solid-State	7-3/8 (188)	16-29/32 (429)	8-9/16 (217)	14-31/32 (380)	6-5/16 (160)	8-9/32 (210)	33.9 (15.4)
	Solid-State	7-3/8 (188)	16-29/32 (429)	8-9/16 (217)	14-31/32 (380)	6-5/16 (160)	8-13/16 (223)	
6	Solid-State	13-1/4 (337)	25-3/32 (637)	11-13/32 (289)	17-23/32 (450)	11-13/16 (300)	10-5/8 (270)	116 (52.6)
	Solid-State	13-1/4 (337)	25-3/32 (637)	11-13/32 (289)	17-23/32 (450)	11-13/16 (300)	11-7/16 (291)	

Note: For Bulletin 509 Size 00, consult your local Allen-Bradley distributor.

Bulletin 500 Line
Approximate Dimensions
 NEMA Multi-Speed Starters

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

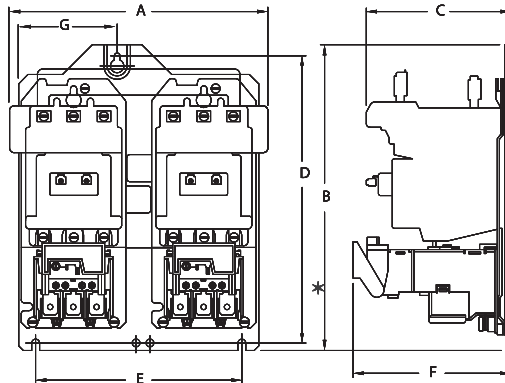
Open Type without Enclosure for Bulletin 520E-520F-520G Multi-Speed Starters with Eutectic Alloy Overload Relay



NEMA Size	Dimensions in Inches (Millimeters)							Approx. Shipping Weight in lbs (kg)
	A Width	B Height	C Depth	D	E	F Relay Reset Depth	G	
2-Speed Separate Winding Bulletin 520E								
0...1	8 (203)	9-5/32 (233)	4-11/16 (119)	8-21/32 (220)	7-3/32 (180)	—	4-5/8 (117)	11-1/4 (5.1)
2	9-1/16 (230)	10-11/32 (263)	4-11/16 (119)	9-27/32 (250)	7-7/8 (200)	—	4-29/32 (125)	13-3/4 (6.2)
3	12-7/8 (327)	12-29/64 (316)	6-21/64 (161)	9-27/32 (250)	11-13/16 (300)	11-13/16 (300)	6-55/64 (174)	34 (15.3)
4	14-27/32 (377)	15-1/64 (381)	6-23/32 (171)	11-13/16 (300)	13-25/32 (350)	13-25/32 (350)	8-5/64 (205)	54 (24.3)
5	16-13/16 (427)	17-55/64 (453)	8-35/64 (217)	16-15/16 (430)	15-3/4 (400)	15-3/4 (400)	8-13/16 (224)	82 (36.9)
2-Speed Consequent Pole Bulletin 520F and 520G								
0...1	9-5/16 (236.5)	9-5/32 (233)	4-11/16 (119)	8-21/32 (220)	7-3/32 (180)	—	4-5/8 (117)	12 (5.4)
2	10-1/4 (260.4)	10-11/32 (263)	4-11/16 (119)	9-27/32 (250)	7-7/8 (200)	—	4-29/32 (125)	15-1/4 (7)
3	16-1/4 (413)	12-29/64 (316.3)	6-21/64 (161)	9-27/32 (250)	13-25/32 (350)	13-25/32 (350)	6-55/64 (174)	44 (19.8)
4	18-7/32 (463)	14-39/64 (371)	6-23/32 (171)	11-13/16 (300)	15-3/4 (400)	15-3/4 (400)	8-5/64 (205)	63 (28.4)
5	18-11/32 (466)	17-55/64 (453)	8-35/64 (217)	16-15/16 (430)	15-3/4 (400)	15-3/4 (400)	8-13/16 (224)	85 (38.6)

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Open Type Enclosure for Bulletin 520E-520F-520G Multi-Speed Starters with Solid State Overload Relay

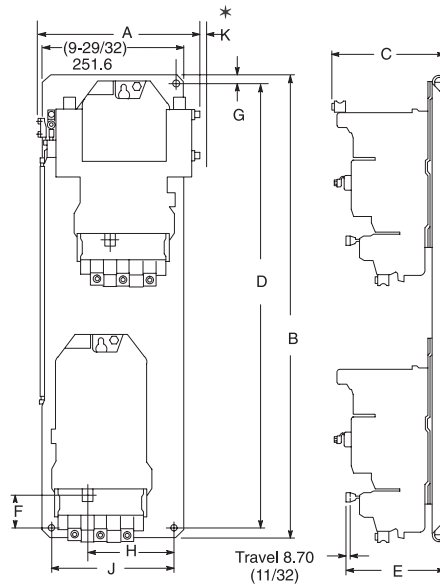


NEMA Size	Overload Relay	Dimensions in Inches (Millimeters)							Approx. Shipping Weight in lbs (kg)
		A Width	B Height	C Depth	D	E	F Relay Reset Depth	G	
2-Speed Separate Winding Bulletin 520E									
0...1	Solid-State	8 (203)	9-5/32 (233)	4-5/8 (118)	8-21/32 (220)	7-3/32 (180)	4-11/16 (118)	3-3/16 (81)	11.3 (5.1)
	Solid-State	8 (203)	11-11/32 (288)	4-5/8 (118)	10-27/32 (276)	7-3/32 (180)	4-31/32 (126)	3-3/16 (81)	
2	Solid-State	9-1/16 (230)	10-11/32 (263)	4-29/32 (125)	9-27/32 (250)	7-7/8 (200)	4-11/16 (118)	4-11/32 (110)	14.9 (6.8)
	Solid-State	9-1/16 (230)	12-5/32 (309)	4-29/32 (125)	11-21/32 (296)	7-7/8 (200)	4-31/32 (126)	4-11/32 (110)	
3	Solid-State	12-7/8 (327)	12-13/32 (315)	6-7/8 (175)	9-27/32 (250)	11-13/16 (300)	6-11/32 (161)	—	35.6 (16.1)
	Solid-State	12-7/8 (327)	14-9/16 (370)	6-55/64 (174)	9-27/32 (250)	11-13/16 (300)	6-17/64 (158)		
4	Solid-State	14-27/32 (377)	14-7/16 (365)	8-3/32 (205)	11-13/16 (300)	13-25/32 (350)	6-23/32 (171)	—	61.0 (27.7)
	Solid-State	14-27/32 (377)	15-21/32 (397)	8-3/32 (205)	11-13/16 (300)	13-25/32 (350)	7-3/4 (196.9)		
5	Solid-State	16-13/16 (427)	17-7/8 (454)	8-13/16 (224)	16-15/16 (430)	15-3/4 (400)	8-9/16 (217)	—	93.5 (42.4)
	Solid-State	16-13/16 (427)	17-7/8 (454)	8-13/16 (224)	16-15/16 (430)	15-3/4 (400)	9-3/16 (233)		
6	Solid-State	23-13/32 (595)	25-3/32 (637)	11-27/64 (290)	17-23/32 (450)	21-31/32 (558)	10-37/64 (269)	—	254 (115)
	Solid-State	23-13/32 (595)	25-3/32 (637)	11-27/64 (290)	17-23/32 (450)	21-31/32 (558)	11-9/16 (294)		
2-Speed Consequent Pole Bulletin 520F and 520G									
0...1	Solid-State	9-5/16 (237)	9-5/32 (233)	4-5/8 (117)	8-21/32 (220)	7-3/32 (180)	4-11/16 (118)	3-9/16 (91)	12.0 (5.4)
	Solid-State	9-5/16 (237)	11-11/32 (288)	4-5/8 (117)	10-27/32 (275)	7-3/32 (180)	4-31/32 (126)	3-9/16 (91)	
2	Solid-State	10-1/4 (260)	10-11/32 (263)	4-29/32 (125)	9-27/32 (250)	7-7/8 (200)	4-11/16 (118)	4-3/4 (121)	15.6 (7.1)
	Solid-State	10-1/4 (260)	12 (305)	4-29/32 (125)	11-1/2 (292)	7-7/8 (200)	4-31/32 (126)	4-3/4 (121)	
3	Solid-State	16-1/4 (413)	12-3/4 (324)	6-7/8 (175)	9-27/32 (250)	13-25/32 (350)	6-11/32 (161)	—	45.0 (20.4)
	Solid-State	16-1/4 (413)	14-7/8 (378)	6-7/8 (175)	9-27/32 (250)	13-25/32 (350)	6-15/32 (164)		
4	Solid-State	18-7/32 (463)	14-27/32 (377)	8-3/32 (205)	11-13/16 (300)	15-3/4 (400)	6-3/4 (172)	—	73.0 (33.1)
	Solid-State	18-3/4 (476)	16-1/16 (408)	8-3/32 (205)	11-13/16 (300)	15-3/4 (400)	7-15/16 (202)		
5	Solid-State	18-11/32 (466)	17-7/8 (454)	8-13/16 (224)	16-15/16 (430)	15-3/4 (400)	8-9/16 (217)	—	131 (59.4)
	Solid-State	18-11/32 (466)	17-7/8 (454)	8-13/16 (224)	16-15/16 (430)	15-3/4 (400)	9-3/16 (233)		

Bulletin 500 Line
Approximate Dimensions
 NEMA Multi-Speed Starters

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Open Type without Enclosure for Bulletin 520VE-520VF-520VG Multi-Speed Starters with Eutectic Alloy Overload Relay

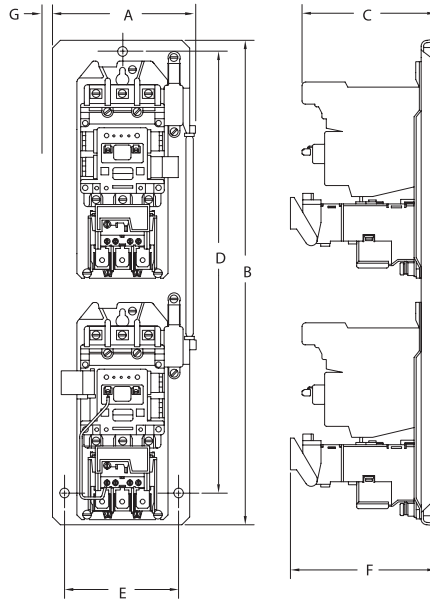


NEMA Size	Dimensions in Inches (Millimeters)										Approx. Shipping Weight in lbs (kg)
	A Width	B Height	C Depth	D	E Relay Reset Depth	F	G	H	J	K	
2-Speed Separate Winding Bulletin 520VE											
0...1	5-11/16 (144.5)	17-9/64 (435.4)	4-15/16 (125.4)	15-3/4 (400)	5 (127)	1-11/32 (34.1)	29/64 (11.5)	1-13/16 (46)	4-21/64 (109.9)	1/16 (1.6)	5.4 (12)
2	6-1/8 (155.6)	20-37/64 (522.7)	4-5/8 (117.5)	19-11/16 (500)	4-5/16 (109.5)	1-21/32 (42.1)	29/64 (11.5)	2-27/32 (72.2)	4-23/32 (119.8)	1/4 (6.4)	6.8 (15)
3	7-17/32 (191.3)	30-5/16 (769.9)	7-1/4 (184.1)	27-9/16 (700.1)	6-45/64 (170.3)	2-55/64 (72.6)	5/8 (15.9)	3-41/64 (92.5)	5-29/32 (150)	1-3/32 (27.8)	18.1 (40)
4	8-5/16 (211.2)	35-1/4 (895.4)	8-23/64 (212.3)	31-1/2 (800.1)	7 (177.8)	2-63/64 (75.8)	5/8 (15.9)	3-63/64 (101.2)	6-11/16 (169.9)	1-1/2 (38.1)	60-1/2 (27.4)
5	8-7/16 (214.4)	42-11/64 (1071.1)	9-17/32 (242.1)	41-17/64 (1048.1)	9-17/64 (235.4)	5-45/64 (144.8)	29/64 (11.5)	3-23/32 (94.4)	6-11/16 (170)	3 (76.2)	—
2-Speed Consequent Pole Bulletin 520VF/520VG											
0...1	6-3/64 (164.7)	17-1/2 (444.5)	4-15/16 (125.4)	15-3/4 (400)	5 (127)	1-11/32 (34.1)	29/64 (11.5)	2-63/64 (75.8)	5-1/8 (130.2)	33/64 (13.1)	13 (5.9)
2	6-29/32 (175.4)	20-37/64 (522.7)	4-5/8 (117.5)	19-11/16 (500)	4-5/16 (109.5)	1-21/32 (42.1)	29/64 (11.5)	31-19/64 (83.7)	5-33/64 (140.1)	23/32 (18.1)	16 (7.3)
3	9-1/8 (231.8)	30-5/16 (777.9)	7-1/4 (184.1)	27-9/16 (700.1)	6-45/64 (170.3)	2-55/64 (72.6)	5/8 (15.9)	5-23/64 (136.2)	7-31/64 (190.1)	2-1/8 (54)	45-1/2 (20.7)
4	10-9/32 (261.1)	35-1/4 (895.4)	8-23/64 (212.3)	31-1/2 (800.1)	7 (177.8)	2-63/64 (75.8)	5/8 (15.9)	5-61/64 (151.2)	8-21/32 (219.9)	3-7/32 (81.8)	72-1/2 (32.9)
5	11-29/32 (302.4)	42-11/64 (1071.1)	9-17/32 (242.1)	41-17/64 (1048.1)	9-17/64 (235.4)	5-45/64 (144.8)	13/32 (10.3)	5-11/16 (144.4)	8-21/32 (220)	4 (101.6)	—

* Allow additional space for internal wiring

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Open Type without Enclosure for Bulletin 520VE-520VF-520VG Multi-Speed Starters with Solid State Overload Relay



Note: The typical drawing above shows 3-point mounting. Sizes 3 through 5 have 4-point mounting holes at each corner of the mounting plate.

2-Speed Separate Winding Bulletin 520VE									Approx. Shipping Weight in lbs (kg)
Dimensions in Inches (Millimeters)									
NEMA Size	Overload Relay	A Width	B Height	C Depth	D	E	F Relay Reset Depth	G*	
0...1	Solid State	5-11/16 (145)	17-1/4 (438)	4-15/16 (126)	15-3/4 (400)	4-5/16 (109)	5 (127)	1/16 (1.6)	12.7 (5.3)
	Solid State	5-11/16 (145)	21-1/2 (546)	4-15/16 (126)	15-3/4 (400)	4-11/32 (110)	5-9/32 (134)	1/16 (1.6)	
2	Solid State	6-1/8 (156)	20-9/16 (522)	4-5/8 (118)	19-11/16 (500)	4-23/32 (120)	4-15/16 (125.5)	1/4 (6.4)	16.0 (7.3)
	Solid State	6-1/8 (156)	23-13/16 (605)	4-5/8 (118)	19-11/16 (500)	4-23/32 (120)	5-9/32 (134)	1/4 (6.4)	
3	Solid State	7-17/32 (192)	31-1/16 (789)	7-19/32 (193)	27-9/16 (700)	5-29/32 (150)	7-1/16 (179.4)	1-3/32 (28)	74.8 (33.9)
	Solid State	7-17/32 (192)	35-9/16 (903)	7-19/32 (193)	34-23/32 (882)	5-29/32 (150)	7-5/32 (182)	1-3/32 (28)	
4	Solid State	8-5/16 (208)	35 (889)	8-13/16 (224)	31-1/2 (800)	6-11/16 (170)	7-15/32 (190)	1-1/2 (38)	98.0 (44.4)
	Solid State	8-5/16 (208)	37-23/32 (958)	8-13/16 (224)	36-13/16 (935)	6-11/16 (170)	8-23/32 (222)	1-1/8 (29)	
5	Solid State	8-7/16 (215)	42-3/16 (1072)	9-17/32 (242)	41-9/32 (1049)	6-11/16 (170)	9-9/32 (236)	3 (76)	113 (51.2)
	Solid State	8-7/16 (215)	42-3/16 (1072)	9-17/32 (242)	41-9/32 (1049)	6-11/16 (170)	9-9/32 (236)	3 (76)	

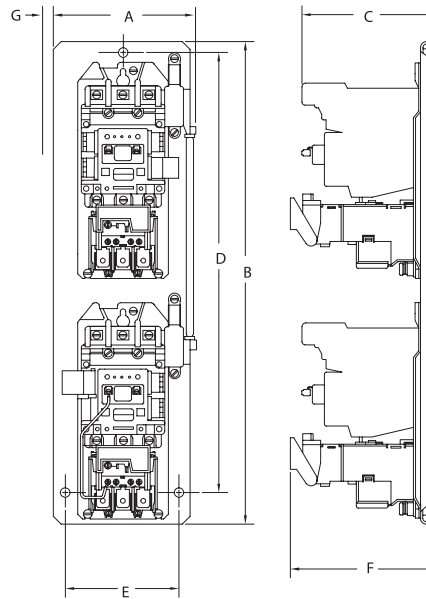
* Allow additional space for internal wiring.

Approximate Dimensions

NEMA Multi-Speed Starters

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Open Type without Enclosure for Bulletin 520VE-520VF-520VG Multi-Speed Starters with Solid State Overload Relay, Continued

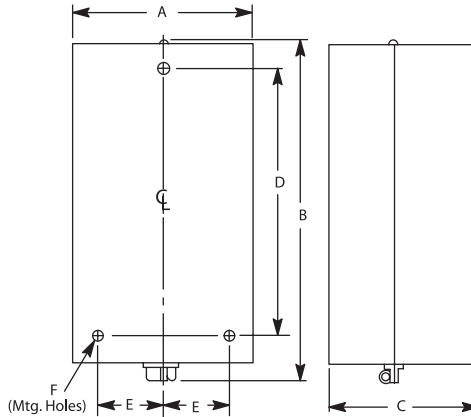


2-Speed Consequent Pole Bulletin 520VF and 520VG									
NEMA Size	Overload Relay	Dimensions in Inches (Millimeters)							Approx. Shipping Weight in lbs (kg)
		A Width	B Height	C Depth	D	E	F Relay Reset Depth	G*	
0...1	Solid-State	6-5/8 (168)	17-1/2 (444.5)	4-15/16 (126)	15-3/4 (146)	5-1/8 (130)	5	1/2 (13)	12.7 (5.8)
	Solid-State	7 (177)	22-11/16 (576)	4-15/16 (126)	15-3/4 (146)	5-1/8 (130)	5-9/32 (134)	17/32 (13)	
2	Solid-State	6-29/32 (176)	20-19/32 (523)	4-5/8 (118)	19-11/16 (500)	5-17/32 (141)	4-5/16 (110)	3/4 (19)	16.0 (7.3)
	Solid-State	6-29/32 (176)	23-13/16 (605)	4-5/8 (118)	19-11/16 (500)	5-17/32 (141)	5-9/32 (134)	3/4 (19)	
3	Solid-State	9-1/8 (232)	31-1/16 (789)	7-19/32 (193)	27-9/16 (700)	7-1/2 (191)	7-1/16 (179)	2-1/8 (54)	74.8 (33.9)
	Solid-State	10-3/32 (256)	35-9/16 (903)	7-19/32 (193)	34-23/32 (882)	7-1/2 (191)	7-5/32 (182)	1-25/32 (29)	
4	Solid-State	11-23/32 (298)	35 (889)	8-13/16 (224)	31-1/2 (800)	8-21/32 (220)	7-15/32 (190)	3-7/32 (82)	98.0 (44.4)
	Solid-State	11-23/32 (298)	37-23/32 (958)	8-13/16 (224)	36-13/16 (935)	8-21/32 (220)	8-23/32 (222)	1-25/32 (29)	
5	Solid-State	11-29/32 (303)	42-3/16 (1072)	9-17/32 (242)	41-9/32 (1049)	8-21/32 (220)	9-9/32 (236)	4 (102)	113 (51.2)
	Solid-State	11-29/32 (303)	42-3/16 (1072)	9-17/32 (242)	41-9/32 (1049)	8-21/32 (220)	9-9/32 (236)	4 (102)	

* Allow additional space for internal wiring.

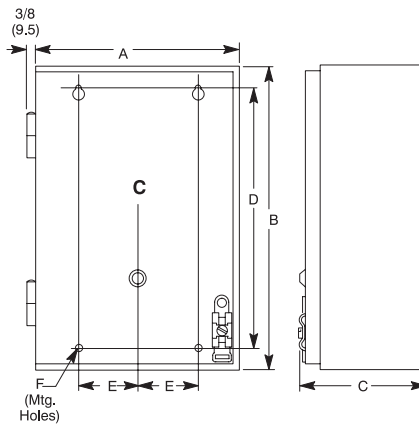
Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Type 1 General Purpose Enclosure for Bulletins 500-500L Contactors 1-...3-Pole



NEMA Size	Dimensions in Inches (Millimeters)						Approx. Shipping Weight in lbs (kg)
	A Width	B Height	C Depth	D	E	F	
00 5/10A	4-7/8 (124)	7-11/16 (195)	4-5/16 (110)	5-5/8 (143)	1-7/8 (48)	7/32 (5.6)	4 (1.8)
0...1 15/20A, 30A	6-13/16 (173)	10-5/8 (270.3)	5-21/32 (143.2)	8-1/4 (210)	2-3/8 (60.5)	7/32 (5.5)	6-3/4 (3.1)
2 60A	7-5/16 (186)	13-3/4 (349.3)	5-21/32 (143.2)	10-3/4 (273)	2-5/8 (66.5)	9/32 (7.1)	9-1/2 (4.3)
3 2-...3-Pole 100A 2-...3-Pole	10-1/4 (260.4)	20-3/16 (513)	7-7/8 (200)	16 (406.4)	3-3/4 (95.2)	11/32 (8.7)	27 (12)
4 2-...3-Pole 200A 2-...3-Pole	11-5/8 (295.3)	23-1/2 (597)	9-1/16 (230.2)	19-1/2 (495.3)	4 (102)	11/32 (8.7)	40 (18)
5 2-...3-Pole 300A 2-...3-Pole	13-3/8 (339.7)	29-3/4 (756)	9-13/16 (249)	25-3/4 (654)	5 (127)	11/32 (8.7)	—

Type 1 General Purpose Enclosure for Bulletins 500-500L Contactors 4-...5-Pole



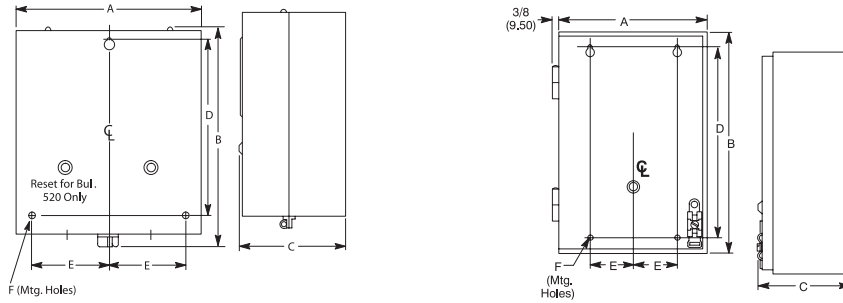
NEMA Size	Dimensions in Inches (Millimeters)						Approx. Shipping Weight in lbs (kg)
	A Width	B Height	C Depth	D	E	F	
3 4-...5-Pole 100A 4 Pole	12-1/8 (308)	20-3/16 (513)	8-1/32 (204)	15-1/2 (394)	4-1/8 (105)	11/32 (8.7)	32 (14)
4 4-...5-Pole 200A 4 Pole	14-1/8 (358.8)	26-5/8 (676.3)	9-3/16 (233.4)	22-3/4 (578)	5 (127)	11/32 (8.7)	49 (22)
5 4 Pole 300A 4 Pole	21-29/32 (556.4)	41-5/32 (1045.4)	10-15/32 (265.9)	39 (990.6)	9-1/2 (241.3)	11/32 (8.7)	—

Note: For Types 3R/12, 4/4X, 4X, and Bolted Type 7 & 9 and 3R, 7 & 9 dimensions, consult your local Allen-Bradley distributor.

Bulletin 500 Line
Approximate Dimensions
For NEMA AC Contactors

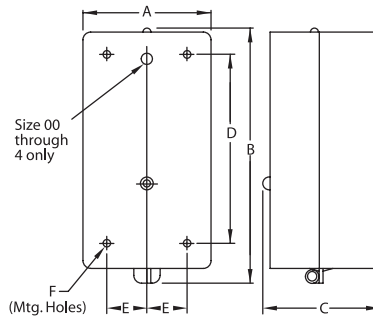
Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Type 1 General Purpose Enclosures for Bulletins 505-520E-520F-520G Starters



NEMA Size	Bulletin No.	Approximate Dimensions in Inches (Millimeters)						Approx. Shipping Weight in lbs (kg)
		A Width	B Height	C Depth	D	E	F	
00	505	6-13/16 (173)	10 (254)	5 (127)	7-1/4 (184)	2-3/4 (69.8)	—	7-1/2 (3.4)
0...1	505-520E*	10-9/16 (268)	12-1/2 (318)	5-31/32 (152)	9-7/8 (251)	4-3/8 (111)	9/32 (7.1)	18 (8.2)
	505-520E† 520F-520G	12-1/2 (318)	14-1/8 (359)	6-1/8 (156)	11-1/4 (286)	4-1/2 (114)	9/32 (7.1)	18 (8.2)
2	505-520E*	11-7/16 (291)	14-9/16 (370)	5-31/32 (152)	11-13/16 (300)	4-1/2 (114)	9/32 (7.1)	21-1/4 (9.6)
	505-520E† 520F-520G	13-1/2 (343)	15-5/8 (397)	6-3/8 (162)	13-1/2 (343)	5-1/2 (140)	9/32 (7.1)	21-1/4 (9.6)
3	505-520E*	15-1/8 (384)	20-3/16 (513)	8-3/16 (208)	16-1/2 (419)	6 (152)	11/32 (8.7)	53 23.(9)
	520F-520G	18-21/32 (474)	19-11/32 (491)	8-1/4 (210)	16-1/2 (419)	8 (203)	11/32 (8.7)	—
4	505-520E*	16-5/8 (422)	27-1/2 (698)	9-5/16 (237)	24 (610)	6-1/4 (159)	11/32 (8.7)	80 (36)
	520F-520G	21-5/32 (537)	27-17/32 (699)	9-7/16 (240)	24 (610)	8-1/2 (216)	11/32 (8.7)	—
5	505-520E 520F-520G	21-29/32 (556)	41-5/32 (1045)	10-15/32 (265.9)	39 (991)	9-1/2 (241)	11/32 (8.7)	—
6	Consult your local Allen-Bradley Distributor.							
7								
8								
9								

Type 1 General Purpose Enclosures for Bulletin 509 Full Voltage Starters

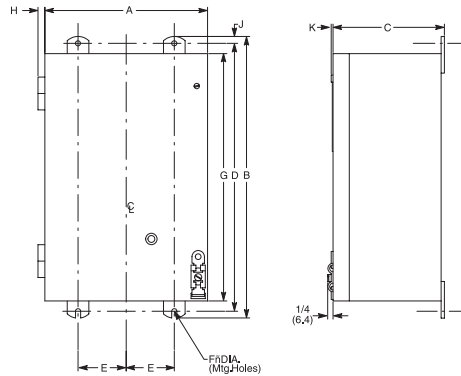


NEMA Size	Approximate Dimensions in Inches (Millimeters)						Approx. Shipping Weight in lbs (kg)	
	A Width	B Height	C Depth	D	E	F		
00 3Ø	6-9/32 (160)	9-3/16 (233)	4-1/2 (114)	6-7/8 (175)	2-1/2 (63.5)	—	4-1/4 (1.9)	
00 1Ø	4-7/8 (124)	7-11/16 (195)	4-5/8 (117)	5-5/8 (143)	1-7/8 (47.5)	—	4 1.(8)	
0...1	6-13/16 (173)	10-5/8 (270)	5-23/32 (145)	8-1/4 (210)	2-3/8 (60.5)	7/32 (5.5)	7-1/4 (3.4)	
2	7-5/16 (816)	13-3/4 (349)	5-23/32 (145)	10-3/4 (273)	2-5/8 (66.5)	9/32 (7.1)	10-1/2 (4.7)	
3	10-1/4 (260)	20-3/16 (513)	7-15/16 (202)	16 (406)	3-3/4 (95.2)	11/32 (8.7)	31 (14)	
4	13-3/8 (340)	29-3/4 (756)	9-31/32 (253)	25-3/4 (654)	4 (102)	11/32 (8.7)	44 (19.8)	
5	16-1/8 (410)	42 (1067)	10-1/8 (254)	38 (965)	6 (152)	11/32 (8.7)	—	
6...7 Wall	25-1/4 (641)	53-5/8 (1362)	14 (356)	52-1/4 (1327)	10-1/4 (261)	—	—	
6 Floor	Consult your local Allen-Bradley Distributor.							
8...9								

* With Reset only.
† With Push Button, Selector Switch or Pilot Light.
Note: For Type 1 with control transformer dimensions, consult your local Allen-Bradley distributor.

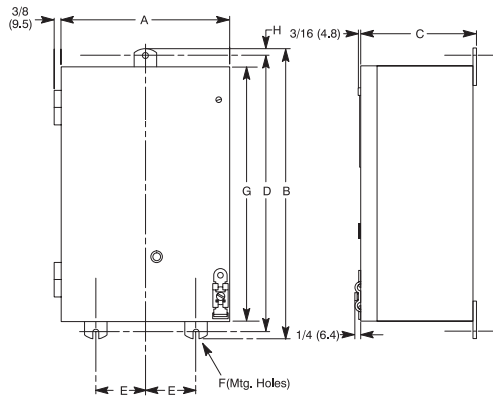
Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Type 3R/12 Enclosure — without Control Transformer for Bulletin 505



NEMA Size	Approximate Dimensions In Inches (Millimeters)									
	A Width	B Height	C Depth	D	E	F	G	H	J	K
0...1	12-1/8 (308)	16-1/16 (408)	6 (152.4)	15-1/4 (387.4)	4-1/2 (114.3)	9/32 (7.1)	14-1/8 (358.8)	3/8 (9.5)	7/16 (11.1)	3/32 (2.4)
2	13-1/8 (333.4)	17-9/16 (446.1)	6-1/4 (158.8)	16-3/4 (425.5)	5 (127)	9/32 (7.1)	15-5/8 (396.9)	3/8 (9.5)	7/16 (11.1)	3/32 (2.4)
3	18-21/32 (473.9)	21-9/16 (547.7)	8-1/8 (206.4)	20-11/16 (525.5)	7-1/2 (190.5)	11/32 (8.7)	19-11/32 (491.3)	3/8 (9.5)	1/2 (12.7)	3/16 (4.8)
4	21-5/32 (537.4)	28-27/32 (732.6)	9-9/32 (235.7)	28 (711.2)	8-1/2 (215.9)	11/32 (8.7)	26-21/32 (677.1)	3/8 (9.5)	1/2 (12.7)	3/16 (4.8)

Type 3R/12 Enclosure — without Control Transformer for Bulletin 509



NEMA Size	Approximate Dimensions In Inches (Millimeters)								Approx. Shipping Weight in lbs (kg)
	A Width	B Height	C Depth	D	E	F	G	H	
0...1	8-3/8 (212.7)	12-7/32 (310.4)	5-7/8 (149.2)	11-15/32 (291.3)	2-1/2 (63.5)	9/32 (7.1)	10-3/8 (263.5)	7/16 (11.1)	13-1/2 (6.1)
2	8-7/8 (225.4)	15-3/8 (390.5)	5-15/16 (150.8)	14-5/8 (371.5)	2-5/8 (66.7)	9/32 (7.1)	13-1/2 (342.9)	7/16 (11.1)	18-1/2 (8.4)
3	12-1/8 (308)	22-7/16 (569.9)	7-15/16 (201.6)	21-9/16 (547.7)	4-7/16 (112.7)	11/32 (8.7)	20-3/16 (512.8)	1/2 (12.7)	35-1/2 (16.1)
4	14-1/8 (358.8)	28-13/16 (731.8)	9 (228.6)	28 (711.2)	5-7/16 (138.1)	11/32 (8.7)	26-5/8 (676.3)	1/2 (12.7)	59-1/2 (27)

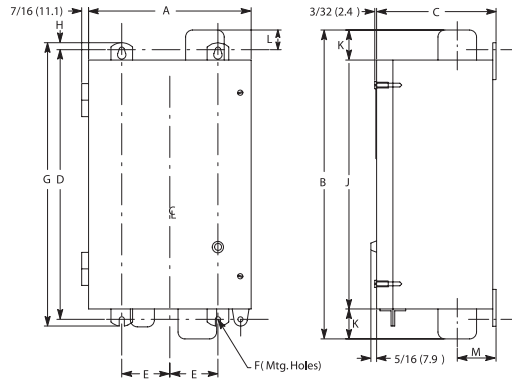
Note: For Type 3R/12 with control transformer dimensions, consult your local Allen-Bradley distributor.

Approximate Dimensions

For NEMA AC Contactors

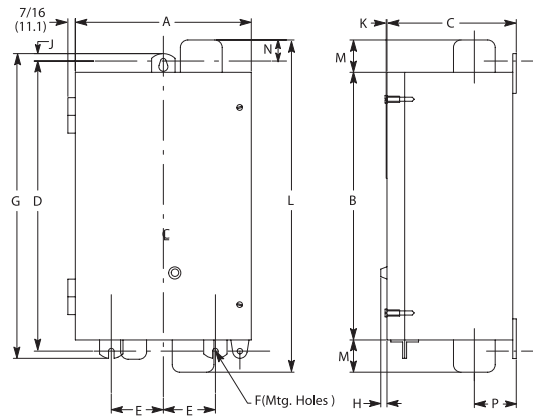
Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Type 4/4X Enclosure — without Control Transformer for Bulletin 505



NEMA Size	Approximate Dimensions In Inches (Millimeters)											
	A Width	B Height	C Depth	D	E	F	G	H	J	K	L	M
0...1	12-1/8 (308)	16-7/8 (428.6)	6-15/22 (164.3)	15-1/4 (387.1)	4-1/2 (114.3)	9/32 (7.1)	16 (406.4)	7/16 (11.1)	14-1/8 (358.8)	1-3/8 (34.9)	3/4 (19.1)	2-5/32 (54.8)
2	13-1/8 (333.4)	18-7/8 (479.4)	6-9/16 (166.7)	16-3/4 (425.5)	5 (127)	9/32 (7.1)	17-1/2 (444.5)	7/16 (11.1)	15-5/8 (396.9)	1-5/8 (41.3)	1 (25.4)	2-5/32 (54.8)
3	18-11/16 (474.7)	22-11/32 (567.5)	8-1/8 (206.4)	20-11/16 (525.5)	7-1/2 (190.5)	11/32 (8.7)	21-9/16 (547.7)	1/2 (12.7)	19-3/8 (492.1)	1-1/2 (38.1)	23/32 (18.3)	2-15/32 (62.7)
4	21-3/16 (538.2)	30-15/16 (785.8)	9-1/4 (235)	28 (711.2)	8-1/2 (215.9)	11/32 (8.7)	28-7/8 (733.4)	1/2 (12.7)	26-11/16 (677.9)V	2-1/8 (54)	1-11/32 (34.2)	3-3/16 (81)

Type 4/4X Enclosure — without Control Transformer for Bulletin 509

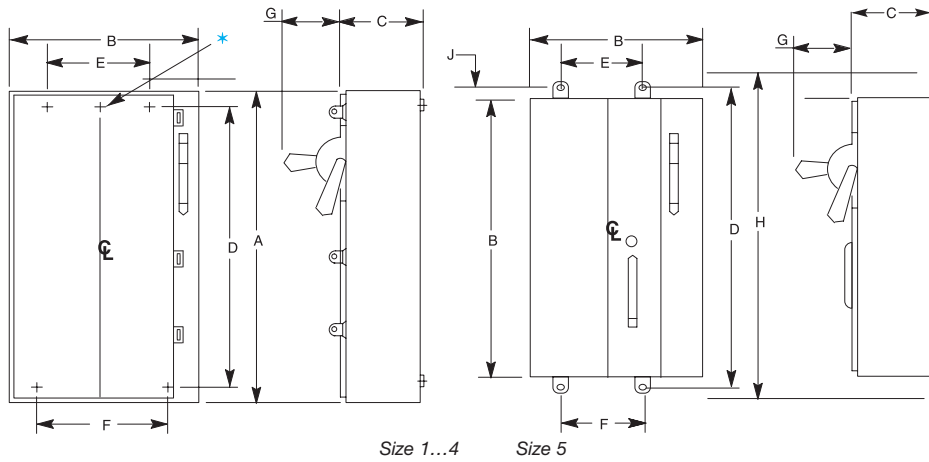


NEMA Size	Approximate Dimensions In Inches (Millimeters)													Approx. Shipping Weight in lbs (kg)
	A Width	B Height	C Depth	D	E	F	G	H	J	K	L	M	N	
0...1	8-3/8 (212.7)	10-3/8 (263.5)	6-7/32 (157.9)	11-15/32 (291.3)	2-1/2 (63.5)	9/32 (7.1)	12-7/32 (310.3)	5/16 (7.9)	7/16 (11.1)	3/32 (2.4)	13-1/8 (333.4)	1-3/8 (34.9)	3/4 (19.1)	15 (6.8)
2	8-7/8 (225.4)	13-1/2 (342.9)	6-11/32 (161.1)	14-5/8 (371.5)	2-5/8 (66.7)	9/32 (7.1)	15-3/8 (390.5)	5/16 (7.9)	7/16 (11.1)	3/32 (2.4)	16-3/4 (425.4)	1-5/8 (41.3)	1 (25.4)	22 (10)
3	12-1/8 (308)	20-7/32 (513.5)	7-27/32 (199.2)	21-9/16 (547.7)	4-7/16 (112.7)	11/32 (8.7)	22-7/16 (569.9)	5/16 (7.9)	1/2 (12.7)	1/8 (3.2)	23-7/32 (589.8)	1-1/2 (38.1)	23/32 (18.3)	35.5 (16.1)
4	14-1/8 (358.8)	26-5/8 (676.3)	8-13/16 (223.8)	27 (685.8)	5-7/16 (138.1)	11/32 (8.7)	27-7/8 (708)	7/32 (5.5)	1/2 (12.7)	1/8 (3.2)	30-7/8 (784.2)	2-1/8 (54)	1-11/32 (34.2)	60 (22.1)

Note: For Type 4/4X with control transformer and Type 4X dimensions, consult your local Allen-Bradley distributor.

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Type 1 (Enclosure Code "A") General Purpose Painted Enclosure for Bulletins 502, 502L, 503, 503L, 506, 506X, 507, 507X, 512, 512M, 513, 513M, 522E, 522F, 522G, 523E, 523F, and 523G, 530, 532, 533, 540, 542, 543, 570, 572, 573



NEMA Size	Bulletin No.	Approximate Dimensions in inches (Millimeters)							Approx. Shipping Weight in lbs (kg)
		A Height	B Width	C Depth	D Mounting	E Mounting	F Mounting	G Handle Depth	
0...2	506X, 507X					*	5.25 (133)	5.56 (141)	40 (18.14)
0...2	502, 502L, 503, 503L, 512, 513	27.50 (968)	10.50 (267)	8.25 (210)	25.13 (639)	*			
0...2	506, 507, 512M, 513M, 522E, 522F, 522G, 523E, 523F, 523G								
3	502, 502L, 503, 503L, 512, 513	30 (762)	20.5 (521)	9.88 (251)	27.63 (702)	15.25 (387)	15.25 (387)	5.56 (141)	90 (40.82)
4	503, 503L, 513								
1PW, 2PW	530, 532, 533								
1YD	540, 542, 543								
3	506, 507, 522E, 522F, 522G, 523E, 523F, 523G								
4	506, 507, 522E, 522F, 522G, 523E, 523F, 523G	50 (1270)	22 (559)	11.19 (284)	47.63 (1210)	15.25 (387)	15.25 (387)	5.56 (141)	250 (113.4)
	502, 502L, 512								
3PW	530, 532, 533								
2YD, 3YD	540, 542, 543								
2	570, 572, 573								
5	502, 502L, 503, 503L, 506, 506X, 507, 507X, 512, 513, 523E, 523F, 523G	56 (1422)	30.5 (775)	13.79 (350)	57.63 (1463)	20 (508)	25.25 (641)	7.62 (194)	360 (163.3)
4PW	530, 532, 533								
5PW	532, 533								
4YD	540, 542, 543								
3, 4	570, 572, 573								
5YD	540, 542, 543								
5, 6	570, 572, 573								
5	522E, 522F, 522G	60 (1524)	37.38 (949)	16.00 (406)	61.69 (1567)	33.88 (861)	33.88 (861)	7.62 (194)	420 (190.5)
5PW	530								

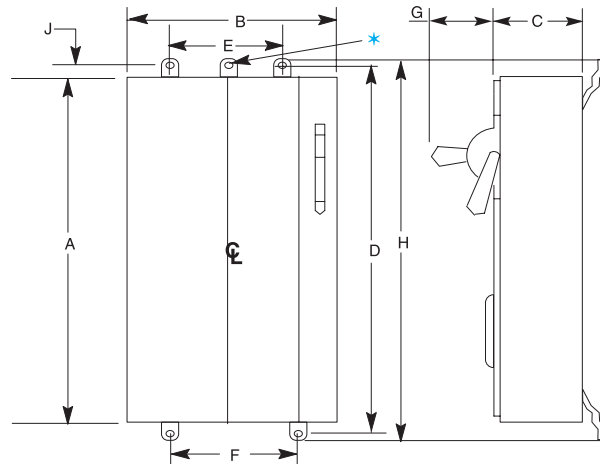
* Sizes 0, 1 and 2 have one top mounting hole located on the center line. Larger size enclosures have two top mounting holes located as shown.

Approximate Dimensions

For NEMA AC Contactors

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Type 3R/4/12 (Enclosure Codes “D”, “F”, and “J”) Rainproof, Dusttight — Industrial Use Enclosures for Bulletins 502, 502L, 503, 503L, 506, 506X, 507, 507X, 512, 512M, 513, 513M, 522E, 522F, 522G, 523E, 523F, 523G, 530, 532, 533, 540, 542, 543, 570, 572 and 573



NEMA Size	Bulletin No.	Approximate Dimensions in inches (Millimeters)									Approx. Shipping Weight in lbs (kg)
		A Height	B Width	C Depth	D Mounting	E Mounting	F Mounting	G Handle Depth	H	J	
0...2	506X, 507X	27.50 (698)	10.50 (267)	8.25 (210)	28.88 (733)	*	5.25 (133)	5.56 (141)	29.88 (759)	0.81 (21)	40 (18.14)
	502, 507 503, 503L, 512, 513										
3	506, 507, 512M, 513M, 522E, 522F, 522G, 523E, 523F, 523G	30 (762)	20.5 (521)	10.19 (259)	31.38 (797.05)	15.25 (387)	15.25 (387)	5.56 (141)	32.38 (822)	0.81 (21)	90 (40.82)
	502, 507 503, 503L, 512, 513										
4	513	50 (1270)	22 (559)	11.5 (292)	51.38 (1305)	15.25 (387)	15.25 (387)	5.56 (141)	52.38 (1330)	0.71 (18)	250 (113.4)
1PW, 2PW	530, 532, 533										
1YD	540, 542, 543	56 (1422)	30.5 (775)	13.79 (350)	57.63 (313)	20 (508)	25.25 (641)	7.62 (194)	62.62 (1590)	1 (25.4)	360 (163.3)
3	503, 503L, 506, 507, 513, 522E, 522F, 522G, 523E, 523F, 523G										
4	502, 502L, 507, 512, 522E, 522F, 522G, 523E, 523F, 523G	60 (1524)	37.38 (949)	16 (906)	61.69 (1567)	33.88 (861)	33.88 (861)	7.62 (194)	63.5 (1613)	1.5 (38)	420 (190.5)
3PW	530, 532, 533										
2YD, 3YD	540, 542, 543	84 (2134)	39.5 (1003)	18 (457)	—	—	—	7.62 (194)	—	—	650 (249.8)
2	570, 572, 573										
4PW	530, 532, 533	60 (1524)	37.38 (949)	16 (906)	61.69 (1567)	33.88 (861)	33.88 (861)	7.62 (194)	63.5 (1613)	1.5 (38)	420 (190.5)
5PW	532, 533										
4YD	540, 542, 543	84 (2134)	39.5 (1003)	18 (457)	—	—	—	7.62 (194)	—	—	650 (249.8)
3, 4	570, 572, 573										
5	502, 502L, 503, 503L, 506, 512, 513 523E, 523F, 523G	60 (1524)	37.38 (949)	16 (906)	61.69 (1567)	33.88 (861)	33.88 (861)	7.62 (194)	63.5 (1613)	1.5 (38)	420 (190.5)
6	512†, 513										
6	512‡	84 (2134)	39.5 (1003)	18 (457)	—	—	—	7.62 (194)	—	—	650 (249.8)
5	522E, 522F, 522G										
5PW	530	60 (1524)	37.38 (949)	16 (906)	61.69 (1567)	33.88 (861)	33.88 (861)	7.62 (194)	63.5 (1613)	1.5 (38)	420 (190.5)
5YD	540, 542, 543										
5, 6	570, 572, 573	84 (2134)	39.5 (1003)	18 (457)	—	—	—	7.62 (194)	—	—	650 (249.8)
7	512, 513										

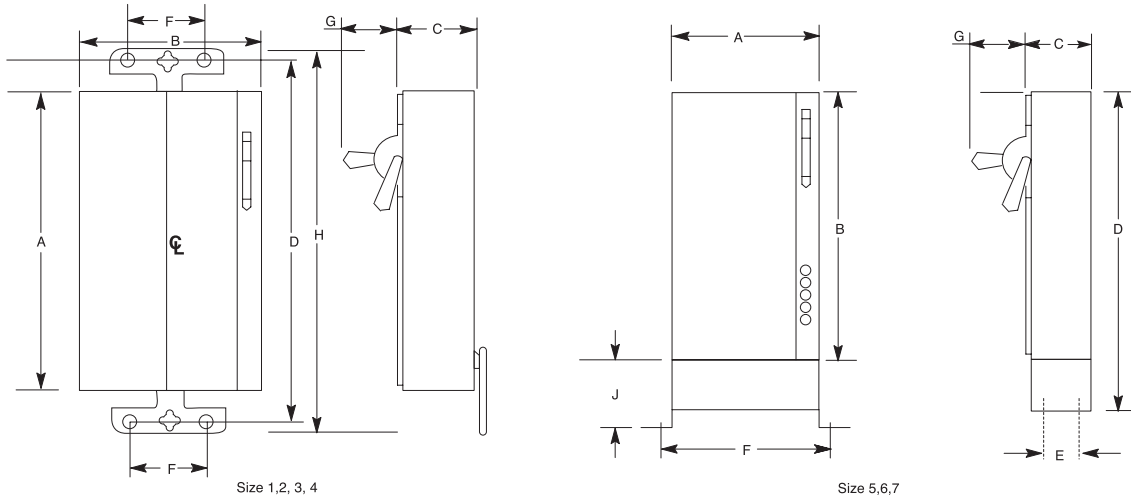
* Sizes 0, 1, and 2 have one top mounting hole located on the center line. All sizes in large enclosures have two top mounting holes located as shown.

† Fusible disconnect switch with class J fuses.

‡ Fusible disconnect switch with class R fuses.

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Type 4/4X (Enclosure Codes "C") Stainless Steel — Industrial Use Enclosures for Bulletins 502, 502L, 503, 503L, 506, 507, 512, 512M, 513, 513M, 522E, 522F, 522G, 523E, 523F, and 523G



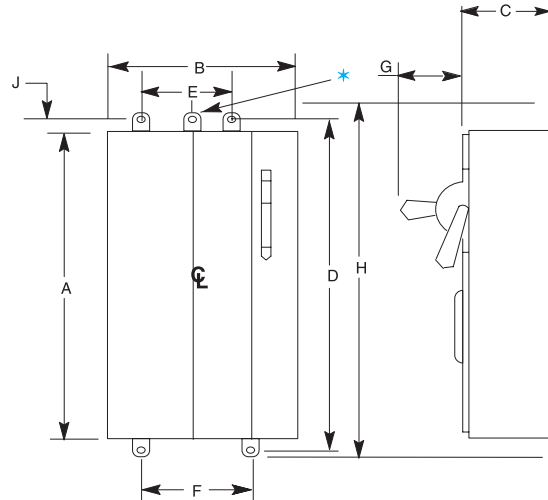
NEMA Size	Bulletin No.	Approximate Dimensions in inches (Millimeters)									Approx. Shipping Weight in lbs (kg)
		A Height	B Width	C Depth	D Mounting	E Mounting	F Mounting	G Handle Depth	H	J	
0...2	1232X	30	20.5	8.72	34.88	10	10	5.56	36.38	—	90
1...3	1233X	(762)	(521)	(221)	(886)	(254)	(254)	(141)	(924)	—	(40.82)
3...4	1232X	50	22	9.90	54.88	15.25	15.25	5.56	56.38	—	250
1PW, 2PW	1282, 1283										
1YD, 2YD	1242, 1243										
2	1272, 1273										
4	1232X										
5	1233X	56	30.5	13.78	—	5.56	40.72	7.62	—	—	—
3PW, 4PW	1282										
3PW...5PW	1283										
3YD, 4YD	1242										
3YD...5YD	1243										
3, 4	1272										
3...5	1273										
5	1232X	56	30.5	13.78	—	7.62	34	7.62	—	9.68	360
6	1233X										
5PW	1282										
5YD	1242										
5, 6	1272										
6	1273										
6	1232X*	60	37.38	16	—	—	40.72	7.62	—	9.68	420
6	1232X†										
7	1232X, 1233X	84	39.5	18	—	—	42.84	7.62	—	9.68	650
		(2134)	(1003)	(457)			(1088)	(194)		(246)	(294.8)

* Fusible disconnect switch with class J fuses.
 † Fusible disconnect switch with class R fuses.

Bulletin 500 Line
Approximate Dimensions
 For NEMA AC Contactors

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Type 4/4X (Enclosure Codes "C") Stainless Steel — Industrial Use Enclosures for Bulletins 502, 502L, 503, 503L, 506, 507, 512, 512M, 513, 513M, 522E, 522F, 522G, 523E, 523F, and 523G



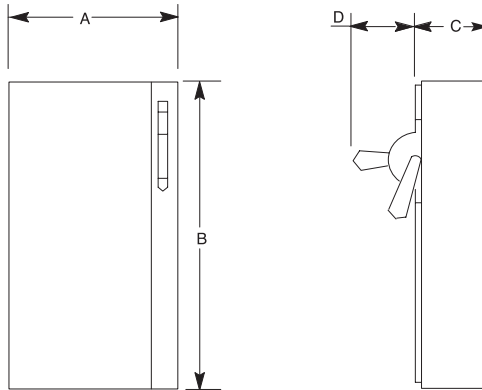
NEMA Size	Bulletin No.	Approximate Dimensions in inches (Millimeters)									Approx. Shipping Weight in lbs (kg)
		A Height	B Width	C Depth	D Mounting	E Mounting	F Mounting	G Handle Depth	H	J	
0...2	502, 502L 503, 503L 512, 513	27.50 (698)	10.50 (267)	8.25 (210)	28.88 (733)	*	7 (178)	5.56 (141)	29.75 (756)	0.81 (21)	40 (18.14)
0...2	506, 507, 512M, 513M, 522E, 522F, 522G, 523E, 523F, 523G,	30 (762)	20.5 (521)	9.88 (251)	31.38 (797)	17 (432)	17 (432)	5.56 (141)	32.26 (819)	0.81 (21)	90 (40.82)
3	502, 502L, 503, 503L, 512, 513										
4	503, 503L, 513										
3	506, 507, 522E, 522F, 522G, 523E, 523F, 523G	50 (1270)	22 (559)	11.19 (284)	51.38 (1305)	18.5 (470)	18.5 (470)	5.56 (141)	52.26 (1327)	0.81 (21)	250 (113.4)
4	502, 502L 506, 507, 512, 522F, 523G, 523E 523F, 523G										
5...6	503, 503L 507, 513, 523E, 523F, 523G	56 (1422)	30.5 (775)	12.34 (313)	57.63 (1464)	20 (508)	25.25 (641)	5.56 (141)	68.62 (1489)	1 (25.4)	360 (163.3)
5	512							7.62 (194)			
6	512†										
5...6	502, 502L 506										

* Sizes 0, 1, and 2 have one top mounting hole located on the center line. All sizes in large enclosures have two top mounting holes located as shown.

† Fusible disconnect switch with class J fuses.

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Type 4/4X (Enclosure Codes "S") Non-metallic, Corrosion-resistant Enclosures for Bulletins 502, 502L, 503, 503L, 506, 507, 512, 513, 522E, 522F, 522G, 523E, 523F, and 523G



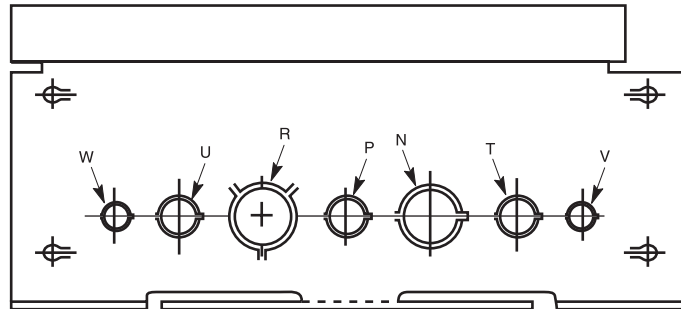
NEMA Size	Bulletin No.	Approximate Dimensions in inches (Millimeters)				Approx. Shipping Weight in lbs (kg)
		A Height	B Width	C Depth	D Handle Depth	
0...2	512, 513	24 (610)	10 (254)	6.88 (175)	4.88 (124)	28 (12.7)
0...2	506, 507, 522E, 522F, 522G, 523E, 523F, 523G,	24 (610)	21 (533)	9.25 (235)	4.88 (124)	60 (27.2)
3	512					
4	513	49.19 (1249)	21.38 (543)	11 (279)	4.88 (124)	180 (81.6)
3	506, 507, 522E, 522F, 522G, 523E, 523F, 523G					
4	506, 507, 512, 523E, 523F, 523G	76.52 (1422)	21.63 (549)	19 (483)	5.75 (146)	280 (127)
5	506, 507, 512, 513, 522E, 522F, 522G, 523E, 523F, 523G					

Approximate Dimensions

For NEMA AC Contactors

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Type 3R (Enclosure Code "N") Rainproof Enclosures with Extra Panel Space — for Bulletins 1232X and 1233X

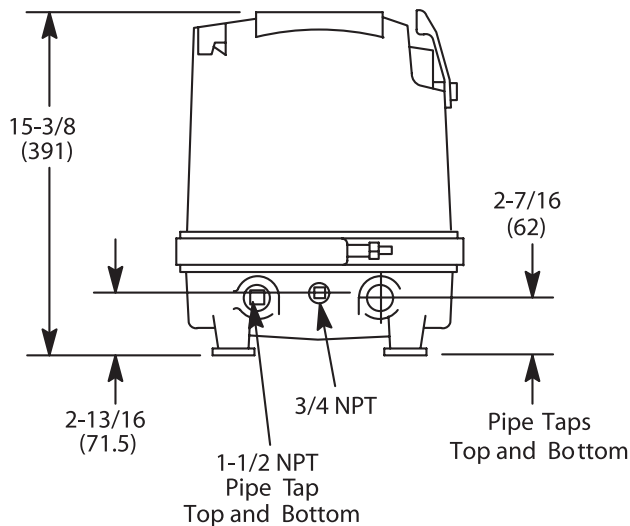
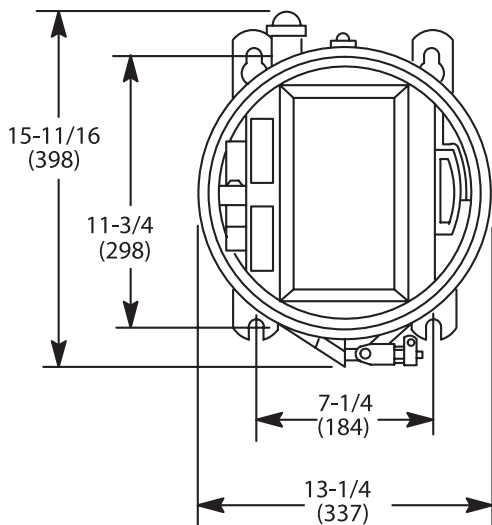


Bulletin No.	NEMA Size	Approximate Dimensions in inches (Millimeters)							
		N		P		R		T	
		Inside	Outside	Inside	Outside	Inside	Outside	Inside	Outside
1232X, 1233X	1	1-3/8 (35)	1-23/32 (44)	7/8 (22)	1-1/8 (29)	1-23/32 (44)	1-31/32 (50)	7/8 (22)	1-1/8 (29)
	2	1 in Hub	1-1/4 in Hub	1/2 in Hub	3/4 in Hub	1-1/4 in Hub	1-1/2 in Hub	1/2 in Hub	3/4 in Hub
	3	7/8 (22)	1-1/8 (29)	1-31/32 (50)	2-15/32 (63)	1-3/8 (35)	—	1-3/8 (35)	1-23/32 (44)
	4	1/2 in Hub	3/4 in Hub	1-1/2 in Hub	2 in Hub	1 in Hub	—	1 in Hub	1-1/4 in Hub
	5	7/8 (22) 1/2 in Hub	1-1/8 (29) 3/4 in Hub	—	—	1-31/32 (50) 1-1/2 in Hub	2-15/32 (63) 2 in Hub	1-31/32 (50) 1-1/2 in Hub	2-15/32 (63) 2 in Hub

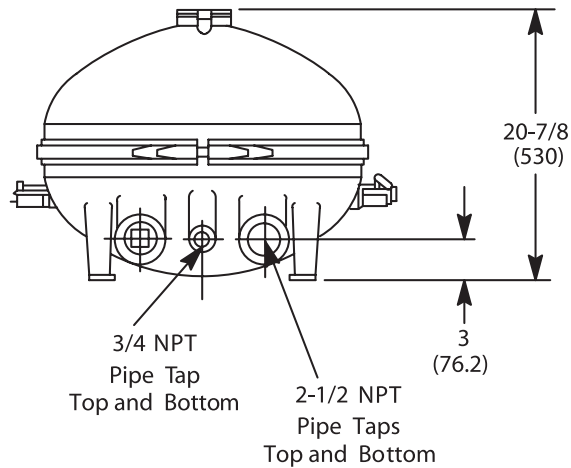
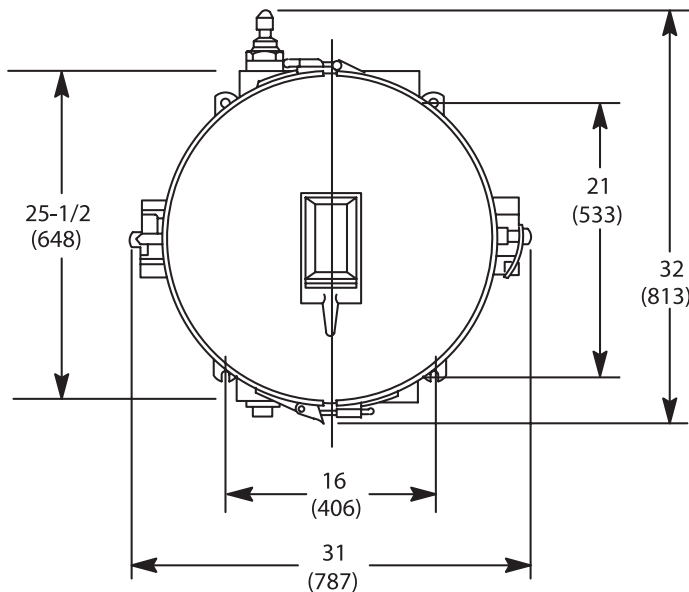
Bulletin No.	NEMA Size	Approximate Dimensions in inches (Millimeters)					
		U		V		W	
		Inside	Outside	Inside	Outside	Inside	Outside
1232X, 1233X	1	7/8 (22)	1-1/8 (29)	—	—	7/8 (22)	1-1/8 (29)
	2	1/2 in Hub	3/4 in Hub	—	—	1/2 in Hub	3/4 in Hub
	3	7/8 (22)	1-1/8 (29)	1-31/32 (50)	2-15/32 (63)	3 (76)	3 (76)
	4	1/2 in Hub	3/4 in Hub	1-1/2 in Hub	2 in Hub	2-1/2 in Hub	2-1/2 in Hub
	5	7/8 (22) 1/2 in Hub	1-1/8 (29) 3/4 in Hub	3 (76) 2-1/2 in Hub	3-5/8 (96) 3 in Hub	3 (76) 2-1/2 in Hub	3-5/8 (96) 3 in Hub

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Unilock Enclosures — Type 3R, 7 & 9, Class I (Enclosure Code “U”) Groups C & D, Class II, Groups E, F & G — Divisions 1 & 2 for Bulletins 505-509-513



Sizes 0-1-2



Sizes 3-4-5

Approximate Dimensions

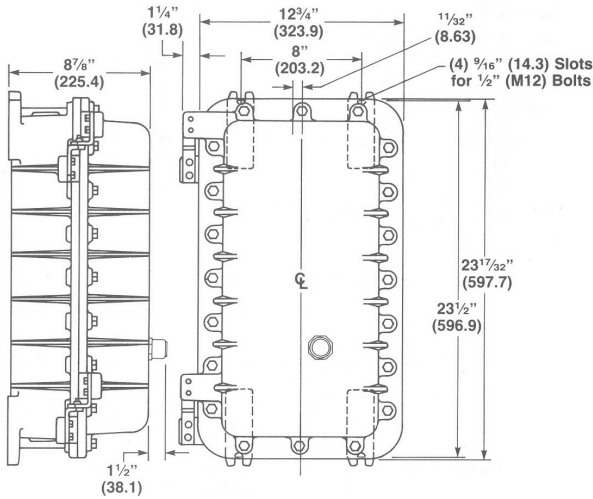
For NEMA AC Contactors

NEMA Starters and Combination Starters

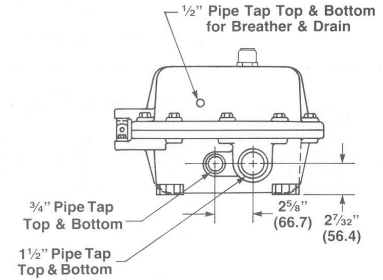
Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Bolted Enclosures — Type 7 & 9 and Type 3R, 7 & 9, Class I, Groups C & D, Class II, Groups E, F & G — Divisions 1 & 2 for Bulletin 505 Full Voltage Reversing Starters

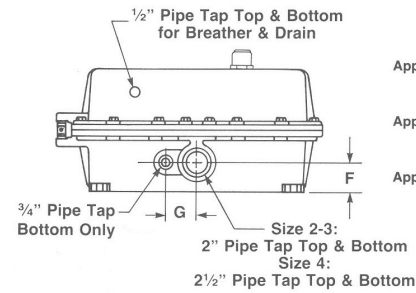
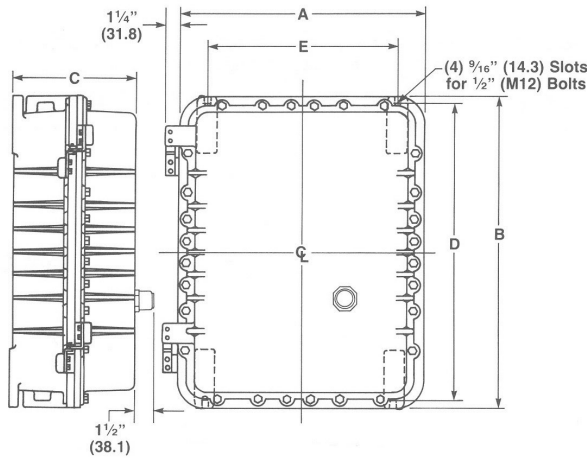
NEMA Sizes 0...1



Approximate Shipping Weight –
78 Lbs. (35.1 Kg.)



NEMA Sizes 2...4



NEMA SIZE 2
Approximate Shipping Weight –
185 Lbs. (83.25 Kg.)

NEMA SIZE 3
Approximate Shipping Weight –
199 Lbs. (89.55 Kg.)

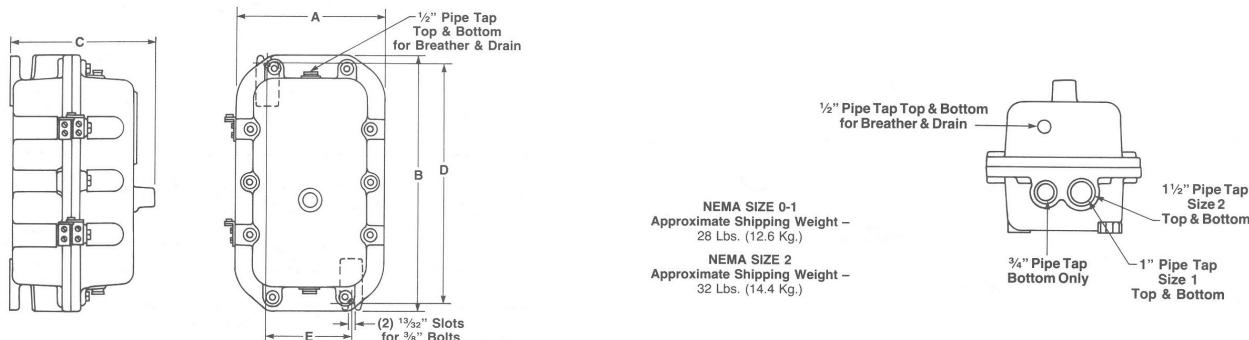
NEMA TYPE 4
Approximate Shipping Weight –
266 Lbs. (119.7 Kg.)

NEMA Size	APPROXIMATE DIMENSIONS IN INCHES (MILLIMETERS)						
	A WIDE	B HIGH	C DEEP	D	E	F	G
2	21	26-3/4	10-7/32	25-1/2	16-1/4	2-7/16	2-5/8
3	(533.4)	(679.5)	(259.6)	(647.7)	(412.8)	(61.9)	(66.7)
4	21-3/8	32-5/8	11-7/16	31-3/8	16-1/4	2-13/16	3-1/2
	(542.9)	(828.7)	(290.5)	(796.9)	(412.8)	(71.4)	(88.9)

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

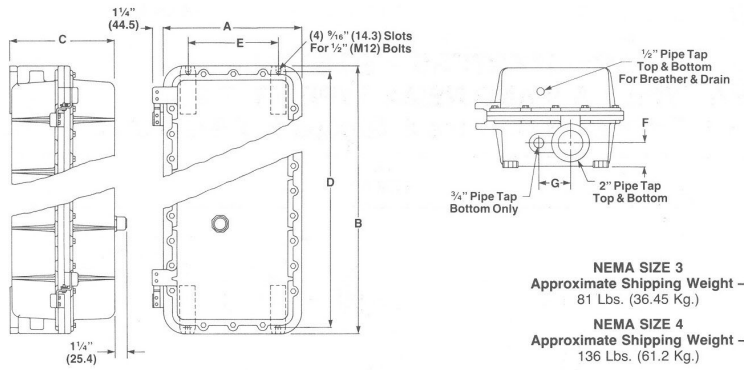
Bolted Enclosures — Type 7 & 9 and Type 3R, 7 & 9, Class I, Groups C & D, Class II, Groups E, F & G — Divisions 1 & 2 for Bulletin 509 Full Voltage Starters

NEMA Sizes 0...2



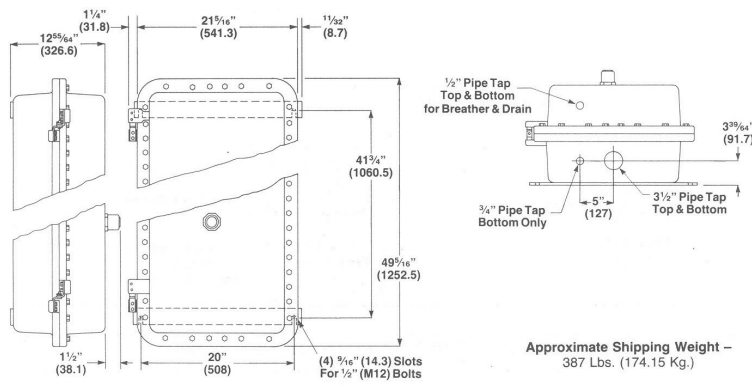
NEMA Size	APPROXIMATE DIMENSIONS IN INCHES (MILLIMETERS)				
	A WIDE	B HIGH	C DEEP	D	E
0-1	8-3/4 (222.2)	15-1/16 (382.6)	8-13/18 (208.8)	14-3/16 (360.4)	5 (127)
2	8-7/8 (225.4)	18-5/16 (465.1)	8-13/16 (208.8)	17-7/16 (442.9)	5-3/8 (136.5)

NEMA Sizes 3...4



NEMA Size	APPROXIMATE DIMENSIONS IN INCHES (MILLIMETERS)						
	A WIDE	B HIGH	C DEEP	D	E	F	G
3	12-3/4 (323.9)	23-17/32 (597.7)	8-7/8 (225.4)	23-1/2 (596.9)	8 (203.2)	2-7/32 (56.4)	2-5/8 (66.7)
4	15-1/8 (384.2)	32-5/8 (828.7)	10-3/8 (269.9)	31-3/8 (796.9)	10 (254)	2-9/18 (65.1)	3-1/2 (88.9)

NEMA Sizes 5



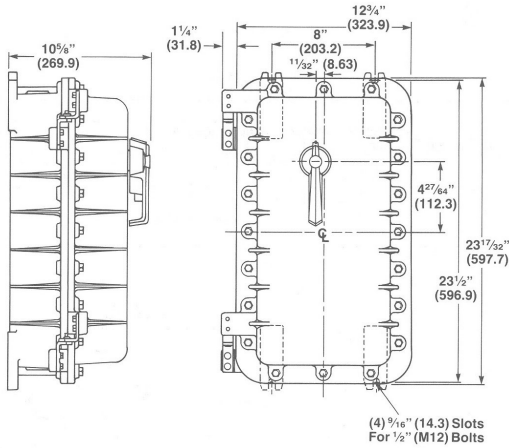
Approximate Dimensions

For NEMA AC Contactors

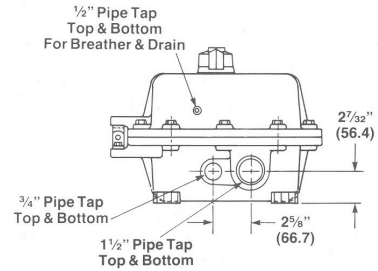
Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Bolted Enclosures — Type 7 & 9 and Type 3R, 7 & 9, Class I, Groups C & D, Class II, Groups E, F & G — Divisions 1 & 2 for Bulletin 513 Full Voltage Combination Starters

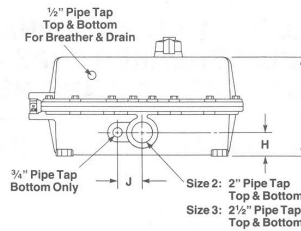
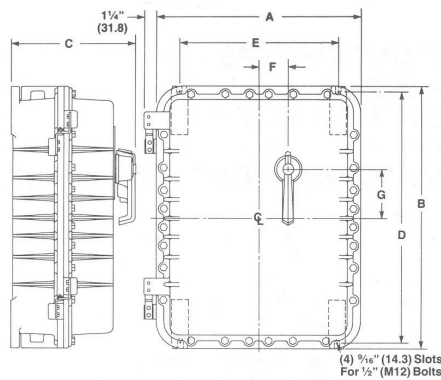
NEMA Sizes 0...2



Approximate Shipping Weight –
83 Lbs. (37.35 Kg.)

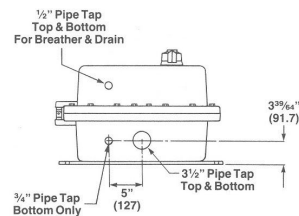
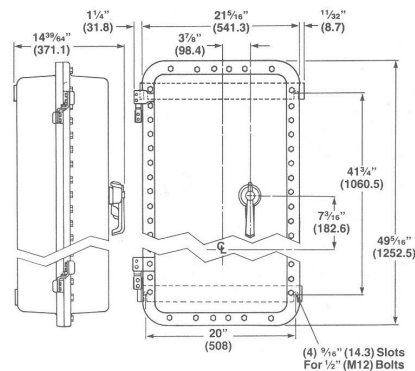


NEMA Sizes 3...4



NEMA Size	APPROXIMATE DIMENSIONS IN INCHES (MILLIMETERS)									APPROX. SHIP WT. IN LBS. (Kg)
	A WIDE	B HIGH	C DEEP	D	E	F	G	H	J	
3	21 (533.4)	26-3/4 (679.5)	11-31/32 (304.1)	25-1/2 (647.7)	16-1/4 (412.8)	2-7/8 (73)	4-13/16 (122.2)	2-7/16 (61.9)	2-5/8 (66.7)	200 (90)
4	21-3/8 (542.9)	32-5/8 (828.7)	13-3/16 (335)	31-3/8 (796.9)	16-1/4 (412.8)	2-11/16 (68.3)	5-1/4 (133.4)	2-13/16 (71.4)	3-1/2 (88.9)	275 (123.8)

NEMA Sizes 5



Approximate Shipping Weight –
430 Lbs. (193.5 Kg.)

Bulletin 500 Line of Contactors and Starters



Used on Size 00, Series B



Used on Size 00, Series D



Used on Size 0 through 5

AC Operating Coils

Voltage (V)	Frequency (Hz)	Size 00		Size 0...1 Size 15/20...30 A		Size 2 Size 60 A		
		Series A	Series B	Series D	2-...3-Pole*†	4-Pole* 4-...5-Pole†	2-Pole* 2-...3-Pole†	3-...4-Pole* 4-...5-Pole†
		Part No.						
24	50	—	GA407	TA407	—	—	—	—
	60	69A27	GA013	TA013	CB013		CC013	CC013C
115...120 110	60	69A86	—	TA473	CB236		CC236	CC236C
	50		GA473‡		CB322	CB322C	CC322	CC322C
110...115	50	—	—	—	CB249	CC249	CC249C	
200...208	60	69A113	—	TA049	CB249		CC249	CC249C
208	60	—	GA049	—	—	—	—	
220	50	—	GA474§	—	—	—	—	
220...230	50	69A83	—	TA474§	CB339	CB339C	CC339	CC339C
230...240	50		—		CB342	CB342C	CC342	CC342C
	60		—		CB254		CC254	CC254C
240	50	—	GA442	—	—	—	—	
	60	—	—	—	—	—	—	
277	60	69A52	GA060	TA480	CB260		CC260	CC260C
380	50	69A11	GA454	TA071	CB354	CB354C	CC354	CC354C
415	50	69A116	GA457	TA457	CB357	CB357C	CC357	CC357C
440	50	—	GA475	—	—	—	—	
440...460 460...480	50	69A288	—	—	—	—	—	—
	60		—	—	—	—	—	
440...460	50	—	GA475	TA475	CB360	CB360C	CC360	CC360C
460...480	60	—	—	—	CB273		CC273	CC273C
480	60	—	—	TA475	—	—	—	—
500	50	69A81	GA464	TA479	CB364	CB364C	CC364	CC364C
575...600	60		—	—	CB278		CC278	CC278C
600	60	—	GA476	TA476	—	—	—	—
Voltage (V)	Frequency (Hz)	Size 3 Size 100 A			Size 4 Size 200 A		Size 5 Size 300 A	
		2-Pole* 2-...3-Pole†	3-...4-Pole* 4-...5-Pole†	3-...4-Pole* 4-...5-Pole†	2-Pole* 2-...3-Pole†	3-...4-Pole* 4-...5-Pole†	Series A	Series L
		Part No.						
24	60	CD013	CD013C	—	—	—	—	—
—	60	CD236	CD236C	—	CE236	CE236C	CF236	AF236
	50				—	—	—	—
110...115	50	CD322	CD322C	—	CE322	CE322C	CF322	AF322
200...208	60	CD249	CD249C	—	CE249	CE249C	CF249	AF249
220...230	50	CD339	CD339C	—	CE339	CE339C	CF339	AF339
230...240		CD342	CD342C	—	CE342	CE342C	CF342	AF342
	277	60	CD254	CD254C	—	CE254	CE254C	CF254
CD260			CD260C	—	CE260	CE260C	CF260	AF260
380	50	CD354	CD354C	—	CE354	CE354C	CF354	AF354
415		CD357	CD357C	—	CE357	CE357C	CF357	AF357
440...460	60	CD360	CD360C	—	CE360	CE360C	CF360	AF360
460...480		CD273	CD273C	—	CE273	CE273C	CF273	AF273
500	50	CD364	CD364C	—	CE364	CE364C	CF364	AF364
575...600	60	CD278	CD278C	—	CE278	CE278C	CF278	AF278

* For Non-Motor Loads (Bulletin 500L).
 † For Motor Rated Contactors and Starters.
 ‡ Also for 120V, 60Hz.
 § Also for 240V, 60Hz.

NEMA Renewal Parts

Bulletin 500 Line of Contactors and Starters, Continued

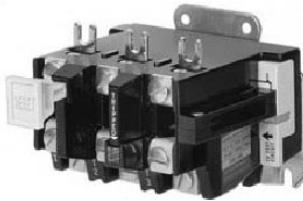
Single Pole Contact Kit — Sizes 00...5 (Includes Front and Rear Stationary Contact, Movable Contact and Contact Spring)

Size	Motor Rated Contactors and Starters (Bulletin 500, 505, 509, and 520)		Non-Motor Rated Contactors (Bulletin 500L)		
	Part No.	Part No.	Size	No. of Poles	Part No.
00 (Series A)*†	2-Pole	Z-21101	—	—	—
	3-Pole	Z-21102			
	4-Pole	Z-21103			
0	40410-331-51‡		15/20 A	2...3	40410-331-53‡
1	40410-331-52‡		30 A	2...3	40410-331-54‡
1P	40410-331-55‡		60 A	2...3	40420-322-52‡
2	40420-322-51		100 A	2...3	40430-300-52
				4	40430-300-53
3	40430-300-51		200 A	2...3	40440-325-52
4	40440-300-51			4	40440-325-53
5 (Series A)	Z-34042§		300 A (Series A)	2	Z-34119
	Z-34043¶			3	Z-34120
5 (Series L)	42450-805-01		300 A (Series L)	2...3	42450-805-02
6 (Series B&C)	40783-802-02		540A (Series B&C)	3	40783-802-02



Manual Reset (Eutectic Alloy) Overload Relays
Heater Elements — Order heater elements as a separate item. See pages 1-45 and 1-47 for heater element selection tables.

Size	Part No.
3Ø	
00 (Series A)	Bulletin 505 use Cat. No. 815-BOV16 Bulletin 505X-509 use Cat. No. 815-BOV4
00 (Series B & D)	Cat. No. 592-JOV16
0...1	42185-800-01▶
2	40185-800-01▶
3	40185-801-01▶
4	40185-802-01▶
5	Cat. No. 592-BOV16
1Ø	
00 (Series A)	Cat. No. 815-BOV4
00 (Series B & D)	Cat. No. 592-BOV4
0...1	42185-804-01▶
1P	40185-803-01▶
2	40185-804-01▶
3	40185-805-01▶



Note: Auxiliary contacts on Size 3 and 4 overload relays are replaceable. Order Cat. No. 595-A34. See page 1-94 for complete information.

* There are no replacement contacts for Series B and Series D, Size 00 device.

† Noted part numbers are for a complete set of movable contacts and springs. Stationary contacts are available **only** as part of the Stationary Contact Block Assembly.

‡ Not for use on Power Pole Adders. Replace complete Power Pole Adder Kit with one selected from the listing on page 1-94.

§ Does not accommodate terminal mounted current transformers.

¶ Accommodates terminal mounted current transformers.

▶ Mounting Plate is not included.

Power Pole Adder Kit (Used Only for 4- and 5-Pole Devices)

Motor Rated Contactors and Starters	
Size	Cat. No.
0...1	599-P01A
2	599-P2A
3	599-P3A
4	599-P4A
Non-Motor Rated Contactors	
Rating (A)	Part No.
15/20	40410-452-04
30	40410-452-08
60	40420-452-04
100	40430-453-51
200	40440-452-51
300	42450-600-01



Motor Load Rated Contactors and Starters — Bulletin 702-709 (Series K)



Size 00



Size 0 through 5

Bulletin 702/709 (Series K) Operating Coils

Voltage (V)	Frequency (Hz)	Size 00	Size 0	Size 1	Size 2		Size 3		Size 4		Size 5
					2-...4-Pole	5-Pole	2-...3-Pole	4-...5-Pole	2-...3-Pole	4...5-Pole	
Part No.											
24	60	69A27	70A27	71A27	72A27	72A873	73A27	73A873	—	—	—
110	50	69A86	70A86	71A86	72A86	72A803	73A86	73A803	74A86	74A803	CF236
120	60										
208	60	69A113	70A113	71A113	72A113	72A875	73A113	73A875	74A113	74A875	CF249
220	50	69A83	70A83	71A83	72A83	72A804	73A83	73A804	74A83	74A804	CF254
240	60										
440	50	69A288	70A288	71A288	72A288	72A805	73A288	73A805	74A288	74A805	CF273
480	60										
550	50	69A81	70A81	71A81	72A81	72A987	73A81	73A987	74A81	74A987	CF278
600	60										

Overload Relays – Manual Reset

NEMA Size	Single Pole		Block Style	
	1 N.C.	1 N.O.-1 N.C.	1 N.C.	1 N.O.-1 N.C.
	Cat. No.	Cat. No.	Cat. No.	Cat. No.
00, 0, 1, 5	815-BOV4	815-BOV49	815-BOV16	815-BOV169
2	815-COV4	815-COV49	815-COV16	815-COV169
3	815-DOV4	815-DOV49	815-DOV16	815-DOV169
4	815-EOV4	815-EOV49	815-EOV16	815-EOV169



Single Pole Manual Reset Overload Relay (Less Element)



Block Style Manual Reset Overload Relay (Less Element)

NEMA Size

No. of Contacts	00	0	1	2	3	4	5
1	N/A	Z-34037	Z-34038	Z-34039	Z-34040	Z-34041	Z-34042* Z-34042†
2	Z-21101‡	Order Required Number of Single Contact Kits					
3	Z-21102‡						
4	Z-21103‡						



Complete Contact Kit (Includes Front Stationary, Rear Stationary and Movable Contact and Contact Spring)

* Does not accommodate terminal mounted current transformers.

† Accommodates terminal mounted current transformers.

‡ Noted part numbers are for a complete set of movable contacts and springs. Stationary contacts are available **only** as part of the Stationary Contact Block Assembly.

Solid-State Overload Relays

Overload Relay Code Selection

For Application on Bulletin 500 Line Starters and NEMA Pump Panels

Starters Without Overload Relays for Field Assembly of Starters Using Bulletin 592 Overload Relays †‡§

These products are intended for field installation of Bulletin 592 Eutectic, or 592 solid-state overload relays. (Select Bulletin 592 overload relays from page 1-155...page 1-157.) They ship in a starter carton with provisions for mounting the overload relay (includes a starter mounting plate, screws/bolts and instructions).

Eutectic Alloy Overload Relays — Overload relay codes do not apply. Use Cat. No. as listed in product selection tables. Select heater elements from page 1-163. Starter Cat. Nos. marked in blue with eutectic alloy overload relays are part of the AB Express Program. Starters with solid-state overload relays are not presently part of the AB Express Program.

* All Sizes — No overload relay.

† Bulletins 520, 522 and 523 require two overload relays.

‡ Bulletins 530, 1282 and 1283 require two overload relays. When selecting the proper solid-state overload relay or heater, divide motor nameplate full load amperes by 2.00.

§ Use this value to select the proper overload relays.

§ Bulletins 540, 1242 and 1243 have one overload relay. When selecting the proper solid-state overload relay or heater, divide motor nameplate full load amperes by 1.73. Use this value to select the proper overload relays.

Solid-State Overload Relay for 3Ø Applications: Class 10, 20, or 30

For use with Bulletins 505, 505V, 506, 507, 509, 512, 512M, 513, 520, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1232X, 1233X, 1242, 1243, 1272, 1273, 1282, and 1283. †‡§

NEMA Size	Full Load Current Adjustment Range (A)	3Ø Manual Reset Overload Relay Code			3Ø Automatic/Manual Reset Overload Relay Code		
		Class 10	Class 20	Class 30	Class 10	Class 20	Class 30
00	0.1...0.32	A1A	A2A	A3A	A4A	A5A	A6A
	0.32...1.0	A1C	A2C	A3C	A4C	A5C	A6C
	1.0...2.9	A1D	A2D	A3D	A4D	A5D	A6D
	1.6...5.0	A1E	A2E	A3E	A4E	A5E	A6E
	3.7...12	A1F	A2F	A3F	A4F	A5F	A6F
0, 1 1PW 1YD	0.19...0.6	A1B	A2B	A3B	A4B	A5B	A6B
	0.32...1.0	A1C	A2C	A3C	A4C	A5C	A6C
	1.0...2.9	A1D	A2D	A3D	A4D	A5D	A6D
	1.6...5.0	A1E	A2E	A3E	A4E	A5E	A6E
	3.7...12	A1F	A2F	A3F	A4F	A5F	A6F
1	12...38	A1H	A2H	A3H	A4H	A5H	A6H
	5.7...18	A1G	A2G	A3G	A4G	A5G	A6G
2 2PW 2YD	12...38	A1H	A2H	A3H	A4H	A5H	A6H
	14...45	A1J	A2J	A3J	A4J	A5J	A6J
3 3PW 3YD	14...45	A1J	A2J	A3J	A4J	A5J	A6J
	23...75	A1K	A2K	A3K	A4K	A5K	A6K
	66...110	A1L	A2L	A3L	A4L	A5L	A6L
4 4PW 4YD	23...75	A1K	A2K	A3K	A4K	A5K	A6K
	66...110	A1L	A2L	A3L	A4L	A5L	A6L
5 5PW 5YD	57...180	A1M	A2M	A3M	A4M	A5M	A6M
	96...300	A1N	A2N	A3N	A4N	A5N	A6N
6 6PW 6YD	200...630	A1R	A2R	A3R	A4R	A5R	A6R
	256...810						
7+	384...1215	❖			❖		
8+	800...2250						

‡ Bulletins 520, 522 and 523 require two overload relay codes to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay.

‡ Bulletins 530, 1282 and 1283 have two overload relays and require two overload relay codes to complete the Cat. No. When selecting the proper SMP overload relay, divide motor nameplate full load amperes by 2.00. Use this value to select the proper overload relay codes.

§ Bulletins 540, 1242 and 1243 have one overload relay. When selecting the proper SMP overload relay, divide motor nameplate full load amperes by 1.73. Use this value to select the proper overload relay code.

† These solid-state overload relays have an interposing relay with a 120V AC coil.

❖ Order by description.

Solid-State Overload Relay for 1Ø Applications: Class 10 or 20

For use with Bulletins 505, 505V, 506, 507, 509, 512, 512M, 513, 1232X, and 1233X.

NEMA Size	Full Load Current Adjustment Range (A)	1Ø Manual Reset Overload Relay Code		1Ø Automatic/Manual Reset Overload Relay Code	
		Class 10	Class 20	Class 10	Class 20
00	2...7	S1A	S2A	S4A	S5A
	5...15	S1B	S2B	S4B	S5B
0, 1	2...7	S1A	S2A	S4A	S5A
	5...15	S1B	S2B	S4B	S5B
1	12...38	S1C	S2C	S4C	S5C
2	5...15	S1B	S2B	S4B	S5B
	14...45	S1F	S2F	S4F	S5F

**Solid-State Overload Relay for 3Ø Applications:
 Automatic/Manual Reset, Class 10, 15, 20, or 30**

For use with Bulletins 505, 505V, 506, 507, 509, 512, 512M, 513, 520, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1232X, 1233X, 1242, 1243, 1272, 1273, 1282, and 1283.*†‡

NEMA Size	Full Load Current Adjustment Range (A)	Automatic/Manual Reset Overload Relay Code
00	0.1...0.32	B1A
	0.32...1.0	B1C
	1.0...2.9	B1D
	1.6...5.0	B1E
	3.7...12	B1F
1, 0	0.19...0.6	B1B
	0.32...1.0	B1C
	1.0...2.9	B1D
	1.6...5.0	B1E
	3.7...12	B1F
1	5.7...18	B1G
	12...38	B1H
2	5.7...18	B1G
	12...38	B1H
3	14...45	B1J
	23...75	B1K
	66...110	B1L
4	23...75	B1K
	66...110	B1L
	57...180	B1M
5	96...300	B1N
6	200...630	B1R
7	256...810	§
8	384...1215	
9	80...2250	

- * Bulletins 520, 522, and 523 require two overload relay codes to complete the Cat. No. The first code will denote the high speed overload relay and the second code will denote the low speed overload relay.
- † Bulletins 530, 1282, and 1283 have two overload relays and require two overload relay codes to complete the Cat. No. When selecting the proper solid-state overload relay, divide motor nameplate full load amperes by 2.00. Use this value to select the proper overload relay codes.
- ‡ Bulletins 540, 1242, and 1243 have one overload relay. When selecting the proper solid-state overload relay, divide motor nameplate full load amperes by 1.73. Use this value to select the proper overload relay code.
- § Order by description.

E3 Solid-State Overload Relay: 2 Inputs/1 Output

For use with Bulletins 505, 505V, 506, 507, 509, 512, 512M, 513, 520, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1232X, 1233X, 1242, 1243, 1272, 1273, 1282, and 1283. ➤

NEMA Size	Full Load Current Adjustment Range (A)	Overload Relay Code +
00	1...5	EC1A
	3...15	EC1B
0...2	1...5	EC1A
	3...15	EC1B
	5...25	EC1C
	9...45	EC1D
3	9...45	EC1D
	18...90	EC1E

**E3 Plus Solid-State Overload Relay: 4 Inputs/2 Outputs,
 Built-In Ground Fault Sensor, PTC Thermistor Input**

For use with Bulletins 505, 505V, 506, 507, 509, 512, 512M, 513, 520, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1232X, 1233X, 1242, 1243, 1272, 1273, 1282, and 1283. ➤

NEMA Size	Full Load Current Adjustment Range (A)	Overload Relay Code +
00	1...5	EC2A
	3...15	EC2B
0...2	1...5	EC2A
	3...15	EC2B
	5...25	EC2C
3	9...45	EC2D
	9...45	EC2D
	18...90	EC2E

**SMP-3 Solid-State Overload Relay for 3Ø Applications:
 Automatic/Manual Reset with Communications, Class 10,
 15, 20 or 30**

For use with Bulletins 505, 509, and 520. ➤

NEMA Size	Full Load Current Adjustment Range (A)	Overload Relay Code + ❖
00	0.7...2.5	C1D
	2...10	C1F
1, 0	0.7...2.5	C1D
	2...10	C1F
	7...37	C1H
2	7...37	C1H
	20...75	C1K
3	20...90	C1L
	40...180	C1M
5*	70...300	C1N
6*	140...630	C1R

- Standard on open-style NEMA devices on bulletins 505, 509, and 520.
- Bulletin 520 requires two overload relay codes to complete the Cat. No. The first code will denote the high speed overload relay and the second code
- ❖ The SMP-3 and E3 solid-state overload relays are available as standard on Open-Style NEMA Starters only.
- Allen-Bradley recommends using 120 or 240V AC coils on all NEMA Starters with SMP-3 solid-state overload relays. When using coil voltages other than 120 or 240V AC, consult your local Allen-Bradley distributor.
- ❖ The ratings of the triacs and the hard output contact (relay) internal to the SMP-3 solid-state overload relay must not be exceeded. See the SMP-3 User's Manual for actual ratings.
- ❖ These solid-state overload relays have an interposing relay with 120V AC coil.



E1 Plus Solid-State Overload Relays

- 0.1 ... 90 A Current Range
- Single- and Three-Phase Devices
- Self-Powered
- Phase Loss Protection
- Wide Adjustment Range (5:1)
- Insert-Molded Power Connections
- 1 N.O. and 1 N.C. Isolated Auxiliary Contacts (B600 Rated)
- Low Energy Consumption (150 mW)
- Ambient Temperature Compensation
- Visible Trip Indication
- Selectable Trip Class (10, 15, 20 or 30)
- Selectable Manual/Auto-Manual Reset

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EN 60947-5-1	
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UL 508	
Certifications	
CE Marked	
CSA Certified C22.2 No. 14	
(File No. LR1234)	
UL Listed per UL 508	

Description

Accurate, Reliable Performance

• Current Measurement-based Protection

While electromechanical overload relays pass motor current through heating elements to provide an indirect simulation of motor heating, the E1 Plus Overload Relay directly measures motor current. Current measurement based overload protection more accurately models a motor's thermal condition. Furthermore, ambient temperature does not impact the performance of current measurement-based designs over the specified temperature operating range.

• Electronic Design

Thermal modeling is performed electronically with precision solid-state components; at the heart of the E1 Plus Overload Relay is an application specific integrated circuit (ASIC). The ASIC continually processes motor current data to accurately maintain the time-current status of the motor thermal capacity utilization value.

• Thermal Memory

A thermal memory circuit allows the E1 Plus Overload Relay to model the heating and cooling effects of motor on and off periods. This ensures accurate protection for both hot and cold motors.

• Enhanced Phase Loss Protection

A separate phase loss detection circuit incorporated into the E1 Plus Overload Relay allows it to respond quickly to phase loss conditions; typical reaction time is 3 seconds.

Easy to Select and Apply

• Straightforward Installation

The self-powered design means that the E1 Plus Overload Relay installs like traditional overload relays. Device setup is accomplished by simply dialing the setting potentiometer to the motor FLA rating. The low energy consumption of the electronic design minimizes temperature rise issues inside control cabinets.

• Wide Adjustment Range

A wide 5:1 adjustment range results in the need for half as many catalog numbers as the bimetallic alternative in order to cover the same current range. This helps to reduce inventory carrying costs and affords greater installation flexibility for dual voltage machines. Evenly spaced setting tick marks enhance the ease of installation setup.

Rugged Construction

• Insert Molded Power Connections

The unique line-side insert molded power connections make for a sturdy two-component starter assembly that is unmatched in the industry. The preformed power connections allow for easy starter assembly – every time.

• Current Transformers

The current transformers are secured separately in the overload housing to ensure the greatest degree of resistance to shock and vibration conditions. Varnished laminations ensure consistent performance and provide additional protection against corrosion.

• Latching Relay

The robust design of the bi-polar latching relay provides reliable trip and reset performance for the most demanding of applications. The self-enclosed relay offers additional environmental protection for use in industrial applications.

Application Flexibility

• Isolated Contacts

The isolated contact configuration allows the N.C. and N.O. contacts to be applied in circuits operating at different voltage levels and without polarity restrictions. The B600 contact rating affords application in circuits rated to 600V.

• DIP Switch Settings

DIP switch settings allow the selection of trip class (10, 15, 20 or 30) and the reset mode (manual or automatic), making these devices very versatile.

Bulletin 592-EE – Three Phase Devices

- Selectable Trip Class (10, 15, 20, 30)
- Selectable Manual/Auto-Manual Reset


Mounts to Contactor	Adjustment Range	Cat. No.
00	0.1...0.5 A	592-EEAT
	0.2...1.0 A	592-EEBT
	1.0...5.0 A	592-EECT
	3.2...16 A	592-EEDT
0...2	0.2...1.0 A	592-EEBC
	1.0...5.0 A	592-EECC
	3.2...16 A	592-EEDC
	5.4...27 A	592-EEEC
3	9...45 A	592-EEFC
	9...45 A	592-EEFD
	18...90 A	592-EEGD

Bulletin 592S-EE – Single-Phase Devices

- Selectable Trip Class (10, 15, 20, 30)
- Selectable Manual/Auto-Manual Reset

Mounts to Contactor	Adjustment Range	Cat. No.
00	1.0...5.0 A	592S-EEPT
	3.2...16 A	592S-EERT
	5.4...27 A	592S-EEST
0...2	1.0...5.0 A	592S-EEPC
	3.2...16 A	592S-EERC
	5.4...27 A	592S-EESC
	9...45 A	592S-EETC
3	18...90 A	592S-EEUD




Accessories

	Description	For Use With	Pkg. Qty.	Cat. No.
	Current Adjustment Shield Prevents inadvertent adjustment of the current setting	592-EE (all)	10	193-BC8

E1 Plus Solid-State Overload Relays

Specifications

Specifications

		Cat. No. 592-EE_T	Cat. No. 592-EE_C	Cat. No. 592-EE_D
Main Circuits				
Rated Insulation Voltage U_i		690V AC		
Rated Impulse Strength U_{imp}		6 kV AC		
Rated Operating Voltage U_e		690V AC (IEC) / 600V AC (CSA/UL)		
Rated Operating Frequency		50/60 Hz (sinusoidal)		
Terminal Cross-Sections:	Terminal Type			
	Terminal Screw	M5	M5	M8
Stranded / Solid	Single Conductor Torque	14...6 AWG 22 lb-in	14...6 AWG 22 lb-in	12...1 AWG 35 lb-in
	Two Conductor Torque	14...10 AWG* 30 lb-in	14...10 AWG* 30 lb-in	6...2 AWG 35 lb-in
Poizdrive Screwdriver Size		2	2	—
Slotted Screwdriver (mm)		1 x 6	1 x 6	—
Hexagon Socket Size (mm)		—	—	4
Control Circuits				
Rated Insulation Voltage U_i		690V AC		
Rated Impulse Strength U_{imp}		6 kV AC		
Rated Operating Voltage U_e		690V AC (IEC) / 600V AC (CSA/UL)		
Rating Designation		B600.		
Rated Operating Current I_e		N.O. / N.C		
AC-15	12...120V	3 / 2		
	220...240V	1.5 / 1.5		
	380...480V	0.75 / 0.75		
	500...600V	0.6 / 0.6		
DC-13, at L/R \geq 15ms	24V	1.1 / 1.1		
	110V	0.4 / 0.4		
	220V	0.2 / 0.2		
	440V	0.08 / 0.08		
Thermal Current I_{the}		5 A		
Contact Reliability		17V, 5 mA		

* For multiple conductor applications, the same style and size of wire must be used.

E1 Plus Solid-State Overload Relays

Specifications

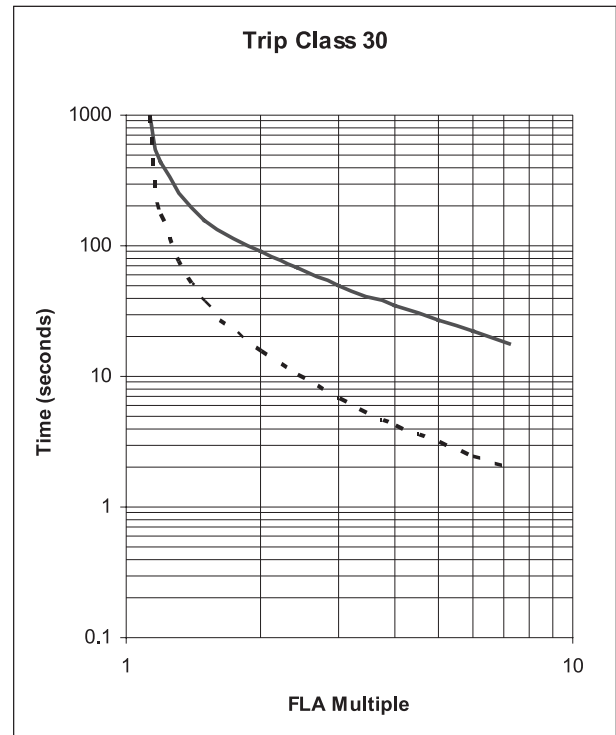
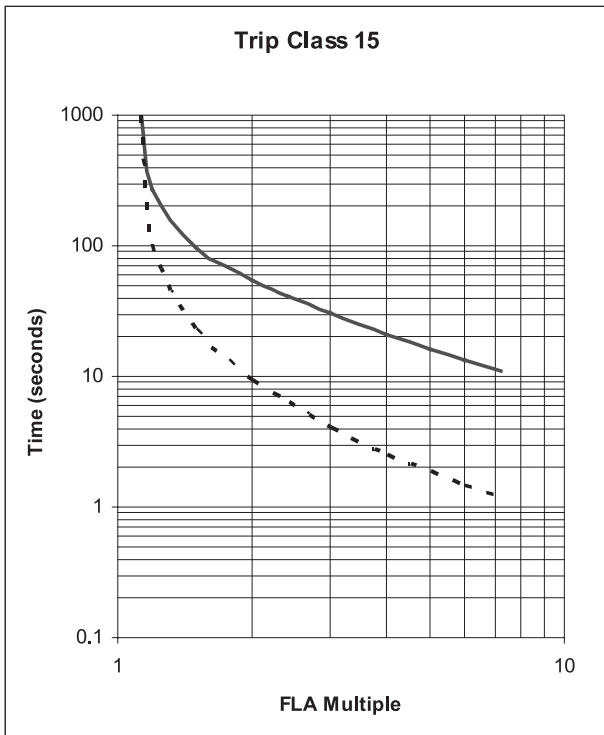
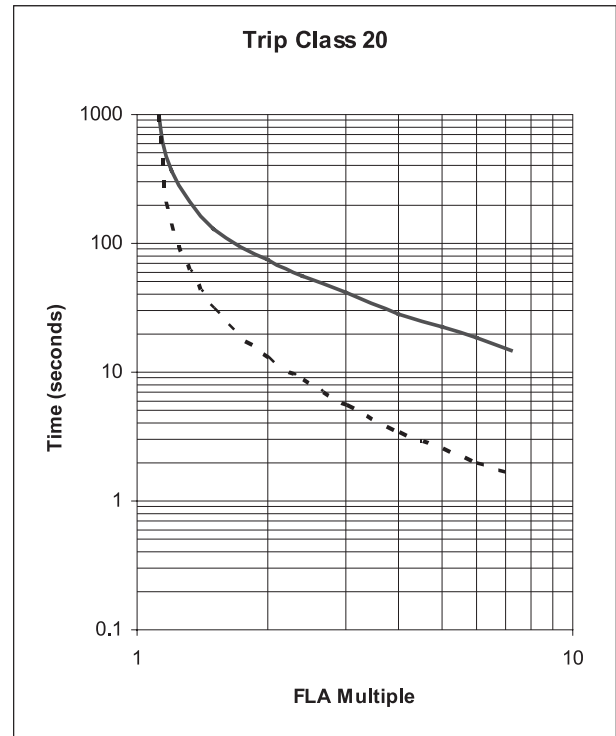
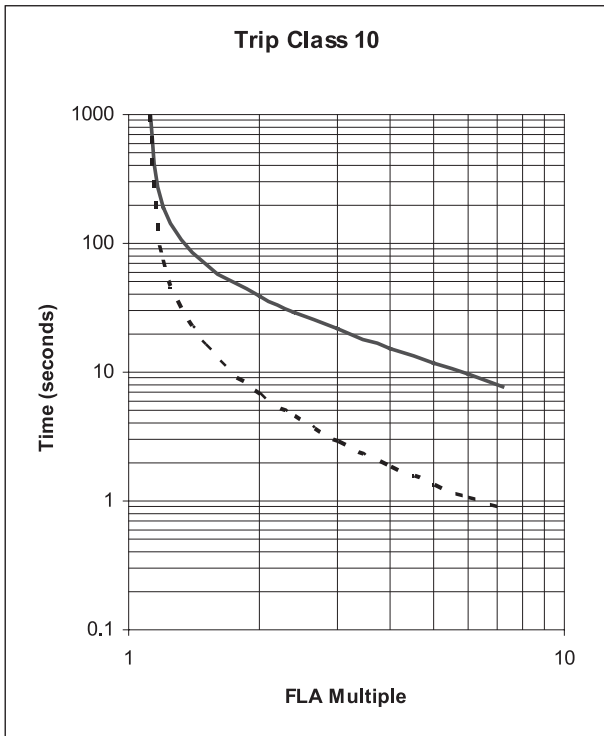
		Cat. No. 592-EE_T	Cat. No. 592-EE_C	Cat. No. 592-EE_D
Screw Terminal Cross-Sections:	Terminal Screw	M3		
Stranded / Solid	Single Conductor Torque	24...10 AWG 5 lb-in		
	Two Conductor Torque	24...12 AWG 5 lb-in		
Screwdriver (mm)		#1 Pozidrive / 0.6 x 3.5 slotted		
Environmental Ratings				
Ambient Temperature	Storage Operating	-40...85 °C (-40...185 °F) -20...60 °C (-4...140 °F)		
Humidity	Operating Damp Heat	5...95%, non-condensing per IEC 68-2-3 and IEC 68-2-30		
Vibration (per IEC 68-2-6)		3G		
Shock (per IEC 68-2-27)		30G		
Maximum Altitude		2000 m		
Pollution Environment		Pollution Degree 3		
Degree of Protection		IP20		
Protection				
Type of Relay		Ambient Compensated, Time Delay, Phase Loss Sensitive		
Nature of Relay		Solid-State		
Trip Rating		120% FLA		
Trip Class		10, 15, 20, 30		
Reset Mode		Automatic or Manual		
Electromagnetic Compatibility				
Electrostatic Discharge Immunity	Test Level	8kV Air Discharge 6kV Contact Discharge		
	Performance Level	1*†		
RF Immunity	Test Level	10V/m		
	Performance Level	1*†		
Electrical Fast Transient/Burst Immunity	Test Level	4kV		
	Performance Level	1*†		
Surge Immunity	Test Level	2kV (L-E) 1kV (L-L)		
	Performance Level	1*†		
General				
Standards		UL508, CSA C22.2 No. 14, NEMA ICS 2-1993 Part 4, EN 60947-4-1, EN 60947-5-1		
Certifications		CE, CSA, UL		
Weight	kg	0.25	0.25	0.52
	lb	0.55	0.55	1.06

* Performance Criteria 1 requires the DUT to experience no degradation or loss of performance.

† Environment 2

E1 Plus Solid-State Overload Relays

Trip Curves



Typical reset time for 193-EE devices set to automatic reset mode is 120 seconds

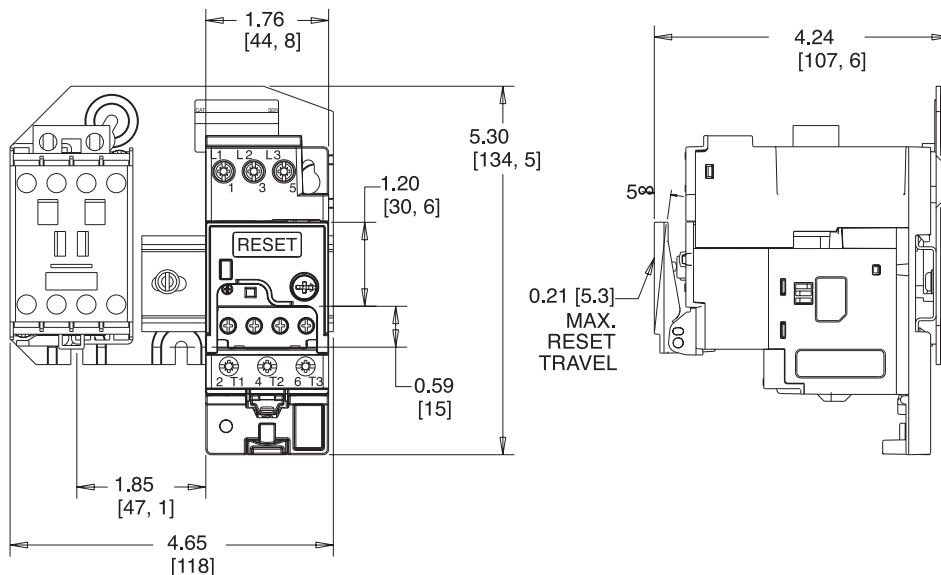
Trip Curve Legend: Cold Trip Hot Trip

E1 Plus Solid-State Overload Relays

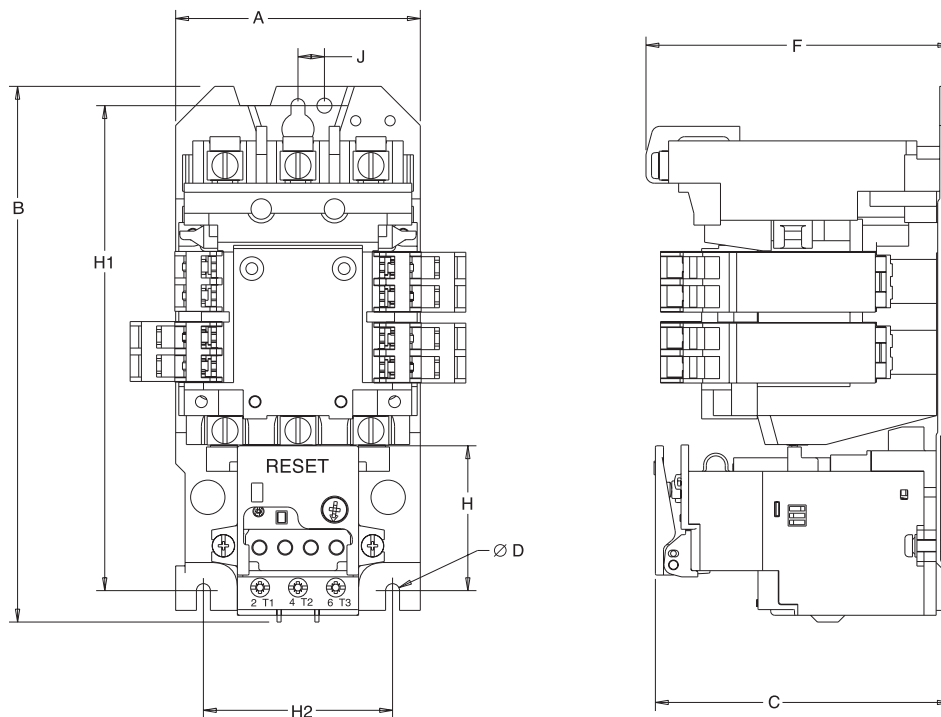
Approximate Dimensions

Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.

Size 00



Size 0...3



Overload Cat. No.	Contactor	A	B	C	D	F	H1	H2	J
592-EE_C	Size 0 and 1	91 (3-9/16)	198 (7-25/32)	114 (4-1/2)	5.2 (13/64)	113 (4-7/16)	180 (7-1/16)	70 (2-3/4)	9.8 (3/8)
592-EE_C	Size 2	100 (3-15/16)	233 (9-11/64)	114 (4-1/2)	5.2 (13/64)	119 (4-11/16)	219 (8-5/8)	80 (3-5/32)	9.8 (3/8)
592-EE_D	Size 3	155.5 (6-1/8)	336.7 (13-1/4)	154 (6-1/16)	7.1 (9/32)	150.1 (5-29/32)	219.9 (8-21/32)	139.9 (5-1/2)	19.9 (25/32)

E3 and E3 Plus Solid-State Overload Relays

Product Overview



Bulletin 592

592-EC1

- 0.4...90 A Current Range
- DeviceNet Ready (ODVA Conformance Tested)
- LED Indicators and Test/Reset Button
- Adjustable Trip Class 5...30
- Ambient Temperature Compensation
- True RMS Current Sensing (20...250 Hz)
- Protection for Single- and Three-Phase Motors
- Integrated I/O (2 In / 1 Out)
- Programmable Trip and Warning Settings
- Diagnostic Functions (History of Last 5 Trips)

592-EC2 also includes

- Integrated I/O (4 In / 2 Out)
- Low-Level (1...5 A) Ground Fault Protection
- PTC Thermistor Monitoring
- DeviceLogix Component Technology (series B only)

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Approximate Dimensions *

*See Bulletin 193-EC section for this information.

Standards Compliance

EN 60947-4-1

CSA 22.2 No. 14

UL 508

Certifications

CE

cULus (File No. E14840) (Guide No. NKCR)

C-tick

Description

The E3 Overload Relay is a multi-function solid-state microprocessor-based electronic overload relay for the protection of single- or three-phase squirrel cage induction motors. In addition to providing ambient compensated overload protection, the E3 Overload Relay also includes advanced features such as warning diagnostics, variable frequency and true RMS current sensing, I/O capabilities, and direct DeviceNet connectivity. The E3 Plus Overload Relay offers the added features of zero sequence (core balance) ground fault protection, PTC thermistor input, and additional I/O capabilities.

Protective/Warning Functions:

- Thermal overload
- Phase loss (Trip only)
- Ground Fault (E3 Plus)
- Stall (Trip only)
- Jam
- Underload
- PTC (E3 Plus)
- Current imbalance

Catalog Number Explanation

592 – EC1 B T

a b c

a

Type	
Code	Description
EC1	E3
EC2	E3 Plus

b

Current Rating (Amps)	
Code	Description
P	0.4...2.0
A	1...5
B	3...15
C	5...25
D	9...45
E	18...90

c

Bulletin 500 Contactor Size	
Code	Description
T	Size 00
C	Size 0...2
D	Size 3

Product Selection

Your order must include 1) the Cat. No. of the overload relay selected, and 2) if required, Cat. No. of any accessories.

Bulletin 592-EC1 Electronic Motor Protection Relays — Direct Contactor Mount

- 2 Inputs
- 1 Output

For Installation on Starter Size	Adjustment Range†	Cat. No.
00	0.4...2.0 A	592-EC1PT
	1...5 A	592-EC1AT
	3...15 A	592-EC1BT
0...2	0.4...2.0 A	592-EC1PC
	1...5 A	592-EC1AC
	3...15 A	592-EC1BC
	5...25 A	592-EC1CC
3	9...45 A	592-EC1DC
	9...45 A	592-EC1DD
	18...90 A	592-EC1ED

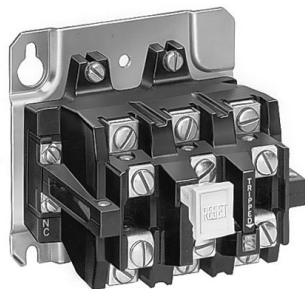
† For applications greater than 90 A, see the Bulletin 193 panel mount devices for use with external current transformers.

Bulletin 592-EC2 Electronic Motor Protection Relays — Direct Contactor Mount

- 4 Inputs
- 2 Outputs
- Built-in Ground Fault Sensor
- PTC Thermistor Input

For Installation on Starter Size	Adjustment Range †	Cat. No.
00	0.4...2.0 A	592-EC2PT
	1...5 A	592-EC2AT
	3...15 A	592-EC2BT
0...2	0.4...2.0 A	592-EC2PC
	1...5 A	592-EC2AC
	3...15 A	592-EC2BC
	5...25 A	592-EC2CC
3	9...45 A	592-EC2DC
	9...45 A	592-EC2DD
	18...90 A	592-EC2ED

† For applications greater than 90 A, see the Bulletin 193 panel mount devices for use with external current transformers.



Eutectic Alloy Type

Bulletin 592

- An Allen-Bradley exclusive — overload relay is the same for all three trip classes (10, 20, and 30) for each Starter Size
- Trip current ratings are easily selected by choosing the proper heater element — no need to change the overload relay
- The trip free mechanism means you still have overload protection even if the reset button is held down

Bulletin 592 overload relay is a manual reset, eutectic alloy, thermal type overload device. When coordinated with the proper short circuit protection, the overload relay is intended to protect the motor, motor controller, and power wiring against overheating due to excessive overcurrents.

All Bulletin 592 block type relays are furnished with an OPTICAL INDICATOR which becomes visible when the relay has tripped. A manual contact test module is provided as standard on block type Bulletin 592 overload relays. One N.O. or N.C. auxiliary contact may be field added to block type Bulletin 592 overload relays. This extra contact module physically replaces the contact test module.

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Standards Compliance

UL 508
 CSA 22.2 No. 14
 CE Mark

Certifications

UL Listed (File No. E14840)
 (Guide No. NKCR)
 CSA Certified (File No. LR1234)

Your order must include: 1) Cat. No. of overload relay selected, 2) order heater element as a separate item. See page 1-152, and 3) if required, Cat. No. of any accessories.

Eutectic Alloy Type — Manual Reset, Starter Mount

STARTER MOUNT — For Installation on Allen-Bradley NEMA Starters

Heater Elements — Overload relays require 1 or 3 overload heater elements. See page 1-152 for heater element selection.

Starter Size	Number of Poles	Open Type without Enclosure	
		N.C. Contact	N.O.-N.C. Contact
		Cat. No.	Cat. No.
00 (Series B & D)	3	592-JOV16	592-JOV169
0,1	3	592-BOW16	592-BOW169
2	3	592-COW16	592-COW169
3	3	592-DOW16	592-DOW169
4	3	592-EOW16	592-EOW169

Eutectic Alloy Type — Manual Reset*, Panel Mount

PANEL MOUNT — For Installation and Wiring Separate from the Contactor

Heater Elements — Overload relays require 1 or 3 overload heater elements. See page 1-152 for heater element selection.

Type	Maximum Continuous Current (A)	Number of Poles	Open Type without Enclosure		Type 1 General Purpose Enclosure	
			N.C. Contact	N.O.-N.C. Contacts	N.C. Contact	N.O.-N.C. Contacts
			Cat. No.	Cat. No.	Cat. No.	Cat. No.
Compact	24	3	592-JOV16	592-JOV169	—	—
	32	3	592-KOV16	592-KOV169	—	—
Standard	40	1	592-BOV4	592-BOV49	—	—
		3	592-BOV16	592-BOV169	592-BAV16	592-BAV169
	62	1	592-COV4	592-COV49	—	—
		3	592-COV16	592-COV169	592-CAV16	592-CAV169
	125	3	592-DOV16	592-DOV169	—	—
	165	3	592-EOV16	592-EOV169	—	—

Current Transformer Type — Eutectic Alloy, Manual Reset

Heater Elements — Overload relays require 3 overload heater elements. See page 1-152 for heater element selection.

Full Load Current Range (A)	Cat. No.†	Lug Kits Cat. No.
60...200‡	592-TPD200	199-LF1
120...300‡	592-TPD300	199-LG1
160...496	592-TPD400	199-LH1
250...630‡	592-TPD630	199-LJ1

* For Renewal Part Overload Relay used on starter mounted devices, see page page 1-138.

† Terminal lugs are not included.

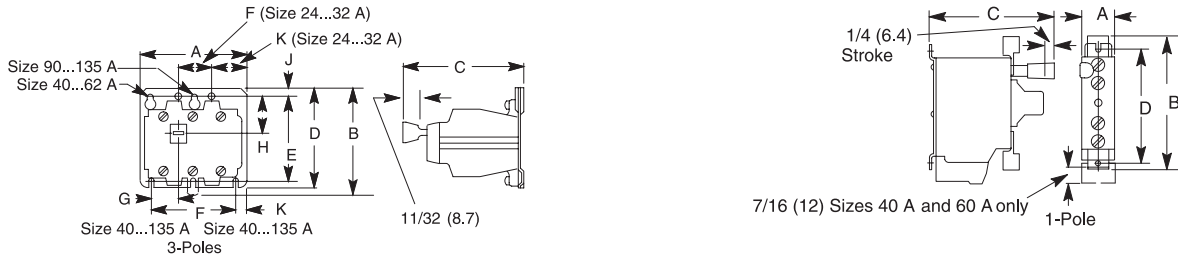
‡ Can be applied up to 1500 volts.

Eutectic Alloy Overload Relays

Approximate Dimensions

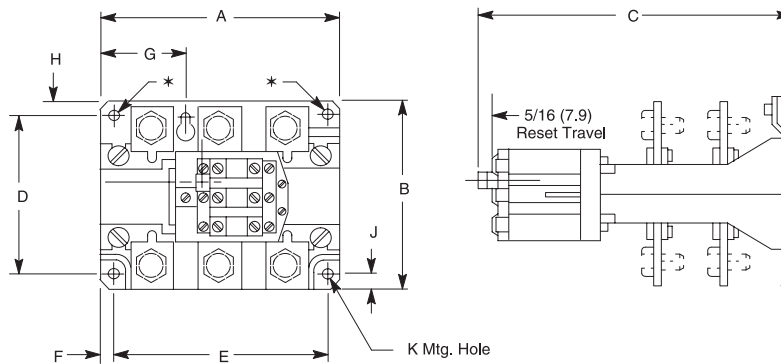
Open Type without Enclosure for Bulletin 592 Eutectic Alloy Type — Manual Reset — Panel Mount

Dimensions are shown in inches (millimeters). Dimensions are not to be used for manufacturing purposes.



Maximum Current (A)	No. of Poles	A Wide	B High	C Deep	D	E	F	G	H	J	K
24/32	3	2-11/16 (68.3)	3-1/4 (82.6)	3-41/64 (92.6)	—	2-3/4 (70)	55/64 (22)	—	—	1/4 (6.4)	29/32 (23)
40	1	7/8 (22.2)	3-1/4 (82.6)	3-9/16 (90.5)	2-29/32 (73.8)	—	—	—	—	—	—
	3	3-15/16 (100)	—	4-1/2 (114)	3-21/32 (93)	3-5/32 (80)	3-5/32 (80)	1-3/64 (26.5)	1-3/8 (35)	1-9/64 (7.5)	25/64 (9.9)
62	1	7/8 (22.2)	3-13/16 (96.8)	3-9/16 (90.5)	3-1/8 (79.4)	—	—	—	—	—	—
	3	3-15/16 (100)	3-31/32 (101)	4-1/2 (114)	3-21/32 (93)	3-5/32 (80)	3-5/32 (80)	1-3/64 (26.5)	1-3/8 (35)	1-9/64 (7.5)	25/64 (9.9)
125	3	6-7/32 (158)	5-7/8 (149)	4-49/64 (121)	6-1/4 (159)	5-1/2 (140)	5-1/2 (140)	1-61/64 (49.6)	2-3/4 (69.8)	5/16 (7.9)	23/64 (9.1)
165	3	6-7/32 (158)	6-17/32 (166)	4-49/64 (121)	6-1/4 (159)	5-1/2 (140)	5-1/2 (140)	1-61/64 (49.6)	2-3/4 (69.8)	5/16 (7.9)	23/64 (9.1)

Open Type without Enclosure for Bulletin 592 Current Transformer Type — Eutectic Alloy, Manual Reset



Cat. No.	A Wide	B High	C Deep	D	E	F	G	H	J	K
592-TPD200	5-5/16 (135)	5-19/32 (142)	8-9/16 (217.5)	4-23/32 (120)	4-23/32 (120)	19/64 (7.5)	1-59/64 (49)	29/64 (12)	51/64 (10)	21/64 (8.4)
592-TPD300	6-63/64 (177.3)	5-19/32 (142)	9-5/32 (233)	4-23/32 (120)	6-9/64 (156)	27/64 (10.6)	22-1/2 (63.6)	29/64 (12)	51/64 (10)	9/32 (7)
592-TPD400	6-63/64 (177.3)	10-15/32 (266)	9-5/32 (233)	4-23/32 (120)	6-9/64 (156)	27/64 (10.6)	22-1/2 (63.6)	29/64 (12)	51/64 (10)	9/32 (7)
592-TPD630	9-27/32 (250)	7-55/64 (210)	8-19/32 (218)	7-3/32 (180)	8-57/64 (226)	15/32 (12)	3-19/64 (84)	25/64 (10)	51/64 (10)	9/32 (7)

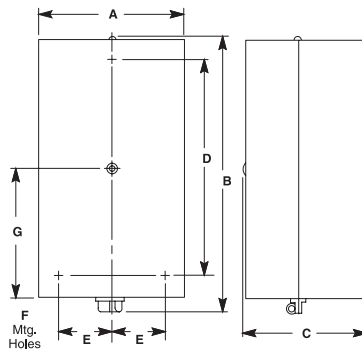
* Mounting holes for Cat. Nos. 592-TPD400 and 592-TPD630 only.

Eutectic Alloy Overload Relays

Approximate Dimensions, Continued

Type 1 General Purpose Enclosure for Bulletin 592


Dimensions are shown in inches (millimeters). Dimensions are not to be used for manufacturing purposes.



Maximum Current (A) Bulletin 592	A Wide	B High	C Deep	D	E	F	G
40...60	6-13/16 (173)	10-5/8 (270)	5-23/32 (145)	8-1/4 (210)	2-3/8 (60.5)	7/32 (5.5)	5-5/16 (135)

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters

 <p style="text-align: center;">Type W Heater Elements</p>	<h3>Eutectic Alloy Overload Relay Heater Elements</h3> <ul style="list-style-type: none"> • Type J — CLASS 10 • Type P — CLASS 20 (Bul. 600 ONLY) • Type W — CLASS 20 • Type WL — CLASS 30 	<h3>Table of Contents</h3> <p>Overload Relay Class Designation ... this page Heater Element Selection this page Ambient Temperature Correction this page Heater Element Selection Procedure this page Time — Current Characteristics 1-154 Index to Heater Element Selection Tables 1-155</p>
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Description

Overload Relay Class Designation

United States Industry Standards (NEMA Part ICS 2-222) designate an overload relay by a class number indicating the maximum time in seconds at which it will trip when carrying a current equal to 600 percent of its current rating.

A Class 10 overload relay will trip in 10 seconds or less at a current equal to 600 percent of its rating.

A Class 20 overload relay will trip in 20 seconds or less at a current equal to 600 percent of its rating.

A Class 30 overload relay will trip in 30 seconds or less at a current equal to 600 percent of its rating.

Allen-Bradley standard overload relay protection is provided using Type W heater elements for the 500 Line. This provides Class 20 operation and is recommended for General Applications.

Specific Applications may require Class 10 or Class 30 overload relays. Class 10 overload relays are often used with hermetic motors, submersible pumps, or motors with short locked rotor time capability. Class 30 overload relays should be used with motors driving high inertia loads, where additional accelerating time is needed and the safe permissible locked rotor time of the motor is within Class 30 performance requirements.

For applications requiring Class 30 protection, Type WL heater elements are available. To order, use the applicable Type W selection table, follow the heater element selection instructions and change the “W” in the Heater Type Number to “WL”.

For applications requiring Class 10 overload relays, Type J elements are available. See page page 1-155 for Index to Heater Element Selection Tables.

Heater Element Selection

The “Full Load Amperes” listed in the tables are to be used for heater element selection. For Type J and W Heater Elements, the rating of the relay in amperes at +40 °C (+104 °F) is 115% of the “Full Load Amperes” listed for the “Heater Type Number”. For Type WL Heater Elements, the rating is 120% of the “Full Load Amperes” listed for the “Heater Type Number.”

Refer to the motor nameplate for the full load current, the service factor, and/or the motor classification by application and temperature rise.

Use this motor nameplate information, the application rules, and the “Full Load Amperes” listed in the proper table (see Index) to determine the “Heater Type Number.”

The following is for motors rated for Continuous Duty:

For motors with marked service factor of not less than 1.15, or motors with a marked temperature rise not over +40 °C (+104 °F), apply application rules 1 through 3. Apply application rules 2 and 3 when the temperature difference does not exceed +10 °C (+18 °F). When the temperature difference is greater, see below.

- 1. The Same Temperature at the Controller and the Motor** — Select the “Heater Type Number” with the listed “Full Load Amperes” nearest the full load value shown on the motor nameplate.
- 2. Higher Temperature at the Controller than at the Motor** — If the full load current value shown on the motor nameplate is between the listed “Full Load Amperes”, select the “Heater Type Number” with the higher value.
- 3. Lower Temperature at the Controller than at the Motor** — If the full load current value shown on the motor nameplate is between the listed “Full Load Amperes”, select the “Heater Type Number” with the lower value.

For motors with Marked Service Factor of less than 1.15, select the “Heater Type Number” one rating smaller than determined by the rules in paragraphs 1, 2 and 3.

Motors rated for Intermittent Duty — Consult your local Allen-Bradley distributor.

Heater Element Selection Procedure — When Temperature at Controller is More Than ±10 °C (±18 °F) Different Than Temperature At Motor

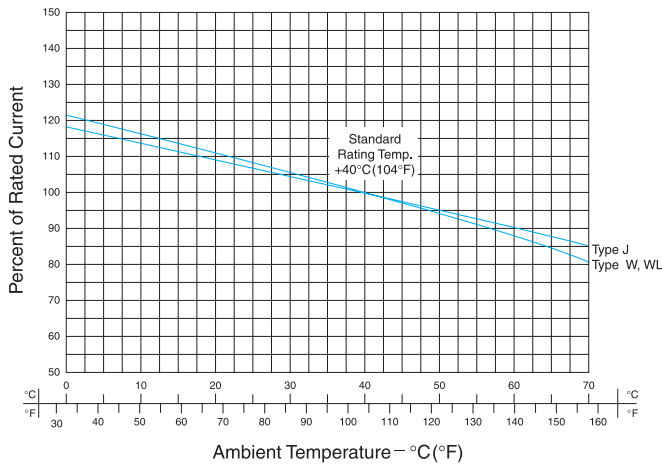
Ambient Temperature Correction

The ambient temperature at the motor and controller is the same in most applications. Under this condition, the overload relay is designed to sense changes in ambient temperature and also protect the motor over a range of temperatures.

Output that a motor can safely deliver varies with temperature. The motor can deliver its full rated horsepower at an ambient temperature specified by the motor manufacturers, normally +40 °C (+104 °F). At high temperatures (higher than +40 °C) less than 100% of the normal rated current can be drawn from the motor without shortening the insulation life. At lower temperatures (less than +40 °C) more than 100% of the normal rated current could be drawn from the motor without shortening the insulation life. Thus, there is an inverse relationship between motor ambient temperature and motor output. In any motor, allowable output decreases as the ambient temperature is raised and vice versa.

Heater Element Selection Procedure — When Temperature at Controller is More Than ±10 °C (±18 °F) Different Than Temperature At Motor, Continued

Ambient Temperature Correction Curve
(See Performance Data, page Important 2)



When the temperature difference between the motor and controller does not exceed +10 °C the heater elements should be selected according to the directions given in the Heater Element Selection, page 1-152.

When the temperature difference is more than +10 °C an ambient temperature correction factor should be used as part of the process for selecting heater elements. The ambient temperature correction curve shown below shows the factor by which heater selection rating changes with ambient temperature changes.

Heater Element Selection Procedure

In solving problems where ambient temperature correction is necessary, the following simple procedure is recommended:

1. First find the correction factor ratio ("C.F.R."). This is the ratio of correction factor of the motor ambient temperature (C.F.m) to the correction factor for the controller ambient temperature (C.F.c). The formula for calculating the correction factor ratio is:

$$C.F.R. = \frac{C.F. \text{ motor}}{C.F. \text{ controller}}$$

Both correction factors are selected from the curve for the type of heater element to be used. The heater element selection tables are based on a +40 °C ambient temperature. This means the correction factor for a +40 °C is 1.00. In other words, there is no correction factor at +40 °C.

2. Next in this heater element selection process is to adjust the motor nameplate full load current (FLC) by the C.F. Ratio. This readjusted value of motor nameplate full load current (FLC) is the yardstick in selecting the proper heater element.
3. The last step is to refer to the suggested heater element table and pick the element whose rating for the given controller size is closest to FLC.

Examples — To become familiar with this heater element selection process, consider a few examples.

Example 1. Starter at Normal +40 °C Ambient — Motor Lower. 3-Phase, AC, squirrel cage motor, 25 Hp, 460V, 60 Hz, 1800 rpm, FLC of 34 A, service factor 1.15, *Temperature at starter +40 °C, Temperature at motor +25 °C, Type W heater elements will be used.*

In Example 1, the motor is at a much cooler ambient temperature (+25 °C) compared to the controller which is at the normal +40 °C. Because the motor is normally rated for use at +40 °C, it will deliver a little more than its rated horsepower. This means that a heater element with a higher than normal motor nameplate full load current rating can be used.

Referring to the Type W ambient temperature correction curve on this page for a motor at +25 °C ambient, the motor correction factor (C.F. motor) is shown to be 108%. The correction factor for the starter ambient temperature is 100% since it is at +40 °C. Thus,

$$C.F. \text{ Ratio} = \frac{C.F. \text{ motor}}{C.F. \text{ controller}} = \frac{108\%}{100\%} = 1.08$$

Now, using this correction factor, the readjusted full load current value can be determined by:

$$FLC = 34 \times 1.08 = 36.7 \text{ A}$$

A Bulletin 512, Size 2, was specified for this application. The directions for heater element selection indicate that Table 153 should be used. The table shows that 36.7 A falls between two values, 35.0 A (W66) and 38.0 A (W67). Because 38.0 A is closer to the requirement, select the heater element W67.

Example 2. Starter at Normal +40 °C Ambient — Motor Higher. 3 Phase AC, squirrel cage motor, 25 Hp, 460V, 60 Hz, 1800 rpm. FLC of 34 A, service factor 1.15. Type W heater elements, *Temperature at starter +40 °C, Temperature at motor +55 °C.*

This represents a situation where the motor ambient temperature is higher than +40 °C. In this example, the motor is at +55 °C ambient temperature and the controller is at +40 °C. When the motor is functioning in a warmer environment than the controller it will not be able to deliver the normal horsepower. To protect it from damage, it becomes necessary to downsize the heater element compared to the same motor operating in a +40 °C ambient temperature. Referring to the Type W ambient temperature correction curve, the correction factor would be:

$$C.F. \text{ Ratio} = \frac{C.F. \text{ motor}}{C.F. \text{ controller}} = \frac{91\%}{100\%} = 0.91$$

Having determined the correction factor, the current rating to be used when selecting a heater element would be:

$$FLC = 34.0 \times 0.91 = 30.9 \text{ A}$$

For Bulletin 512, Size 2, again refer to Table 153. The value of 30.9 A falls between 30.0 A (W64) and 32.5 A (W66). Since 30.0 is closer to 30.9 specify the W64 heater element.

Example 3: Starter Lower than +40 °C — Motor Higher. 3-Phase, AC, squirrel cage motor, 25 Hp, 460V, 60 Hz, 1800 rpm. FLC of 34 A, service factor 1.15. Type W heater elements, *Temperature at starter +25 °C, Temperature at motor +55 °C.*

Next, consider a case where both the controller and the motor are at ambient temperatures other than +40 °C. In Example 3 the temperature of the controller is +25 °C ambient (cooler) while the temperature of the motor is +55 °C ambient (warmer). As stated earlier, a motor running in a warmer environment will deliver less than its normal horsepower. This requires downsizing the heater element rating. The controller in this case is in a cooler environment which prevents the heater element from heating up as much as in a +40 °C ambient temperature. This also requires downsizing the heater element rating to provide adequate protection. Thus, the net effect of a warmer motor and a cooler controller is to further downsize the heater element. Using the Type W temperature correction curve, the correction factor in this case is:

$$C.F. \text{ Ratio} = \frac{C.F. \text{ motor}}{C.F. \text{ controller}} = \frac{91\%}{108\%} = 0.84$$

The readjusted value of current FLC for this example is:

$$FLC = 34.0 \times 0.84 = 28.6 \text{ A}$$

Table 153 shows that this value falls between 28.0 A (W63) and 30.0 A (W64). Because 28.0 A is closer to the requirement, select the heater element W63.

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters, Continued

Heater Element Selection Procedure, Continued

Example 4: Starter Above +40 °C — Motor Lower. 3-Phase, AC, squirrel cage motor, 25 Hp, 460V, 60 Hz, 1800 rpm. FLC of 34 A, service factor 1.15. Type W heater elements, *Temperature at starter +65 °C, Temperature at motor +35 °C.*

Now, consider the effect of a controller in a warmer environment and a motor in a cooler environment. In Example 4, the controller is at +65 °C ambient (warmer) and the motor at +35 °C ambient (cooler). As mentioned earlier, a motor at a cooler temperature can deliver more than its normal horsepower. The controller when in a warmer environment will heat up faster causing the eutectic alloy to melt before the normal overload condition. This requires upsizing the heater element rating. Referring to the Type W ambient temperature correction curve (page 1-152), the correction factor in this case is:

$$\text{C.F. Ratio} = \frac{\text{C.F. motor}}{\text{C.F. controller}} = \frac{103\%}{84.5\%} = 1.22$$

This correction factor allows a heater element with current rating of:

$$\begin{aligned} \text{FLC} &= 34.0 \times 1.22 \\ &= 41.48 \text{ A} \end{aligned}$$

Referring to Table 153, this value of 41.4 A falls between 40.5 A (W68) and 43.5 A (W69). Because 40.5 A is closer to the requirement, select heater element W68.

Example 5: Starter Above +40 °C — Motor Above. 3-Phase, AC, squirrel cage motor, 25 Hp, 460V, 60 Hz, 1800 rpm. FLC of 35 A, service factor 1.15. Type W heater elements, *Temperature at starter +45 °C, Temperature at motor +60 °C.*

Next, take an example where both the controller and the motor are both warmer than +40 °C ambient temperature but their ambient temperatures are different. For instance, the controller could be at +45 °C ambient and the motor is at +60 °C ambient. Since the difference in their ambient temperatures is greater than +10 °C an ambient temperature correction must be made. In Example 5 the correction factor is given by:

$$\text{C.F. Ratio} = \frac{\text{C.F. motor}}{\text{C.F. controller}} = \frac{88\%}{97\%} = 0.91$$

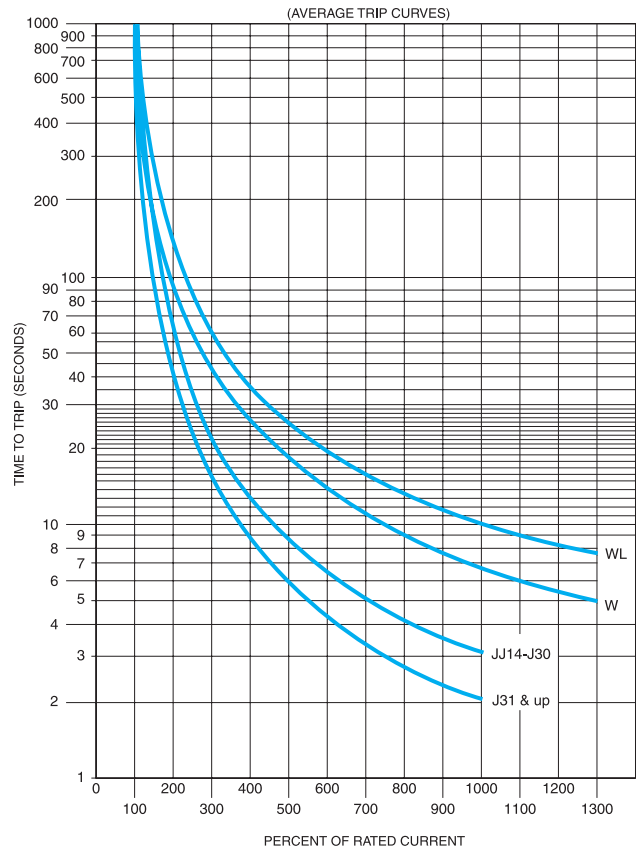
This means that the rating of the heater element should be 90% of the normal nameplate motor full load current or:

$$35.0 \times 0.91 = 31.9 \text{ A}$$

For Bulletin 512, Size 2 controller, Table 153 shows this rating to fall between 30.0 A (W64) and 32.5 A (W65). Because 32.5 A is closer, select heater element W65. Note here that the net effect has been to downsize the heater element rating compared to a normal +40 °C ambient operation.

Note: The heater element selection tables are designed to accommodate motor service factors of 1.15 or greater, as given in all the preceding examples. If the service factor had been less than 1.15 (for example, S.F. = 1.0) a heater element one rating smaller than selected in each example would have been the correct choice. This would provide protection at 10% lower current levels.

Time — Current Characteristics at +40 °C (+104 °F) (See Performance Data, page Important-2)



Index to Heater Element Selection Tables

Bulletin Number	Encl. Type	Size	Table No.			
			Manual Reset			
			Type W Element		Type J Element	
			1 Relay, 1Ø	3 Relays, 3Ø	1 Relay, 1Ø	3 Relays, 3Ø
105, 109	Open	9...30 A	—	180	—	182
		36...110 A	—	191	—	187
		180 A	—	195	—	196
505	Open, 1, 3R/4/12	00	127	180	55	182
		0...4	156	151	164	162
505	Open 1, 3R/4/12, 4/4X	5	—	347	—	547
		6	—	195	—	196
505	4/4X	7...8	—	133	—	132
		0...4	—	146	—	158
505	4X	5	—	177	—	178
		0...2	—	145	—	158
505	Unilock 3R/7 & 9	0...1	—	166	—	159
505	Bolted 3R/7 & 9, 7 & 9	0...3	—	171	—	172
		4	156	168	164	162
505V	Open	0...4	—	154	—	—
506, 507	1, 3R/12, 4/4X, 4X	0...4	—	149	—	161
		5	—	347	—	547
507	1, 3R/4/12, 4/4X, 4X	6	—	195	—	196
		7	—	134	—	165
507	Bolted 3R/7 & 9, 7 & 9	0...2	—	168	—	172
		3	—	168	—	162
		4	—	171	—	172
509	Open, 1, 3R/12	00	127	180	55	182
509	Open	0...4, 1P	156	152	164	163
509	1, 3R/4/12	0...4	155	150	164	162
509 with control transformer	1, 3R/4/12	0...4, 1P	156	150	164	162
509	Open, 1, 3R/4/12	5	—	347	—	547
509	Open, 1, 3R/4/12, 4/4X	6	—	195	—	196
509	Open 1, 3R/4/12, 4/4X	7...8	—	133	—	132
509	4/4X	0...3	—	144	—	158
		4	—	148	—	—
		5	—	177	—	178
509	4X	0...2	156	146	164	158
509	Unilock 3R/7 & 9	0...4	—	166	—	159
		5	—	177	—	178
509	Bolted 3R/7 & 9, 7 & 9	0...3, 1P	156	171	164	172
		4	—	171	—	162
		5	—	171	—	547
512	1, 3R/4/12, 4/4X, 4X	0...4	—	153	—	163
		5	—	347	—	547
		6	—	195	—	196
512M	3R/4/12	1...2	—	153	—	163
513	1, 3R/4/12, 4/4X, 4X	0...4	—	148	—	160
		5	—	347	—	547
		6	—	195	—	196
		7	—	134	—	165
513	Unilock 3R/7 & 9	0...4	—	167	—	159
		5	—	169	—	178

Bulletin Number	Encl. Type	Size	Table No.			
			Manual Reset			
			Type W Element		Type J Element	
			1 Relay, 1Ø	3 Relays, 3Ø	1 Relay, 1Ø	3 Relays, 3Ø
513	Bolted 3R/7 & 9, 7 & 9	0...3	—	168	—	172
		4	—	168	—	160
		5	—	168	—	160
520	Open, 1, 3R/4/12	0...4	—	151	—	162
		5	—	347	—	547
		6	—	195	—	196
		7	—	133	—	132
520	4/4X	0...4	—	146	—	158
		5	—	177	—	178
520	4X	0...2	—	145	—	158
520E	Bolted 3R/7 & 9, 7 & 9	0...3	—	171	—	172
520F & G	Bolted 3R/7 & 9, 7 & 9	0...2	—	168	—	172
		3	—	168	—	162
530*	1	1PW... 2PW	—	150	—	162
		3PW... 4PW	—	148	—	162
		5PW	—	347	—	547
		6PW	—	195	—	196
		7PW... 8PW	—	133	—	132
540†	1	1YD... 4YD	—	152	—	162
		5YD	—	347	—	547
		6YD	—	195	—	196
		7YD... 8YD	—	133	—	132
570	1	2...4	—	154	—	162
		5	—	347	—	547
		6	—	195	—	196
		7...8...9	—	133	—	132
592	Open	24...32 A	—	180	—	182
		40...165 A	192	191	198	187
592	1	40...165 A	192	181	198	183
592 with current transformer	Open	—	—	195	—	196
600	All	—	—	—	5 (Type P)	—
609, 609RS, 609TS, 609U, 609TU	All	0...1...1P	112	110	117	116
1232X, 1233X	—	0...2	—	152	—	163
		3, 4	—	149	—	163
		5	—	347	—	547

* When selecting heater elements for Bulletin 530, divide the motor nameplate full load amperes by 2.00 — use this value to select the proper "Heater Element Cat. No."

† When selecting heater elements for Bulletin 540, divide the motor nameplate full load amperes by 1.73 — use this value to select the proper "Heater Element Cat. No."

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters, Continued

TABLE 5	
Heater Element Cat. No.	Full Load Amperes
P1	0.17
P2	0.21
P3	0.25
P4	0.32
P5	0.39
P6	0.46
P7	0.57
P8	0.71
P9	0.79
P10	0.87
P11	0.98
P12	1.08
P13	1.19
P14	1.30
P15	1.43
P16	1.58
P17	1.75
P18	1.88
P19	2.13
P20	2.40
P21	2.58
P22	2.92
P23	3.09
P24	3.32
P25	3.37
P26	4.16
P27	4.51
P28	4.93
P29	5.43
P30	6.03
P31	6.83
P32	7.72
P33	8.24
P34	8.90
P35	9.60
P36	10.8
P37	12.0
P38	13.5
P39	15.2

TABLE 55						
Heater Element Cat. No.	Full Load Amperes					
	Size 00	Size 0	Size 1	Size 1P	Size 2	Size 3
JJ14	0.22	0.22	0.22	—	—	—
JJ13	0.24	0.24	0.24	—	—	—
JJ12	0.27	0.27	0.27	—	—	—
JJ11	0.30	0.30	0.30	—	—	—
JJ10	0.33	0.33	0.33	—	—	—
JJ9	0.36	0.36	0.36	—	—	—
JJ8	0.40	0.40	0.40	—	—	—
JJ7	0.44	0.44	0.44	—	—	—
JJ6	0.48	0.48	0.48	—	—	—
JJ5	0.53	0.53	0.53	—	—	—
JJ4	0.58	0.58	0.58	—	—	—
JJ3	0.65	0.65	0.65	—	—	—
JJ2	0.71	0.71	0.71	—	—	—
JJ1	0.78	0.78	0.78	—	—	—
J1	0.87	0.87	0.87	—	—	—
J2	0.95	0.95	0.95	—	—	—
J3	1.05	1.05	1.05	—	—	—
J4	1.16	1.16	1.16	—	—	—
J5	1.28	1.28	1.28	—	—	—
J6	1.41	1.41	1.41	—	—	—
J7	1.55	1.55	1.55	—	—	—
J8	1.70	1.70	1.70	—	—	—
J9	1.87	1.87	1.87	—	—	—
J10	2.06	2.06	2.06	—	—	—
J11	2.27	2.27	2.27	—	—	—
J12	2.51	2.51	2.51	—	—	—
J13	2.78	2.78	2.78	—	—	—
J14	3.07	3.07	3.07	—	—	—
J15	3.38	3.38	3.38	—	—	—
J16	3.72	3.72	3.72	—	—	—
J17	4.10	4.10	4.10	—	—	—
J18	4.52	4.52	4.52	—	—	—
J19	4.98	4.98	4.98	—	—	—
J20	5.49	5.49	5.49	—	—	—
J21	6.04	6.04	6.04	—	—	—
J22	6.66	6.66	6.66	—	—	—
J23	7.35	7.35	7.35	—	—	—
J24	8.13	8.13	8.13	—	—	—
J25	8.96	8.96	8.96	—	—	—
J26	9.90	9.90	9.90	—	—	—
J27	—	10.9	10.9	11.0	—	—
J28	—	12.0	12.0	12.2	—	—
J29	—	13.2	13.2	13.4	—	—
J30	—	14.6	14.6	14.8	—	—
J31	—	16.1	16.1	16.3	—	—
J32	—	17.7	17.7	17.9	18.3	—
J33	—	—	19.5	19.8	20.2	—
J34	—	—	21.4	21.8	22.2	—
J35	—	—	23.6	24.0	24.4	—
J36	—	—	26.0	26.4	26.9	—
J37	—	—	28.5	29.0	29.8	—
J38	—	—	—	32.0	33.0	—
J39	—	—	—	35.0	36.5	40.5
J40	—	—	—	38.5	40.5	45.5
J41	—	—	—	—	45.5	51
J42	—	—	—	—	—	56
J43	—	—	—	—	—	62
J44	—	—	—	—	—	68
J45	—	—	—	—	—	74
J46	—	—	—	—	—	82
J70	—	—	—	—	—	90
J71	—	—	—	—	—	—
J72	—	—	—	—	—	—
J73	—	—	—	—	—	—
J74	—	—	—	—	—	—

Refer to Heater Element Selection Procedure on page 1-152 before using tables.

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters, Continued

TABLE 110		
Heater Element Cat. No.	Full Load Amperes	
	Size 0	Size 1
W10	0.18	0.18
W11	0.20	0.20
W12	0.22	0.22
W13	0.24	0.24
W14	0.27	0.27
W15	0.30	0.30
W16	0.33	0.33
W17	0.36	0.36
W18	0.40	0.40
W19	0.44	0.44
W20	0.48	0.48
W21	0.53	0.53
W22	0.59	0.59
W23	0.65	0.65
W24	0.71	0.71
W25	0.78	0.78
W26	0.86	0.86
W27	0.95	0.95
W28	1.05	1.05
W29	1.16	1.16
W30	1.27	1.27
W31	1.41	1.41
W32	1.55	1.55
W33	1.71	1.71
W34	1.89	1.89
W35	2.08	2.08
W36	2.30	2.30
W37	2.53	2.53
W38	2.79	2.79
W39	3.07	3.07
W40	3.38	3.38
W41	3.73	3.73
W42	4.11	4.11
W43	4.51	4.51
W44	4.96	4.96
W45	5.44	5.44
W46	5.98	5.98
W47	6.57	6.57
W48	7.21	7.21
W49	7.92	7.92
W50	8.70	8.70
W51	9.57	9.5
W52	10.5	10.5
W53	11.6	11.6
W54	12.7	12.7
W55	14.0	14.0
W56	15.4	15.4
W57	16.8	16.8
W58	18.3	18.3
W59	—	19.9
W60	—	21.7
W61	—	23.6
W62	—	25.7
W63	—	28.0

TABLE 112			
Heater Element Cat. No.	Full Load Amperes		
	Size 0	Size 1	Size 1P
W10	0.21	0.21	—
W11	0.23	0.23	—
W12	0.25	0.25	—
W13	0.28	0.28	—
W14	0.31	0.31	—
W15	0.34	0.34	—
W16	0.37	0.37	—
W17	0.41	0.41	—
W18	0.45	0.45	—
W19	0.49	0.49	—
W20	0.54	0.54	—
W21	0.59	0.59	—
W22	0.65	0.65	—
W23	0.71	0.71	—
W24	0.78	0.78	—
W25	0.86	0.86	—
W26	0.94	0.94	—
W27	1.04	1.04	—
W28	1.14	1.14	—
W29	1.26	1.26	—
W30	1.39	1.39	—
W31	1.53	1.53	—
W32	1.69	1.69	—
W33	1.86	1.86	—
W34	2.05	2.05	—
W35	2.26	2.26	—
W36	2.49	2.49	—
W37	2.74	2.74	—
W38	3.02	3.02	—
W39	3.33	3.33	—
W40	3.67	3.67	—
W41	4.04	4.04	—
W42	4.45	4.45	—
W43	4.89	4.89	—
W44	5.38	5.38	—
W45	5.92	5.92	—
W46	6.51	6.51	—
W47	7.16	7.16	—
W48	7.87	7.87	—
W49	8.66	8.66	—
W50	9.52	9.52	—
W51	10.5	10.5	10.5
W52	11.5	11.5	11.5
W53	12.6	12.6	12.6
W54	13.9	13.9	13.9
W55	15.2	15.2	15.2
W56	16.7	16.7	16.7
W57	18.3	18.3	18.3
W58	—	19.9	19.9
W59	—	21.8	21.8
W60	—	23.8	23.8
W61	—	26.0	26.0
W62	—	28.5	28.5
W63	—	—	31.0
W64	—	—	34.0
W65	—	—	37.0

Refer to Heater Element Selection Procedure on page 1-152 before using tables.

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters, Continued

TABLE 116		
Heater Element Cat. No.	Full Load Amperes	
	Size 0	Size 1
JJ14	0.19	0.19
JJ13	0.21	0.21
JJ12	0.23	0.23
JJ11	0.26	0.26
JJ10	0.29	0.29
JJ9	0.31	0.31
JJ8	0.35	0.35
JJ7	0.39	0.39
JJ6	0.43	0.43
JJ5	0.47	0.47
JJ4	0.52	0.52
JJ3	0.58	0.58
JJ2	0.64	0.64
JJ1	0.71	0.71
J1	0.79	0.79
J2	0.87	0.87
J3	0.96	0.96
J4	1.07	1.07
J5	1.18	1.18
J6	1.31	1.31
J7	1.45	1.45
J8	1.60	1.60
J9	1.76	1.76
J10	1.94	1.94
J11	2.13	2.13
J12	2.35	2.35
J13	2.59	2.59
J14	2.85	2.85
J15	3.14	3.14
J16	3.45	3.45
J17	3.80	3.80
J18	4.19	4.19
J19	4.62	4.62
J20	5.08	5.08
J21	5.60	5.60
J22	6.17	6.17
J23	6.80	6.80
J24	7.48	7.48
J25	8.24	8.24
J26	9.08	9.08
J27	10.0	10.0
J28	11.0	11.0
J29	12.2	12.2
J30	13.6	13.6
J31	15.1	15.1
J32	16.7	16.7
J33	18.6	18.6
J34	—	20.4
J35	—	22.5
J36	—	24.8
J37	—	27.5
J38	—	—
J39	—	—
J40	—	—

TABLE 117			
Heater Element Cat. No.	Full Load Amperes		
	Size 0	Size 1	Size 1P
JJ14	0.20	0.20	—
JJ13	0.22	0.22	—
JJ12	0.24	0.24	—
JJ11	0.27	0.27	—
JJ10	0.30	0.30	—
JJ9	0.33	0.33	—
JJ8	0.37	0.37	—
JJ7	0.40	0.40	—
JJ6	0.45	0.45	—
JJ5	0.50	0.50	—
JJ4	0.55	0.55	—
JJ3	0.60	0.60	—
JJ2	0.67	0.67	—
JJ1	0.74	0.74	—
J1	0.82	0.82	—
J2	0.91	0.91	—
J3	1.00	1.00	—
J4	1.11	1.11	—
J5	1.22	1.22	—
J6	1.35	1.35	—
J7	1.49	1.49	—
J8	1.66	1.66	—
J9	1.83	1.83	—
J10	2.02	2.02	—
J11	2.24	2.24	—
J12	2.48	2.48	—
J13	2.75	2.75	—
J14	3.03	3.03	—
J15	3.35	3.35	—
J16	3.70	3.70	—
J17	4.10	4.10	—
J18	4.53	4.53	—
J19	5.01	5.01	—
J20	5.54	5.54	—
J21	6.13	6.13	—
J22	6.78	6.78	—
J23	7.49	7.49	—
J24	8.29	8.29	—
J25	9.16	9.16	—
J26	10.1	10.1	—
J27	11.2	11.2	—
J28	12.4	12.4	12.4
J29	13.7	13.7	13.7
J30	15.2	15.2	15.2
J31	16.8	16.8	16.8
J32	18.5	18.5	18.5
J33	—	20.5	20.5
J34	—	22.8	22.8
J35	—	25.0	25.0
J36	—	27.5	27.5
J37	—	—	30.0
J38	—	—	33.5
J39	—	—	36.0
J40	—	—	—

Refer to Heater Element Selection Procedure on page 1-152 before using tables.

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters, Continued

TABLE 127	
Heater Element Cat. No.	Full Load Amperes
	Size 00
W10	0.21
W11	0.23
W12	0.25
W13	0.27
W14	0.30
W15	0.34
W16	0.37
W17	0.41
W18	0.45
W19	0.50
W20	0.55
W21	0.60
W22	0.65
W23	0.71
W24	0.78
W25	0.86
W26	0.95
W27	1.04
W28	1.14
W29	1.25
W30	1.36
W31	1.50
W32	1.65
W33	1.82
W34	2.01
W35	2.21
W36	2.45
W37	2.67
W38	3.00
W39	3.31
W40	3.65
W41	4.06
W42	4.49
W43	4.98
W44	5.48
W45	6.06
W46	6.68
W47	7.35
W48	8.09
W49	8.90
W50	9.80

TABLE 132		
Heater Element Cat. No.	Full Load Amperes	
	Size 7	Size 8
J7	231	350
J8	253	380
J9	276	415
J10	305	455
J11	330	495
J12	360	540
J13	400	600
J14	440	660
J15	485	722
J16	530	795
J17	585	880
J18	645	965
J19	710	1160
J20	780	1170
J21	860	1290

TABLE 133		
Heater Element Cat. No.	Full Load Amperes	
	Size 7	Size 8
W29	—	—
W30	—	—
W31	230	345
W32	248	375
W33	272	410
W34	305	460
W35	325	485
W36	355	535
W37	390	585
W38	430	645
W39	475	710
W40	520	780
W41	575	860
W42	630	945
W43	690	1035
W44	755	1135
W45	835	1255

TABLE 134	
Heater Element Cat. No.	Size 7
W29	240
W30	261
W31	285
W32	310
W33	340
W34	370
W35	405
W36	445
W37	490
W38	540
W39	590
W40	650
W41	710
W42	780
W43	860
W44	—

Refer to Heater Element Selection Procedure on page 1-152 before using tables.

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters, Continued

TABLE 144					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 2	Size 3	Size 4
W10	0.18	0.18	—	—	—
W11	0.20	0.20	—	—	—
W12	0.22	0.22	—	—	—
W13	0.24	0.24	—	—	—
W14	0.26	0.26	—	—	—
W15	0.29	0.29	—	—	—
W16	0.32	0.32	—	—	—
W17	0.35	0.35	—	—	—
W18	0.38	0.38	—	—	—
W19	0.42	0.42	—	—	—
W20	0.46	0.46	—	—	—
W21	0.51	0.51	—	—	—
W22	0.56	0.56	—	—	—
W23	0.62	0.62	—	—	—
W24	0.68	0.68	—	—	—
W25	0.75	0.75	—	—	—
W26	0.82	0.82	—	—	—
W27	0.90	0.90	—	—	—
W28	0.99	0.99	—	—	—
W29	1.09	1.09	—	—	—
W30	1.20	1.20	—	—	—
W31	1.32	1.32	—	—	—
W32	1.45	1.45	—	—	—
W33	1.59	1.59	—	—	—
W34	1.75	1.75	—	—	—
W35	1.93	1.93	—	—	—
W36	2.12	2.12	—	—	—
W37	2.33	2.33	—	—	—
W38	2.56	2.56	—	—	—
W39	2.81	2.81	—	—	—
W40	3.09	3.09	—	—	—
W41	3.40	3.40	—	—	—
W42	3.74	3.74	—	—	—
W43	4.11	4.11	—	—	—
W44	4.52	4.52	—	—	—
W45	4.97	4.97	—	—	—
W46	5.46	5.46	5.60	—	—
W47	6.01	6.01	6.15	—	—
W48	6.60	6.60	6.76	—	—
W49	7.26	7.26	7.43	—	—
W50	7.98	7.98	8.17	—	—
W51	8.78	8.78	8.98	—	—
W52	9.65	9.65	9.87	—	—
W53	10.6	10.6	10.8	—	—
W54	11.7	11.7	11.9	—	—
W55	12.8	12.8	13.1	—	—
W56	14.1	14.1	14.4	—	—
W57	15.4	15.4	15.7	—	—
W58	16.8	16.8	17.1	—	—
W59	18.3	18.3	18.6	—	—
W60	—	19.8	20.1	—	—
W61	—	21.3	21.7	25.5	—
W62	—	22.7	23.1	28.1	—
W63	—	24.4	24.8	31.0	32.0
W64	—	26.2	28.6	34.0	35.0
W65	—	28.2	30.5	37.0	38.5
W66	—	—	33.0	40.0	42.5
W67	—	—	35.5	43.5	46.5
W68	—	—	38.0	47	51
W69	—	—	40.5	51	55
W70	—	—	43.5	55	59
W71	—	—	47.0	59	64
W72	—	—	—	63	69
W73	—	—	—	67	74
W74	—	—	—	71	79
W75	—	—	—	76	84
W76	—	—	—	80	90
W77	—	—	—	85	96
W78	—	—	—	90	102
W79	—	—	—	—	107
W80	—	—	—	—	113
W81	—	—	—	—	118
W82	—	—	—	—	124
W83	—	—	—	—	130
W84	—	—	—	—	135
W85	—	—	—	—	—

TABLE 145			
Heater Element Cat. No.	Full Load Amperes		
	Size 0	Size 1	Size 2
W10	0.18	0.18	—
W11	0.20	0.20	—
W12	0.22	0.22	—
W13	0.24	0.24	—
W14	0.27	0.27	—
W15	0.30	0.30	—
W16	0.33	0.33	—
W17	0.36	0.36	—
W18	0.40	0.40	—
W19	0.44	0.44	—
W20	0.49	0.49	—
W21	0.54	0.54	—
W22	0.60	0.60	—
W23	0.66	0.66	—
W24	0.73	0.73	—
W25	0.80	0.80	—
W26	0.88	0.88	—
W27	0.97	0.97	—
W28	1.06	1.06	—
W29	1.17	1.17	—
W30	1.29	1.29	—
W31	1.42	1.42	—
W32	1.56	1.56	—
W33	1.71	1.71	—
W34	1.89	1.89	—
W35	2.08	2.08	—
W36	2.28	2.28	—
W37	2.51	2.51	—
W38	2.76	2.76	—
W39	3.04	3.04	—
W40	3.34	3.34	—
W41	3.68	3.68	—
W42	4.05	4.05	—
W43	4.45	4.45	—
W44	4.90	4.90	—
W45	5.39	5.39	5.58
W46	5.88	5.88	6.11
W47	6.41	6.41	6.70
W48	6.99	6.99	7.34
W49	7.63	7.63	7.97
W50	8.32	8.32	8.69
W51	9.07	9.07	9.52
W52	9.89	9.89	10.4
W53	10.8	10.8	11.4
W54	11.8	11.8	12.5
W55	12.9	12.9	13.6
W56	14.2	14.2	14.9
W57	15.5	15.5	16.2
W58	16.8	16.8	17.4
W59	18.5	18.5	19.3
W60	—	20.3	21.0
W61	—	22.2	23.0
W62	—	24.0	25.0
W63	—	26.1	27.1
W64	—	28.4	29.6
W65	—	—	32.0
W66	—	—	34.5
W67	—	—	38.0
W68	—	—	41.5
W69	—	—	45.0
W70	—	—	—
W71	—	—	—
W72	—	—	—
W73	—	—	—
W74	—	—	—
W75	—	—	—
W76	—	—	—
W77	—	—	—
W78	—	—	—
W79	—	—	—
W80	—	—	—
W81	—	—	—
W82	—	—	—
W83	—	—	—
W84	—	—	—
W85	—	—	—

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters, Continued

TABLE 146					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 2	Size 3	Size 4
W10	0.18	0.18	—	—	—
W11	0.20	0.20	—	—	—
W12	0.22	0.22	—	—	—
W13	0.24	0.24	—	—	—
W14	0.27	0.27	—	—	—
W15	0.30	0.30	—	—	—
W16	0.33	0.33	—	—	—
W17	0.36	0.36	—	—	—
W18	0.40	0.40	—	—	—
W19	0.44	0.44	—	—	—
W20	0.49	0.49	—	—	—
W21	0.54	0.54	—	—	—
W22	0.60	0.60	—	—	—
W23	0.66	0.66	—	—	—
W24	0.73	0.73	—	—	—
W25	0.80	0.80	—	—	—
W26	0.88	0.88	—	—	—
W27	0.97	0.97	—	—	—
W28	1.06	1.06	—	—	—
W29	1.17	1.17	—	—	—
W30	1.29	1.29	—	—	—
W31	1.42	1.42	—	—	—
W32	1.56	1.56	—	—	—
W33	1.71	1.71	—	—	—
W34	1.89	1.89	—	—	—
W35	2.08	2.08	—	—	—
W36	2.28	2.28	—	—	—
W37	2.51	2.51	—	—	—
W38	2.76	2.76	—	—	—
W39	3.04	3.04	—	—	—
W40	3.34	3.34	—	—	—
W41	3.68	3.68	—	—	—
W42	4.05	4.05	—	—	—
W43	4.45	4.45	—	—	—
W44	4.90	4.90	—	—	—
W45	5.39	5.39	5.53	—	—
W46	5.88	5.88	6.04	—	—
W47	6.41	6.41	6.60	—	—
W48	6.99	6.99	7.21	—	—
W49	7.63	7.63	7.87	—	—
W50	8.32	8.32	8.60	—	—
W51	9.07	9.07	9.39	—	—
W52	9.89	9.89	10.3	—	—
W53	10.8	10.8	11.2	—	—
W54	11.8	11.8	12.2	—	—
W55	12.8	12.8	13.3	—	—
W56	14.0	14.0	14.6	—	—
W57	15.3	15.3	15.8	—	—
W58	16.7	16.7	17.3	—	—
W59	18.1	18.1	18.9	—	—
W60	—	19.7	20.6	—	—
W61	—	21.5	22.5	25.5	—
W62	—	23.5	24.6	28.1	—
W63	—	25.7	26.8	31.0	32.0
W64	—	27.5	29.4	34.0	35.0
W65	—	—	32.0	37.0	38.5
W66	—	—	34.5	40.0	42.5
W67	—	—	37.5	43.5	46.5
W68	—	—	41.0	47.0	51
W69	—	—	44.5	51	55
W70	—	—	47.0	55	59
W71	—	—	—	59	64
W72	—	—	—	63	69
W73	—	—	—	67	74
W74	—	—	—	71	79
W75	—	—	—	76	84
W76	—	—	—	80	90
W77	—	—	—	85	96
W78	—	—	—	90	102
W79	—	—	—	—	107
W80	—	—	—	—	113
W81	—	—	—	—	118
W82	—	—	—	—	124
W83	—	—	—	—	130
W84	—	—	—	—	135

TABLE 148					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 2	Size 3	Size 4
W10	0.19	0.19	—	—	—
W11	0.21	0.21	—	—	—
W12	0.23	0.23	—	—	—
W13	0.25	0.25	—	—	—
W14	0.28	0.28	—	—	—
W15	0.30	0.30	—	—	—
W16	0.33	0.33	—	—	—
W17	0.36	0.36	—	—	—
W18	0.39	0.39	—	—	—
W19	0.43	0.43	—	—	—
W20	0.48	0.48	—	—	—
W21	0.52	0.52	—	—	—
W22	0.57	0.57	—	—	—
W23	0.62	0.62	—	—	—
W24	0.69	0.69	—	—	—
W25	0.76	0.76	—	—	—
W26	0.83	0.83	—	—	—
W27	0.91	0.91	—	—	—
W28	1.01	1.01	—	—	—
W29	1.12	1.12	—	—	—
W30	1.22	1.22	—	—	—
W31	1.34	1.34	—	—	—
W32	1.47	1.47	—	—	—
W33	1.62	1.62	—	—	—
W34	1.78	1.78	—	—	—
W35	1.96	1.96	—	—	—
W36	2.15	2.15	—	—	—
W37	2.36	2.36	—	—	—
W38	2.60	2.60	—	—	—
W39	2.86	2.86	—	—	—
W40	3.16	3.16	—	—	—
W41	3.48	3.48	—	—	—
W42	3.84	3.84	—	—	—
W43	4.22	4.22	—	—	—
W44	4.65	4.65	—	—	—
W45	5.12	5.12	5.13	—	—
W46	5.63	5.63	5.64	—	—
W47	6.20	6.20	6.22	—	—
W48	6.82	6.82	6.85	—	—
W49	7.51	7.51	7.56	—	—
W50	8.23	8.23	8.45	—	—
W51	9.07	9.07	9.32	—	—
W52	9.95	9.95	10.3	10.6	—
W53	10.8	10.8	11.4	11.6	—
W54	11.9	11.9	12.4	12.6	—
W55	13.0	13.0	13.6	13.9	—
W56	14.2	14.2	14.8	15.3	—
W57	15.5	15.5	16.1	16.9	17.3
W58	16.4	16.4	17.3	18.7	19.0
W59	17.7	17.7	18.7	20.7	21.0
W60	19.7	19.7	20.6	22.8	23.1
W61	—	21.7	22.7	25.1	25.5
W62	—	24.2	25.2	27.5	28.0
W63	—	27.0	28.0	30.5	31.0
W64	—	—	30.0	33.5	34.0
W65	—	—	32.5	36.5	37.0
W66	—	—	35.0	39.5	40.0
W67	—	—	38.0	42.5	44.0
W68	—	—	40.5	46	48.5
W69	—	—	43.5	50	53.0
W70	—	—	46.5	54	57.0
W71	—	—	—	58	62.0
W72	—	—	—	62	67.0
W73	—	—	—	67	72.0
W74	—	—	—	72	77.0
W75	—	—	—	76	82.0
W76	—	—	—	81	87.0
W77	—	—	—	86	93.0
W78	—	—	—	90	99.0
W79	—	—	—	—	105
W80	—	—	—	—	112
W81	—	—	—	—	117
W82	—	—	—	—	123
W83	—	—	—	—	129
W84	—	—	—	—	135
W85	—	—	—	—	—

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1283

TABLE 149					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 2	Size 3	Size 4
W10	0.18	0.18	—	—	—
W11	0.20	0.20	—	—	—
W12	0.22	0.22	—	—	—
W13	0.24	0.24	—	—	—
W14	0.27	0.27	—	—	—
W15	0.30	0.30	—	—	—
W16	0.33	0.33	—	—	—
W17	0.36	0.36	—	—	—
W18	0.40	0.40	—	—	—
W19	0.44	0.44	—	—	—
W20	0.49	0.49	—	—	—
W21	0.54	0.54	—	—	—
W22	0.60	0.60	—	—	—
W23	0.66	0.66	—	—	—
W24	0.73	0.73	—	—	—
W25	0.80	0.80	—	—	—
W26	0.88	0.88	—	—	—
W27	0.97	0.97	—	—	—
W28	1.06	1.06	—	—	—
W29	1.17	1.17	—	—	—
W30	1.29	1.29	—	—	—
W31	1.42	1.42	—	—	—
W32	1.56	1.56	—	—	—
W33	1.71	1.71	—	—	—
W34	1.89	1.89	—	—	—
W35	2.08	2.08	—	—	—
W36	2.28	2.28	—	—	—
W37	2.51	2.51	—	—	—
W38	2.76	2.76	—	—	—
W39	3.04	3.04	—	—	—
W40	3.34	3.34	—	—	—
W41	3.68	3.68	—	—	—
W42	4.05	4.05	—	—	—
W43	4.45	4.45	—	—	—
W44	4.90	4.90	—	—	—
W45	5.39	5.39	5.53	—	—
W46	5.88	5.88	6.00	—	—
W47	6.41	6.41	6.60	—	—
W48	6.99	6.99	7.20	—	—
W49	7.63	7.63	7.84	—	—
W50	8.32	8.32	8.53	—	—
W51	9.07	9.07	9.30	—	—
W52	9.89	9.89	10.2	10.6	—
W53	10.8	10.8	11.2	11.6	—
W54	11.8	11.8	12.2	12.6	—
W55	12.8	12.8	13.2	13.9	—
W56	14.0	14.0	14.4	15.3	—
W57	15.3	15.3	15.8	16.9	18.5
W58	16.2	16.2	16.8	18.7	20.5
W59	17.6	17.6	18.3	20.7	22.5
W60	19.5	19.5	20.3	22.8	25.0
W61	—	21.5	22.4	25.1	27.5
W62	—	23.4	24.4	27.5	30.0
W63	—	25.7	26.8	30.5	33.0
W64	—	27.5	28.7	33.5	36.0
W65	—	—	31.5	37.0	39.5
W66	—	—	34.0	41.0	43.0
W67	—	—	37.0	44.0	47.5
W68	—	—	40.5	47.5	52.0
W69	—	—	43.5	52.0	56.0
W70	—	—	46.5	57.0	61.0
W71	—	—	—	61.0	66.0
W72	—	—	—	66.0	71.0
W73	—	—	—	71.0	76.0
W74	—	—	—	75.0	81.0
W75	—	—	—	79.0	87.0
W76	—	—	—	83.0	93.0
W77	—	—	—	87.0	99.0
W78	—	—	—	91.0	105
W79	—	—	—	—	111
W80	—	—	—	—	118
W81	—	—	—	—	125
W82	—	—	—	—	132
W83	—	—	—	—	139
W84	—	—	—	—	—

TABLE 150					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 2	Size 3	Size 4
W10	0.18	0.18	—	—	—
W11	0.20	0.20	—	—	—
W12	0.22	0.22	—	—	—
W13	0.24	0.24	—	—	—
W14	0.26	0.26	—	—	—
W15	0.28	0.28	—	—	—
W16	0.31	0.31	—	—	—
W17	0.34	0.34	—	—	—
W18	0.37	0.37	—	—	—
W19	0.41	0.41	—	—	—
W20	0.46	0.46	—	—	—
W21	0.50	0.50	—	—	—
W22	0.55	0.55	—	—	—
W23	0.60	0.60	—	—	—
W24	0.67	0.67	—	—	—
W25	0.73	0.73	—	—	—
W26	0.80	0.80	—	—	—
W27	0.88	0.88	—	—	—
W28	0.97	0.97	—	—	—
W29	1.07	1.07	—	—	—
W30	1.17	1.17	—	—	—
W31	1.29	1.29	—	—	—
W32	1.42	1.42	—	—	—
W33	1.57	1.57	—	—	—
W34	1.73	1.73	—	—	—
W35	1.90	1.90	—	—	—
W36	2.08	2.08	—	—	—
W37	2.28	2.28	—	—	—
W38	2.51	2.51	—	—	—
W39	2.76	2.76	—	—	—
W40	3.04	3.04	—	—	—
W41	3.34	3.34	—	—	—
W42	3.68	3.68	—	—	—
W43	4.04	4.04	—	—	—
W44	4.46	4.46	—	—	—
W45	4.94	4.94	5.13	—	—
W46	5.46	5.46	5.64	—	—
W47	6.03	6.03	6.22	—	—
W48	6.65	6.65	6.85	—	—
W49	7.33	7.33	7.56	—	—
W50	8.13	8.13	8.45	—	—
W51	8.95	8.95	9.32	—	—
W52	9.90	9.90	10.3	10.4	—
W53	10.7	10.7	11.3	11.4	—
W54	11.7	11.7	12.3	12.5	—
W55	12.8	12.8	13.4	13.7	—
W56	14.0	14.0	14.5	15.1	—
W57	15.3	15.3	15.8	16.7	18.5
W58	16.2	16.2	16.7	18.4	20.5
W59	17.5	17.5	18.0	20.3	22.5
W60	19.4	19.4	19.9	22.5	25.0
W61	—	21.3	21.9	24.8	27.5
W62	—	23.3	24.2	27.2	30.0
W63	—	25.5	26.8	30.0	33.0
W64	—	27.2	28.7	33.0	36.0
W65	—	—	31.0	36.0	39.5
W66	—	—	33.5	39.5	43.0
W67	—	—	36.0	43.5	47.0
W68	—	—	38.5	47.5	51.0
W69	—	—	41.5	52.0	56.0
W70	—	—	45.0	56.0	61.0
W71	—	—	—	60.0	66.0
W72	—	—	—	65.0	71.0
W73	—	—	—	69.0	76.0
W74	—	—	—	74.0	82.0
W75	—	—	—	79.0	87.0
W76	—	—	—	85.0	93.0
W77	—	—	—	91.0	99.0
W78	—	—	—	—	105
W79	—	—	—	—	111
W80	—	—	—	—	118
W81	—	—	—	—	125
W82	—	—	—	—	132
W83	—	—	—	—	139
W84	—	—	—	—	—
W85	—	—	—	—	—

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1283

TABLE 151					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 2	Size 3	Size 4
W10	0.19	0.19	—	—	—
W11	0.21	0.21	—	—	—
W12	0.23	0.23	—	—	—
W13	0.25	0.25	—	—	—
W14	0.28	0.28	—	—	—
W15	0.30	0.30	—	—	—
W16	0.33	0.33	—	—	—
W17	0.36	0.36	—	—	—
W18	0.39	0.39	—	—	—
W19	0.43	0.43	—	—	—
W20	0.48	0.48	—	—	—
W21	0.52	0.52	—	—	—
W22	0.57	0.57	—	—	—
W23	0.62	0.62	—	—	—
W24	0.69	0.69	—	—	—
W25	0.76	0.76	—	—	—
W26	0.83	0.83	—	—	—
W27	0.91	0.91	—	—	—
W28	1.01	1.01	—	—	—
W29	1.12	1.12	—	—	—
W30	1.22	1.22	—	—	—
W31	1.34	1.34	—	—	—
W32	1.47	1.47	—	—	—
W33	1.62	1.62	—	—	—
W34	1.78	1.78	—	—	—
W35	1.96	1.96	—	—	—
W36	2.15	2.15	—	—	—
W37	2.36	2.36	—	—	—
W38	2.60	2.60	—	—	—
W39	2.86	2.86	—	—	—
W40	3.16	3.16	—	—	—
W41	3.48	3.48	—	—	—
W42	3.84	3.84	—	—	—
W43	4.22	4.22	—	—	—
W44	4.65	4.65	—	—	—
W45	5.12	5.12	5.13	—	—
W46	5.63	5.63	5.64	—	—
W47	6.20	6.20	6.22	—	—
W48	6.82	6.82	6.85	—	—
W49	7.51	7.51	7.56	—	—
W50	8.23	8.23	8.45	—	—
W51	9.07	9.07	9.32	—	—
W52	9.95	9.95	10.3	10.6	—
W53	10.8	10.8	11.3	11.6	—
W54	11.9	11.9	12.3	12.6	—
W55	13.0	13.0	13.4	13.9	—
W56	14.2	14.2	14.5	15.3	—
W57	15.5	15.5	15.8	16.9	—
W58	16.4	16.4	16.7	18.7	—
W59	17.7	17.7	18.1	20.7	—
W60	19.7	19.7	20.0	22.8	—
W61	—	21.7	22.0	25.1	25.0
W62	—	24.2	24.5	27.5	27.7
W63	—	27.0	27.3	30.5	31.0
W64	—	—	29.2	33.5	34.0
W65	—	—	31.5	36.5	38.0
W66	—	—	34.5	40.0	41.5
W67	—	—	37.0	44.0	45.5
W68	—	—	39.5	48.0	49.0
W69	—	—	42.5	52.0	53.0
W70	—	—	46.0	57.0	57.0
W71	—	—	—	61.0	62.0
W72	—	—	—	66.0	67.0
W73	—	—	—	70.0	72.0
W74	—	—	—	75.0	77.0
W75	—	—	—	80.0	84.0
W76	—	—	—	86.0	92.0
W77	—	—	—	92.0	97.0
W78	—	—	—	—	102
W79	—	—	—	—	109
W80	—	—	—	—	117
W81	—	—	—	—	125
W82	—	—	—	—	130
W83	—	—	—	—	136
W84	—	—	—	—	—
W85	—	—	—	—	—

TABLE 152					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 2	Size 3	Size 4
W10	0.19	0.19	—	—	—
W11	0.21	0.21	—	—	—
W12	0.23	0.23	—	—	—
W13	0.25	0.25	—	—	—
W14	0.28	0.28	—	—	—
W15	0.31	0.31	—	—	—
W16	0.34	0.34	—	—	—
W17	0.37	0.37	—	—	—
W18	0.41	0.41	—	—	—
W19	0.45	0.45	—	—	—
W20	0.50	0.50	—	—	—
W21	0.55	0.55	—	—	—
W22	0.60	0.60	—	—	—
W23	0.66	0.66	—	—	—
W24	0.73	0.73	—	—	—
W25	0.80	0.80	—	—	—
W26	0.88	0.88	—	—	—
W27	0.97	0.97	—	—	—
W28	1.06	1.06	—	—	—
W29	1.16	1.16	—	—	—
W30	1.27	1.27	—	—	—
W31	1.39	1.39	—	—	—
W32	1.51	1.51	—	—	—
W33	1.65	1.65	—	—	—
W34	1.80	1.80	—	—	—
W35	1.96	1.96	—	—	—
W36	2.15	2.15	—	—	—
W37	2.36	2.36	—	—	—
W38	2.60	2.60	—	—	—
W39	2.86	2.86	—	—	—
W40	3.16	3.16	—	—	—
W41	3.48	3.48	—	—	—
W42	3.85	3.85	—	—	—
W43	4.23	4.23	—	—	—
W44	4.68	4.68	—	—	—
W45	5.18	5.18	5.25	—	—
W46	5.68	5.68	5.81	—	—
W47	6.28	6.28	6.41	—	—
W48	6.94	6.94	7.09	—	—
W49	7.71	7.71	7.86	—	—
W50	8.45	8.45	8.56	—	—
W51	9.29	9.29	9.40	—	—
W52	10.3	10.3	10.4	10.6	—
W53	11.4	11.4	11.5	11.6	—
W54	12.5	12.5	12.6	12.6	—
W55	13.7	13.7	13.8	13.9	—
W56	15.0	15.0	15.1	15.3	—
W57	16.3	16.3	16.4	16.9	18.5
W58	17.6	17.6	17.7	18.7	20.5
W59	18.9	18.9	19.1	20.7	22.5
W60	—	20.9	21.1	22.8	25.0
W61	—	22.9	23.2	25.1	27.5
W62	—	25.0	25.7	27.5	30.0
W63	—	27.6	28.5	30.5	33.0
W64	—	—	30.5	33.5	36.0
W65	—	—	33.0	36.5	39.5
W66	—	—	35.5	40.0	43.0
W67	—	—	38.5	44.0	47.0
W68	—	—	41.5	48.5	51.0
W69	—	—	45.0	53.0	56.0
W70	—	—	—	58.0	61.0
W71	—	—	—	62.0	66.0
W72	—	—	—	67.0	72.0
W73	—	—	—	72.0	77.0
W74	—	—	—	77.0	83.0
W75	—	—	—	82.0	89.0
W76	—	—	—	88.0	95.0
W77	—	—	—	94.0	102
W78	—	—	—	—	108
W79	—	—	—	—	116
W80	—	—	—	—	123
W81	—	—	—	—	130
W82	—	—	—	—	137
W83	—	—	—	—	—

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1283

TABLE 153					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 2	Size 3	Size 4
W10	0.19	0.19	—	—	—
W11	0.21	0.21	—	—	—
W12	0.23	0.23	—	—	—
W13	0.25	0.25	—	—	—
W14	0.28	0.28	—	—	—
W15	0.31	0.31	—	—	—
W16	0.34	0.34	—	—	—
W17	0.37	0.37	—	—	—
W18	0.41	0.41	—	—	—
W19	0.45	0.45	—	—	—
W20	0.5	0.50	—	—	—
W21	0.55	0.55	—	—	—
W22	0.6	0.60	—	—	—
W23	0.66	0.66	—	—	—
W24	0.73	0.73	—	—	—
W25	0.8	0.80	—	—	—
W26	0.88	0.88	—	—	—
W27	0.97	0.97	—	—	—
W28	1.06	1.06	—	—	—
W29	1.16	1.16	—	—	—
W30	1.27	1.27	—	—	—
W31	1.39	1.39	—	—	—
W32	1.51	1.51	—	—	—
W33	1.65	1.65	—	—	—
W34	1.8	1.80	—	—	—
W35	1.98	1.98	—	—	—
W36	2.18	2.18	—	—	—
W37	2.39	2.39	—	—	—
W38	2.63	2.63	—	—	—
W39	2.9	2.90	—	—	—
W40	3.19	3.19	—	—	—
W41	3.5	3.50	—	—	—
W42	3.85	3.85	—	—	—
W43	4.24	4.24	—	—	—
W44	4.66	4.66	—	—	—
W45	5.13	5.13	5.25	—	—
W46	5.64	5.64	5.78	—	—
W47	6.2	6.20	6.35	—	—
W48	6.82	6.82	6.99	—	—
W49	7.51	7.51	7.69	—	—
W50	8.25	8.25	8.45	—	—
W51	9.07	9.07	9.32	—	—
W52	9.98	9.98	10.3	10.6	—
W53	11	11.0	11.4	11.6	—
W54	12.1	12.1	12.4	12.6	—
W55	13.3	13.3	13.6	13.9	—
W56	14.6	14.6	15.0	15.3	—
W57	16	16.0	16.4	16.9	18.5
W58	17.4	17.4	17.8	18.7	20.5
W59	19	19.0	19.5	20.7	22.5
W60	—	20.7	21.2	22.8	25.0
W61	—	22.7	23.3	25.1	27.5
W62	—	24.7	25.3	27.5	30.0
W63	—	27.0	28.0	30.5	33.0
W64	—	—	30.0	33.5	36.0
W65	—	—	32.5	36.5	39.5
W66	—	—	35.0	39.5	43.0
W67	—	—	38.0	42.5	47.0
W68	—	—	40.5	46.0	51.0
W69	—	—	43.5	50.0	56.0
W70	—	—	46.5	54.0	61.0
W71	—	—	—	58.0	66.0
W72	—	—	—	62.0	71.0
W73	—	—	—	67.0	76.0
W74	—	—	—	72.0	82.0
W75	—	—	—	76.0	87.0
W76	—	—	—	81.0	93.0
W77	—	—	—	86.0	99.0
W78	—	—	—	90.0	105
W79	—	—	—	—	111
W80	—	—	—	—	118
W81	—	—	—	—	125
W82	—	—	—	—	132
W83	—	—	—	—	139
W84	—	—	—	—	—

TABLE 154					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 2	Size 3	Size 4
W10	0.20	0.20	—	—	—
W11	0.22	0.22	—	—	—
W12	0.24	0.24	—	—	—
W13	0.26	0.26	—	—	—
W14	0.29	0.29	—	—	—
W15	0.32	0.32	—	—	—
W16	0.35	0.35	—	—	—
W17	0.38	0.38	—	—	—
W18	0.42	0.42	—	—	—
W19	0.47	0.47	—	—	—
W20	0.51	0.51	—	—	—
W21	0.56	0.56	—	—	—
W22	0.61	0.61	—	—	—
W23	0.67	0.67	—	—	—
W24	0.74	0.74	—	—	—
W25	0.81	0.81	—	—	—
W26	0.89	0.89	—	—	—
W27	0.98	0.98	—	—	—
W28	1.08	1.08	—	—	—
W29	1.19	1.19	—	—	—
W30	1.30	1.30	—	—	—
W31	1.43	1.43	—	—	—
W32	1.55	1.55	—	—	—
W33	1.70	1.70	—	—	—
W34	1.90	1.90	—	—	—
W35	2.02	2.02	—	—	—
W36	2.22	2.22	—	—	—
W37	2.43	2.43	—	—	—
W38	2.68	2.68	—	—	—
W39	2.96	2.96	—	—	—
W40	3.25	3.25	—	—	—
W41	3.58	3.58	—	—	—
W42	3.94	3.94	—	—	—
W43	4.30	4.30	—	—	—
W44	4.72	4.72	—	—	—
W45	5.22	5.22	5.25	—	—
W46	5.78	5.78	5.81	—	—
W47	6.38	6.38	6.41	—	—
W48	7.06	7.06	7.09	—	—
W49	7.83	7.83	7.86	—	—
W50	8.55	8.55	8.58	—	—
W51	9.41	9.41	9.48	—	—
W52	10.5	10.5	10.6	11.1	—
W53	11.6	11.6	11.7	12.2	—
W54	12.7	12.7	12.8	13.4	—
W55	14.0	14.0	14.1	14.7	—
W56	15.3	15.3	15.4	16.3	—
W57	16.7	16.7	16.9	17.9	19.5
W58	18.0	18.0	18.3	19.7	21.4
W59	—	19.3	19.9	21.7	23.7
W60	—	21.3	21.9	23.8	26.0
W61	—	23.3	24.2	26.1	28.7
W62	—	25.6	26.8	28.7	31.5
W63	—	28.1	29.6	31.5	34.5
W64	—	—	32.5	34.5	37.5
W65	—	—	35.0	38.0	41.0
W66	—	—	37.5	41.5	44.5
W67	—	—	41.0	45.5	48.5
W68	—	—	45.0	49.5	53
W69	—	—	—	54	58
W70	—	—	—	59	63
W71	—	—	—	64	68
W72	—	—	—	70	74
W73	—	—	—	76	80
W74	—	—	—	81	86
W75	—	—	—	87	92
W76	—	—	—	93	98
W77	—	—	—	—	105
W78	—	—	—	—	112
W79	—	—	—	—	120
W80	—	—	—	—	128
W81	—	—	—	—	136
W82	—	—	—	—	—
W83	—	—	—	—	—
W84	—	—	—	—	—
W85	—	—	—	—	—

Heater Element Selection

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TABLE 155					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 1P	Size 2	Size 3
W10	0.20	0.20	—	—	—
W11	0.22	0.22	—	—	—
W12	0.24	0.24	—	—	—
W13	0.26	0.26	—	—	—
W14	0.29	0.29	—	—	—
W15	0.32	0.32	—	—	—
W16	0.35	0.35	—	—	—
W17	0.39	0.39	—	—	—
W18	0.43	0.43	—	—	—
W19	0.47	0.47	—	—	—
W20	0.51	0.51	—	—	—
W21	0.56	0.56	—	—	—
W22	0.61	0.61	—	—	—
W23	0.67	0.67	—	—	—
W24	0.74	0.74	—	—	—
W25	0.81	0.81	—	—	—
W26	0.89	0.89	—	—	—
W27	0.98	0.98	—	—	—
W28	1.08	1.08	—	—	—
W29	1.19	1.19	—	—	—
W30	1.30	1.30	—	—	—
W31	1.43	1.43	—	—	—
W32	1.56	1.56	—	—	—
W33	1.70	1.70	—	—	—
W34	1.88	1.88	—	—	—
W35	2.05	2.05	—	—	—
W36	2.24	2.24	—	—	—
W37	2.44	2.44	—	—	—
W38	2.69	2.69	—	—	—
W39	2.97	2.97	—	—	—
W40	3.30	3.30	—	—	—
W41	3.64	3.64	—	—	—
W42	4.10	4.10	—	—	—
W43	4.57	4.57	—	—	—
W44	5.01	5.01	—	—	—
W45	5.51	5.51	—	5.48	—
W46	6.06	6.06	—	6.09	—
W47	6.62	6.62	—	6.65	—
W48	7.22	7.22	—	7.26	—
W49	7.89	7.89	—	7.94	—
W50	8.62	8.62	—	8.68	—
W51	9.41	9.41	—	9.48	—
W52	10.5	10.5	—	10.6	11.5
W53	11.6	11.6	11.6	11.7	12.6
W54	12.7	12.7	12.7	12.8	13.8
W55	14.0	14.0	14.0	14.1	15.1
W56	15.3	15.3	15.3	15.4	16.7
W57	16.7	16.7	16.7	16.8	18.3
W58	18.0	18.0	18.0	18.1	20.1
W59	—	19.3	19.3	19.5	22.1
W60	—	21.3	21.3	21.5	24.4
W61	—	23.3	23.3	23.8	27.0
W62	—	25.6	25.6	26.4	29.5
W63	—	28.1	28.1	29.2	32.5
W64	—	—	30.5	31.5	35.0
W65	—	—	32.5	34.0	38.5
W66	—	—	34.0	36.5	42.0
W67	—	—	36.0	39.5	46.0
W68	—	—	—	42.5	50
W69	—	—	—	46.0	54
W70	—	—	—	—	59
W71	—	—	—	—	64
W72	—	—	—	—	70
W73	—	—	—	—	76
W74	—	—	—	—	81
W75	—	—	—	—	87
W76	—	—	—	—	93
W77	—	—	—	—	—
W78	—	—	—	—	—
W79	—	—	—	—	—
W80	—	—	—	—	—

TABLE 156						
Heater Element Cat. No.	Full Load Amperes					
	Size 0	Size 1	Size 1P	Size 2	Size 3	Size 4
W10	0.20	0.20	—	—	—	—
W11	0.22	0.22	—	—	—	—
W12	0.24	0.24	—	—	—	—
W13	0.26	0.26	—	—	—	—
W14	0.29	0.29	—	—	—	—
W15	0.32	0.32	—	—	—	—
W16	0.35	0.35	—	—	—	—
W17	0.39	0.39	—	—	—	—
W18	0.43	0.43	—	—	—	—
W19	0.47	0.47	—	—	—	—
W20	0.51	0.51	—	—	—	—
W21	0.56	0.56	—	—	—	—
W22	0.61	0.61	—	—	—	—
W23	0.67	0.67	—	—	—	—
W24	0.74	0.74	—	—	—	—
W25	0.81	0.81	—	—	—	—
W26	0.89	0.89	—	—	—	—
W27	0.98	0.98	—	—	—	—
W28	1.08	1.08	—	—	—	—
W29	1.19	1.19	—	—	—	—
W30	1.30	1.30	—	—	—	—
W31	1.43	1.43	—	—	—	—
W32	1.57	1.57	—	—	—	—
W33	1.72	1.72	—	—	—	—
W34	1.90	1.90	—	—	—	—
W35	2.08	2.08	—	—	—	—
W36	2.28	2.28	—	—	—	—
W37	2.49	2.49	—	—	—	—
W38	2.74	2.74	—	—	—	—
W39	3.02	3.02	—	—	—	—
W40	3.33	3.33	—	—	—	—
W41	3.68	3.68	—	—	—	—
W42	4.14	4.14	—	—	—	—
W43	4.61	4.61	—	—	—	—
W44	5.06	5.06	—	—	—	—
W45	5.56	5.56	—	5.57	—	—
W46	6.11	6.11	—	6.12	—	—
W47	6.72	6.72	—	6.73	—	—
W48	7.40	7.40	—	7.38	—	—
W49	8.18	8.18	—	8.20	—	—
W50	8.88	8.88	—	8.92	—	—
W51	9.70	9.70	—	9.81	—	—
W52	10.8	10.8	—	10.9	11.7	—
W53	11.8	11.8	11.8	11.9	12.8	—
W54	12.9	12.9	12.9	13.0	13.9	—
W55	14.2	14.2	14.2	14.3	15.2	—
W56	15.5	15.5	15.5	15.6	16.8	—
W57	17.0	17.0	17.0	17.1	18.5	19.5
W58	18.3	18.3	18.3	18.5	20.2	21.4
W59	—	19.9	19.9	20.1	22.2	23.7
W60	—	22.0	22.0	22.2	24.5	26.0
W61	—	24.3	24.3	24.5	27.1	28.7
W62	—	27.0	27.0	27.2	29.9	31.5
W63	—	—	29.5	30.0	32.5	34.5
W64	—	—	32.0	33.0	35.5	37.5
W65	—	—	34.0	35.5	39.0	41.0
W66	—	—	36.0	38.0	42.5	44.5
W67	—	—	—	41.5	47.0	48.5
W68	—	—	—	45.0	52	53
W69	—	—	—	—	57	58
W70	—	—	—	—	62	63
W71	—	—	—	—	67	68
W72	—	—	—	—	73	74
W73	—	—	—	—	79	80
W74	—	—	—	—	85	86
W75	—	—	—	—	92	93
W76	—	—	—	—	—	100
W77	—	—	—	—	—	108
W78	—	—	—	—	—	116
W79	—	—	—	—	—	125
W80	—	—	—	—	—	135
W81	—	—	—	—	—	—
W82	—	—	—	—	—	—
W83	—	—	—	—	—	—
W84	—	—	—	—	—	—
W85	—	—	—	—	—	—

Refer to Heater Element Selection Procedure on page 1-152 before using tables.

Heater Element Selection

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TABLE 158					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 2	Size 3	Size 4
JJ14	0.19	0.19	—	—	—
JJ13	0.21	0.21	—	—	—
JJ12	0.23	0.23	—	—	—
JJ11	0.26	0.26	—	—	—
JJ10	0.28	0.28	—	—	—
JJ9	0.31	0.31	—	—	—
JJ8	0.34	0.34	—	—	—
JJ7	0.38	0.38	—	—	—
JJ6	0.42	0.42	—	—	—
JJ5	0.46	0.46	—	—	—
JJ4	0.51	0.51	—	—	—
JJ3	0.57	0.57	—	—	—
JJ2	0.63	0.63	—	—	—
JJ1	0.69	0.69	—	—	—
J1	0.76	0.76	—	—	—
J2	0.84	0.84	—	—	—
J3	0.92	0.92	—	—	—
J4	1.02	1.02	—	—	—
J5	1.12	1.12	—	—	—
J6	1.23	1.23	—	—	—
J7	1.36	1.36	—	—	—
J8	1.50	1.50	—	—	—
J9	1.65	1.65	—	—	—
J10	1.82	1.82	—	—	—
J11	2.00	2.00	—	—	—
J12	2.20	2.20	—	—	—
J13	2.43	2.43	—	—	—
J14	2.68	2.68	—	—	—
J15	2.95	2.95	—	—	—
J16	3.25	3.25	—	—	—
J17	3.58	3.58	—	—	—
J18	3.96	3.96	—	—	—
J19	4.37	4.37	—	—	—
J20	4.82	4.82	—	—	—
J21	5.32	5.32	—	—	—
J22	5.87	5.87	—	—	—
J23	6.48	6.48	—	—	—
J24	7.15	7.15	—	—	—
J25	7.89	7.89	—	—	—
J26	8.70	8.70	8.84	—	—
J27	9.56	9.56	9.71	—	—
J28	10.5	10.5	10.7	—	—
J29	11.5	11.5	11.8	—	—
J30	12.7	12.7	13.0	—	—
J31	13.9	13.9	14.4	—	—
J32	15.3	15.3	15.9	—	—
J33	16.8	16.8	17.6	—	—
J34	18.5	18.5	19.4	21.6	—
J35	—	20.3	21.4	23.9	—
J36	—	22.3	23.5	26.5	—
J37	—	24.5	25.8	29.3	—
J38	—	27.0	28.8	32.5	34.5
J39	—	—	32.5	36.0	38
J40	—	—	36.0	40.0	42
J41	—	—	39.0	44.0	46
J42	—	—	42.0	49	51
J43	—	—	45.0	55	57
J44	—	—	—	60	62
J45	—	—	—	66	68
J46	—	—	—	72	74
J70	—	—	—	78	80
J71	—	—	—	84	87
J72	—	—	—	92	95
J73	—	—	—	—	104
J74	—	—	—	—	113
J75	—	—	—	—	122
J76	—	—	—	—	132
J77	—	—	—	—	143

TABLE 159					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 2	Size 3	Size 4
JJ14	0.19	0.19	—	—	—
JJ13	0.21	0.21	—	—	—
JJ12	0.23	0.23	—	—	—
JJ11	0.26	0.26	—	—	—
JJ10	0.28	0.28	—	—	—
JJ9	0.31	0.31	—	—	—
JJ8	0.34	0.34	—	—	—
JJ7	0.38	0.38	—	—	—
JJ6	0.42	0.42	—	—	—
JJ5	0.46	0.46	—	—	—
JJ4	0.51	0.51	—	—	—
JJ3	0.57	0.57	—	—	—
JJ2	0.63	0.63	—	—	—
JJ1	0.69	0.69	—	—	—
J1	0.76	0.76	—	—	—
J2	0.84	0.84	—	—	—
J3	0.92	0.92	—	—	—
J4	1.02	1.02	—	—	—
J5	1.12	1.12	—	—	—
J6	1.23	1.23	—	—	—
J7	1.36	1.36	—	—	—
J8	1.50	1.50	—	—	—
J9	1.65	1.65	—	—	—
J10	1.82	1.82	—	—	—
J11	2.00	2.00	—	—	—
J12	2.20	2.20	—	—	—
J13	2.43	2.43	—	—	—
J14	2.68	2.68	—	—	—
J15	2.95	2.95	—	—	—
J16	3.25	3.25	—	—	—
J17	3.59	3.59	—	—	—
J18	3.96	3.96	—	—	—
J19	4.37	4.37	—	—	—
J20	4.82	4.82	—	—	—
J21	5.32	5.32	—	—	—
J22	5.87	5.87	—	—	—
J23	6.48	6.48	—	—	—
J24	7.15	7.15	—	—	—
J25	7.89	7.89	—	—	—
J26	8.70	8.70	8.84	—	—
J27	9.56	9.56	9.71	—	—
J28	10.5	10.5	10.7	—	—
J29	11.5	11.5	11.7	—	—
J30	12.7	12.7	12.9	—	—
J31	13.9	13.9	14.2	—	—
J32	15.3	15.3	15.8	—	—
J33	16.8	16.8	17.5	—	—
J34	18.5	18.5	19.4	20.9	—
J35	—	20.3	21.2	23.2	—
J36	—	22.3	23.2	25.7	—
J37	—	24.6	25.3	28.4	31.5
J38	—	27.0	27.7	31.5	35.0
J39	—	—	30.5	35.0	38.5
J40	—	—	33.0	39.0	43.0
J41	—	—	36.0	43.5	47.0
J42	—	—	39.5	48.5	51
J43	—	—	43.0	54	56
J44	—	—	47.0	59	61
J45	—	—	—	64	67
J46	—	—	—	70	73
J70	—	—	—	77	81
J71	—	—	—	85	90
J72	—	—	—	92	99
J73	—	—	—	—	108
J74	—	—	—	—	118
J75	—	—	—	—	129
J76	—	—	—	—	140

Refer to Heater Element Selection Procedure on page 1-152 before using tables.

Heater Element Selection

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TABLE 160						
Heater Element Cat. No.	Full Load Amperes					
	Size 0	Size 1	Size 2	Size 3	Size 4	Size 5
JJ14	0.19	0.19	—	—	—	—
JJ13	0.21	0.21	—	—	—	—
JJ12	0.23	0.23	—	—	—	—
JJ11	0.26	0.26	—	—	—	—
JJ10	0.28	0.28	—	—	—	—
JJ9	0.31	0.31	—	—	—	—
JJ8	0.34	0.34	—	—	—	—
JJ7	0.38	0.38	—	—	—	—
JJ6	0.42	0.42	—	—	—	—
JJ5	0.46	0.46	—	—	—	—
JJ4	0.51	0.51	—	—	—	—
JJ3	0.57	0.57	—	—	—	—
JJ2	0.63	0.63	—	—	—	—
JJ1	0.69	0.69	—	—	—	—
J1	0.76	0.76	—	—	—	—
J2	0.84	0.84	—	—	—	—
J3	0.93	0.93	—	—	—	—
J4	1.03	1.03	—	—	—	—
J5	1.14	1.14	—	—	—	—
J6	1.26	1.26	—	—	—	76
J7	1.39	1.39	—	—	—	83
J8	1.53	1.53	—	—	—	91
J9	1.68	1.68	—	—	—	100
J10	1.86	1.86	—	—	—	108
J11	2.05	2.05	—	—	—	117
J12	2.25	2.25	—	—	—	127
J13	2.48	2.48	—	—	—	138
J14	2.73	2.73	—	—	—	150
J15	3.01	3.01	—	—	—	165
J16	3.31	3.31	—	—	—	179
J17	3.65	3.65	—	—	—	195
J18	4.02	4.02	—	—	—	211
J19	4.42	4.42	—	—	—	230
J20	4.87	4.87	—	—	—	250
J21	5.37	5.37	—	—	—	272
J22	5.91	5.91	—	—	—	—
J23	6.50	6.50	6.50	—	—	—
J24	7.19	7.19	7.21	—	—	—
J25	7.94	7.94	7.99	—	—	—
J26	8.78	8.78	8.85	—	—	—
J27	9.71	9.71	9.81	—	—	—
J28	10.7	10.7	10.9	—	—	—
J29	11.8	11.8	12.1	—	—	—
J30	13.1	13.1	13.4	—	—	—
J31	14.5	14.5	14.9	—	—	—
J32	16.0	16.0	16.5	—	—	—
J33	17.7	17.7	18.3	—	—	—
J34	19.6	19.6	20.2	22.2	—	—
J35	—	21.6	22.4	24.5	—	—
J36	—	23.9	24.8	27.1	—	—
J37	—	26.4	27.4	29.9	—	—
J38	—	29.3	30.5	33.0	33.5	—
J39	—	—	33.5	36.5	37.5	—
J40	—	—	37.0	40.5	41.5	—
J41	—	—	41.0	45.0	46.5	—
J42	—	—	45.5	50	52	—
J43	—	—	—	56	57	—
J44	—	—	—	61	63	—
J45	—	—	—	67	68	—
J46	—	—	—	73	75	—
J70	—	—	—	80	83	—
J71	—	—	—	87	91	—
J72	—	—	—	95	99	—
J73	—	—	—	—	108	—
J74	—	—	—	—	117	—
J75	—	—	—	—	126	—
J76	—	—	—	—	135	—

TABLE 161					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 2	Size 3	Size 4
JJ14	0.19	0.19	—	—	—
JJ13	0.21	0.21	—	—	—
JJ12	0.23	0.23	—	—	—
JJ11	0.26	0.26	—	—	—
JJ10	0.28	0.28	—	—	—
JJ9	0.31	0.31	—	—	—
JJ8	0.34	0.34	—	—	—
JJ7	0.38	0.38	—	—	—
JJ6	0.42	0.42	—	—	—
JJ5	0.46	0.46	—	—	—
JJ4	0.51	0.51	—	—	—
JJ3	0.57	0.57	—	—	—
JJ2	0.63	0.63	—	—	—
JJ1	0.69	0.69	—	—	—
J1	0.76	0.76	—	—	—
J2	0.84	0.84	—	—	—
J3	0.93	0.93	—	—	—
J4	1.03	1.03	—	—	—
J5	1.13	1.13	—	—	—
J6	1.24	1.24	—	—	—
J7	1.37	1.37	—	—	—
J8	1.51	1.51	—	—	—
J9	1.66	1.66	—	—	—
J10	1.84	1.84	—	—	—
J11	2.02	2.02	—	—	—
J12	2.22	2.22	—	—	—
J13	2.45	2.45	—	—	—
J14	2.70	2.70	—	—	—
J15	2.97	2.97	—	—	—
J16	3.27	3.27	—	—	—
J17	3.61	3.61	—	—	—
J18	3.98	3.98	—	—	—
J19	4.39	4.39	—	—	—
J20	4.84	4.84	—	—	—
J21	5.34	5.34	—	—	—
J22	5.89	5.89	—	—	—
J23	6.49	6.49	—	—	—
J24	7.16	7.16	—	—	—
J25	7.91	7.91	—	—	—
J26	8.73	8.73	9.11	—	—
J27	9.58	9.58	10.1	—	—
J28	10.6	10.6	11.1	—	—
J29	11.7	11.7	12.2	—	—
J30	13.0	13.0	13.5	—	—
J31	14.4	14.4	14.9	—	—
J32	15.9	15.9	16.4	—	—
J33	17.6	17.6	18.1	—	—
J34	19.5	19.5	20.0	22.2	—
J35	—	21.5	22.1	24.5	—
J36	—	23.6	24.3	27.1	—
J37	—	25.9	26.8	29.9	—
J38	—	28.5	29.5	33.0	34.5
J39	—	—	32.5	36.5	38.5
J40	—	—	35.5	40.5	42.5
J41	—	—	39.0	45.0	47.0
J42	—	—	43.0	50	52
J43	—	—	47.5	56	58
J44	—	—	—	61	64
J45	—	—	—	67	70
J46	—	—	—	73	77
J70	—	—	—	80	85
J71	—	—	—	87	93
J72	—	—	—	95	102
J73	—	—	—	—	112
J74	—	—	—	—	123
J75	—	—	—	—	135

Refer to Heater Element Selection Procedure on page 1-152 before using tables.

Heater Element Selection

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TABLE 162					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 2	Size 3	Size 4
JJ14	0.19	0.19	—	—	—
JJ13	0.21	0.21	—	—	—
JJ12	0.23	0.23	—	—	—
JJ11	0.26	0.26	—	—	—
JJ10	0.28	0.28	—	—	—
JJ9	0.31	0.31	—	—	—
JJ8	0.34	0.34	—	—	—
JJ7	0.38	0.38	—	—	—
JJ6	0.42	0.42	—	—	—
JJ5	0.46	0.46	—	—	—
JJ4	0.51	0.51	—	—	—
JJ3	0.57	0.57	—	—	—
JJ2	0.63	0.63	—	—	—
JJ1	0.69	0.69	—	—	—
J1	0.76	0.76	—	—	—
J2	0.84	0.84	—	—	—
J3	0.92	0.92	—	—	—
J4	1.02	1.02	—	—	—
J5	1.12	1.12	—	—	—
J6	1.23	1.23	—	—	—
J7	1.36	1.36	—	—	—
J8	1.50	1.50	—	—	—
J9	1.65	1.65	—	—	—
J10	1.82	1.82	—	—	—
J11	2.00	2.00	—	—	—
J12	2.20	2.20	—	—	—
J13	2.43	2.43	—	—	—
J14	2.68	2.68	—	—	—
J15	2.95	2.95	—	—	—
J16	3.25	3.25	—	—	—
J17	3.59	3.59	—	—	—
J18	3.99	3.99	—	—	—
J19	4.42	4.42	—	—	—
J20	4.87	4.87	—	—	—
J21	5.41	5.41	—	—	—
J22	5.98	5.98	6.04	—	—
J23	6.61	6.61	6.73	—	—
J24	7.26	7.26	7.41	—	—
J25	7.98	7.98	8.19	—	—
J26	8.77	8.77	9.05	—	—
J27	9.61	9.61	10.0	—	—
J28	10.6	10.6	11.1	—	—
J29	11.7	11.7	12.2	—	—
J30	13.0	13.0	13.5	—	—
J31	14.4	14.4	14.9	—	—
J32	15.9	15.9	16.5	—	—
J33	17.5	17.5	18.3	—	—
J34	19.4	19.4	20.2	21.6	—
J35	—	21.3	22.4	23.9	—
J36	—	23.3	24.8	26.5	—
J37	—	25.5	27.4	29.3	—
J38	—	28.0	30.5	32.5	33.5
J39	—	—	33.5	36.0	37.5
J40	—	—	37.5	40.0	41.0
J41	—	—	41.0	44.5	46.5
J42	—	—	45.0	49.5	52
J43	—	—	—	55	57
J44	—	—	—	60	63
J45	—	—	—	66	68
J46	—	—	—	72	75
J70	—	—	—	78	83
J71	—	—	—	85	91
J72	—	—	—	92	99
J73	—	—	—	—	108
J74	—	—	—	—	117
J75	—	—	—	—	126
J76	—	—	—	—	135

TABLE 163					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 2	Size 3	Size 4
JJ14	0.19	0.19	—	—	—
JJ13	0.21	0.21	—	—	—
JJ12	0.23	0.23	—	—	—
JJ11	0.26	0.26	—	—	—
JJ10	0.28	0.28	—	—	—
JJ9	0.31	0.31	—	—	—
JJ8	0.34	0.34	—	—	—
JJ7	0.38	0.38	—	—	—
JJ6	0.42	0.42	—	—	—
JJ5	0.46	0.46	—	—	—
JJ4	0.51	0.51	—	—	—
JJ3	0.57	0.57	—	—	—
JJ2	0.63	0.63	—	—	—
JJ1	0.69	0.69	—	—	—
J1	0.77	0.77	—	—	—
J2	0.86	0.86	—	—	—
J3	0.95	0.95	—	—	—
J4	1.06	1.06	—	—	—
J5	1.18	1.18	—	—	—
J6	1.32	1.32	—	—	—
J7	1.44	1.44	—	—	—
J8	1.58	1.58	—	—	—
J9	1.72	1.72	—	—	—
J10	1.88	1.88	—	—	—
J11	2.06	2.06	—	—	—
J12	2.25	2.25	—	—	—
J13	2.48	2.48	—	—	—
J14	2.73	2.73	—	—	—
J15	3.01	3.01	—	—	—
J16	3.31	3.31	—	—	—
J17	3.65	3.65	—	—	—
J18	4.02	4.02	—	—	—
J19	4.42	4.42	—	—	—
J20	4.87	4.87	—	—	—
J21	5.37	5.37	—	—	—
J22	5.91	5.91	—	—	—
J23	6.50	6.50	6.50	—	—
J24	7.19	7.19	7.21	—	—
J25	7.94	7.94	8.52	—	—
J26	8.78	8.78	9.30	—	—
J27	9.71	9.71	10.2	—	—
J28	10.7	10.7	11.1	—	—
J29	11.8	11.8	12.1	—	—
J30	13.1	13.1	13.4	—	—
J31	14.5	14.5	14.9	—	—
J32	16.0	16.0	16.5	—	—
J33	17.7	17.7	18.3	—	—
J34	19.6	19.6	20.2	21.8	—
J35	—	21.7	22.4	23.9	—
J36	—	23.9	24.8	26.6	—
J37	—	26.4	27.4	29.6	—
J38	—	29.3	30.5	33.0	33.5
J39	—	—	33.5	37.0	37.5
J40	—	—	37.0	41.0	41.5
J41	—	—	41.0	45.5	46.0
J42	—	—	45.5	51	52
J43	—	—	—	56	57
J44	—	—	—	61	63
J45	—	—	—	67	69
J46	—	—	—	73	76
J70	—	—	—	79	84
J71	—	—	—	87	92
J72	—	—	—	95	102
J73	—	—	—	—	112
J74	—	—	—	—	123
J75	—	—	—	—	135

Heater Element Selection

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TABLE 164					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 1P	Size 2	Size 3
JJ14	0.20	0.20	—	—	—
JJ13	0.22	0.22	—	—	—
JJ12	0.24	0.24	—	—	—
JJ11	0.27	0.27	—	—	—
JJ10	0.30	0.30	—	—	—
JJ9	0.33	0.33	—	—	—
JJ8	0.36	0.36	—	—	—
JJ7	0.40	0.40	—	—	—
JJ6	0.44	0.44	—	—	—
JJ5	0.49	0.49	—	—	—
JJ4	0.54	0.54	—	—	—
JJ3	0.59	0.59	—	—	—
JJ2	0.65	0.65	—	—	—
JJ1	0.72	0.72	—	—	—
J1	0.80	0.80	—	—	—
J2	0.88	0.88	—	—	—
J3	0.97	0.97	—	—	—
J4	1.07	1.07	—	—	—
J5	1.18	1.18	—	—	—
J6	1.31	1.31	—	—	—
J7	1.44	1.44	—	—	—
J8	1.59	1.59	—	—	—
J9	1.76	1.76	—	—	—
J10	1.94	1.94	—	—	—
J11	2.14	2.14	—	—	—
J12	2.36	2.36	—	—	—
J13	2.60	2.60	—	—	—
J14	2.86	2.86	—	—	—
J15	3.15	3.15	—	—	—
J16	3.46	3.46	—	—	—
J17	3.81	3.81	—	—	—
J18	4.19	4.19	—	—	—
J19	4.61	4.61	—	—	—
J20	5.07	5.07	—	—	—
J21	5.58	5.58	—	—	—
J22	6.14	6.14	—	—	—
J23	6.75	6.75	—	6.75	—
J24	7.47	7.47	—	7.49	—
J25	8.26	8.26	—	8.31	—
J26	9.14	9.14	—	9.22	—
J27	10.1	10.1	—	10.2	—
J28	11.2	11.2	11.2	11.3	—
J29	12.4	12.4	12.4	12.6	—
J30	13.7	13.7	13.7	14.0	—
J31	15.2	15.2	15.2	15.5	—
J32	16.8	16.8	16.8	17.1	—
J33	18.6	18.6	18.6	19.0	—
J34	—	20.5	20.5	21.0	23.3
J35	—	22.7	22.7	23.2	25.8
J36	—	25.1	25.1	25.7	28.8
J37	—	27.8	27.8	28.4	31.5
J38	—	—	30.5	31.5	35.5
J39	—	—	34.0	35.0	39.5
J40	—	—	38.0	39.0	44.0
J41	—	—	—	43.5	47.0
J42	—	—	—	48.0	52
J43	—	—	—	—	58
J44	—	—	—	—	63
J45	—	—	—	—	69
J46	—	—	—	—	76
J70	—	—	—	—	84
J71	—	—	—	—	92
J72	—	—	—	—	—
J73	—	—	—	—	—
J74	—	—	—	—	—
J75	—	—	—	—	—

TABLE 165	
Heater Element Cat. No.	Full Load Amperes
	Size 7
J5	230
J6	253
J7	279
J8	310
J9	340
J10	375
J11	410
J12	455
J13	500
J14	550
J15	610
J16	670
J17	740
J18	810
J19	—

Refer to Heater Element Selection Procedure on page 1-152 before using tables.

Heater Element Selection

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TABLE 166						
Heater Element Cat. No.	Full Load Amperes					
	Size 0	Size 1	Size 2	Size 3	Size 4	Size 5
W10	0.19	0.19	—	—	—	—
W11	0.21	0.21	—	—	—	—
W12	0.23	0.23	—	—	—	—
W13	0.25	0.25	—	—	—	—
W14	0.27	0.27	—	—	—	—
W15	0.30	0.30	—	—	—	—
W16	0.32	0.32	—	—	—	—
W17	0.36	0.36	—	—	—	—
W18	0.39	0.39	—	—	—	—
W19	0.43	0.43	—	—	—	—
W20	0.47	0.47	—	—	—	—
W21	0.52	0.52	—	—	—	—
W22	0.56	0.56	—	—	—	—
W23	0.62	0.62	—	—	—	—
W24	0.68	0.68	—	—	—	—
W25	0.74	0.74	—	—	—	—
W26	0.82	0.82	—	—	—	—
W27	0.90	0.90	—	—	—	—
W28	0.98	0.98	—	—	—	—
W29	1.05	1.05	—	—	—	72
W30	1.16	1.16	—	—	—	78
W31	1.29	1.29	—	—	—	85
W32	1.40	1.40	—	—	—	92
W33	1.55	1.55	—	—	—	100
W34	1.70	1.70	—	—	—	109
W35	1.84	1.84	—	—	—	118
W36	2.02	2.02	—	—	—	128
W37	2.22	2.22	—	—	—	139
W38	2.45	2.45	—	—	—	151
W39	2.63	2.63	—	—	—	164
W40	2.89	2.89	—	—	—	181
W41	3.17	3.17	—	—	—	198
W42	3.48	3.48	—	—	—	218
W43	3.82	3.82	—	—	—	240
W44	4.19	4.19	—	—	—	—
W45	4.60	4.60	5.1	—	—	—
W46	5.05	5.05	5.6	—	—	—
W47	5.54	5.54	6.12	—	—	—
W48	6.08	6.08	6.65	—	—	—
W49	6.68	6.68	7.25	—	—	—
W50	7.33	7.33	7.9	—	—	—
W51	8.05	8.05	8.6	—	—	—
W52	8.83	8.83	9.4	—	—	—
W53	9.70	9.70	10.2	—	—	—
W54	10.6	10.6	11.2	—	—	—
W55	11.7	11.7	12.2	—	—	—
W56	12.8	12.8	13.4	—	—	—
W57	14.1	14.1	14.7	—	—	—
W58	15.5	15.5	16.2	—	—	—
W59	17.0	17.0	17.7	—	—	—
W60	18.6	18.6	19.4	—	—	—
W61	—	20.4	21.3	25.0	—	—
W62	—	22.4	23.4	27.3	—	—
W63	—	24.6	25.6	29.8	—	—
W64	—	27.0	28.1	32.5	33.5	—
W65	—	—	30	35.5	37.0	—
W66	—	—	32.5	39.0	40.5	—
W67	—	—	35	42.0	44.5	—
W68	—	—	37.5	46.0	49.0	—
W69	—	—	40	51.0	54.0	—
W70	—	—	42.0	55.0	59.0	—
W71	—	—	44.5	59.0	64.0	—
W72	—	—	47.0	64.0	69.0	—
W73	—	—	—	69.0	74.0	—
W74	—	—	—	74.0	79.0	—
W75	—	—	—	79.0	84.0	—
W76	—	—	—	83.0	90.0	—
W77	—	—	—	88.0	96.0	—
W78	—	—	—	93.0	102	—
W79	—	—	—	—	108	—
W80	—	—	—	—	116	—
W81	—	—	—	—	123	—
W82	—	—	—	—	131	—
W83	—	—	—	—	139	—
W84	—	—	—	—	—	—
W85	—	—	—	—	—	—

TABLE 167						
Heater Element Cat. No.	Full Load Amperes					
	Size 0	Size 1	Size 2	Size 3	Size 4	Size 5
W10	0.20	0.20	—	—	—	—
W11	0.22	0.22	—	—	—	—
W12	0.24	0.24	—	—	—	—
W13	0.26	0.26	—	—	—	—
W14	0.28	0.28	—	—	—	—
W15	0.31	0.31	—	—	—	—
W16	0.34	0.34	—	—	—	—
W17	0.37	0.37	—	—	—	—
W18	0.41	0.41	—	—	—	—
W19	0.45	0.45	—	—	—	—
W20	0.49	0.49	—	—	—	—
W21	0.54	0.54	—	—	—	—
W22	0.59	0.59	—	—	—	—
W23	0.65	0.65	—	—	—	—
W24	0.71	0.71	—	—	—	—
W25	0.78	0.78	—	—	—	—
W26	0.85	0.85	—	—	—	—
W27	0.93	0.93	—	—	—	—
W28	1.01	1.01	—	—	—	—
W29	1.12	1.12	—	—	—	72
W30	1.22	1.22	—	—	—	78
W31	1.34	1.34	—	—	—	84
W32	1.47	1.47	—	—	—	91
W33	1.61	1.61	—	—	—	99
W34	1.76	1.76	—	—	—	107
W35	1.93	1.93	—	—	—	116
W36	2.11	2.11	—	—	—	125
W37	2.31	2.31	—	—	—	136
W38	2.53	2.53	—	—	—	147
W39	2.77	2.77	—	—	—	159
W40	3.03	3.03	—	—	—	174
W41	3.32	3.32	—	—	—	191
W42	3.63	3.63	—	—	—	210
W43	3.97	3.97	—	—	—	—
W44	4.35	4.35	4.58	—	—	—
W45	4.76	4.76	5.02	—	—	—
W46	5.21	5.21	5.50	—	—	—
W47	5.71	5.71	6.02	—	—	—
W48	6.25	6.25	6.60	—	—	—
W49	6.84	6.84	7.23	—	—	—
W50	7.48	7.48	7.92	—	—	—
W51	8.20	8.20	8.68	—	—	—
W52	8.98	8.98	9.51	—	—	—
W53	9.83	9.83	10.4	—	—	—
W54	10.8	10.8	11.4	—	—	—
W55	11.8	11.8	12.5	—	—	—
W56	12.9	12.9	13.7	—	—	—
W57	14.1	14.1	15.0	—	—	—
W58	15.5	15.5	16.4	—	—	—
W59	17.0	17.0	17.9	—	—	—
W60	18.7	18.7	19.5	—	—	—
W61	—	20.5	21.3	25.5	—	—
W62	—	22.4	23.3	28.0	—	—
W63	—	24.6	25.4	30.5	32.0	—
W64	—	27.0	27.4	33.5	35.0	—
W65	—	—	29.5	36.5	38.0	—
W66	—	—	32.0	40.0	41.5	—
W67	—	—	34.5	43.5	45.0	—
W68	—	—	37.0	47.5	49.0	—
W69	—	—	39.0	51.0	54.0	—
W70	—	—	41.0	55.0	58.0	—
W71	—	—	43.0	60.0	63.0	—
W72	—	—	45.0	65.0	68.0	—
W73	—	—	—	69.0	73.0	—
W74	—	—	—	74.0	79.0	—
W75	—	—	—	78.0	85.0	—
W76	—	—	—	83.0	90.0	—
W77	—	—	—	88.0	97.0	—
W78	—	—	—	93.0	103	—
W79	—	—	—	—	109	—
W80	—	—	—	—	115	—
W81	—	—	—	—	121	—
W82	—	—	—	—	126	—
W83	—	—	—	—	131	—
W84	—	—	—	—	137	—
W85	—	—	—	—	—	—

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1283

TABLE 168						
Heater Element Cat. No.	Full Load Amperes					
	Size 0	Size 1	Size 2	Size 3	Size 4	Size 5
W10	0.18	0.18	—	—	—	—
W11	0.20	0.20	—	—	—	—
W12	0.22	0.22	—	—	—	—
W13	0.24	0.24	—	—	—	—
W14	0.26	0.26	—	—	—	—
W15	0.29	0.29	—	—	—	—
W16	0.32	0.32	—	—	—	—
W17	0.35	0.35	—	—	—	—
W18	0.39	0.39	—	—	—	—
W19	0.43	0.43	—	—	—	—
W20	0.47	0.47	—	—	—	—
W21	0.51	0.51	—	—	—	—
W22	0.56	0.56	—	—	—	—
W23	0.61	0.61	—	—	—	—
W24	0.67	0.67	—	—	—	—
W25	0.74	0.74	—	—	—	—
W26	0.82	0.82	—	—	—	—
W27	0.94	0.94	—	—	—	—
W28	1.02	1.02	—	—	—	—
W29	1.12	1.12	—	—	—	70
W30	1.23	1.23	—	—	—	76
W31	1.38	1.38	—	—	—	82
W32	1.50	1.50	—	—	—	90
W33	1.64	1.64	—	—	—	98
W34	1.78	1.78	—	—	—	106
W35	1.95	1.95	—	—	—	115
W36	2.10	2.10	—	—	—	125
W37	2.28	2.28	—	—	—	137
W38	2.57	2.57	—	—	—	150
W39	2.83	2.83	—	—	—	162
W40	3.12	3.12	—	—	—	176
W41	3.47	3.47	—	—	—	191
W42	3.84	3.84	—	—	—	210
W43	4.26	4.26	—	—	—	230
W44	4.68	4.68	4.78	—	—	249
W45	5.18	5.18	5.28	—	—	270
W46	5.71	5.71	5.79	—	—	—
W47	6.28	6.28	6.35	—	—	—
W48	6.90	6.90	6.97	—	—	—
W49	7.59	7.59	7.65	—	—	—
W50	8.35	8.35	8.40	—	—	—
W51	9.28	9.28	9.30	—	—	—
W52	10.2	10.2	10.2	—	—	—
W53	11.2	11.2	11.2	—	—	—
W54	12.1	12.1	12.2	—	—	—
W55	13.3	13.3	13.4	—	—	—
W56	14.5	14.5	14.7	—	—	—
W57	15.7	15.7	16.1	—	—	—
W58	16.6	16.6	17.6	—	—	—
W59	17.8	17.8	19.3	—	—	—
W60	19.6	19.6	21.1	—	—	—
W61	—	21.5	22.9	25.0	—	—
W62	—	23.5	25.0	27.7	—	—
W63	—	25.7	27.1	30.5	—	—
W64	—	28.2	29.5	34.0	34.0	—
W65	—	—	32.0	36.5	37.0	—
W66	—	—	34.5	39.5	40.0	—
W67	—	—	37.0	42.5	44.0	—
W68	—	—	40.0	46.0	48.5	—
W69	—	—	42.5	51	53	—
W70	—	—	45.0	55	57	—
W71	—	—	—	59	62	—
W72	—	—	—	64	67	—
W73	—	—	—	69	72	—
W74	—	—	—	74	77	—
W75	—	—	—	79	82	—
W76	—	—	—	83	87	—
W77	—	—	—	88	93	—
W78	—	—	—	93	99	—
W79	—	—	—	—	105	—
W80	—	—	—	—	112	—
W81	—	—	—	—	117	—
W82	—	—	—	—	123	—
W83	—	—	—	—	129	—
W84	—	—	—	—	135	—

TABLE 169	
Heater Element Cat. No.	Full Load Amperes
	Size 5
W29	70
W30	77
W31	85
W32	89
W33	94
W34	100
W35	107
W36	118
W37	127
W38	140
W39	154
W40	167
W41	181
W42	194
W43	207
W44	221

Refer to Heater Element Selection Procedure on page 1-152 before using tables.

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters, Continued

TABLE 171							
Heater Element Cat. No.	Full Load Amperes						
	Size 00	Size 0	Size 1	Size 2	Size 3	Size 4	Size 5
W10	0.17	0.17	0.17	—	—	—	—
W11	0.19	0.19	0.19	—	—	—	—
W12	0.21	0.21	0.21	—	—	—	—
W13	0.22	0.22	0.22	—	—	—	—
W14	0.25	0.25	0.25	—	—	—	—
W15	0.28	0.28	0.28	—	—	—	—
W16	0.31	0.31	0.31	—	—	—	—
W17	0.34	0.34	0.34	—	—	—	—
W18	0.37	0.37	0.37	—	—	—	—
W19	0.42	0.42	0.42	—	—	—	—
W20	0.46	0.46	0.46	—	—	—	—
W21	0.50	0.50	0.50	—	—	—	—
W22	0.56	0.56	0.56	—	—	—	—
W23	0.62	0.62	0.62	—	—	—	—
W24	0.69	0.69	0.69	—	—	—	—
W25	0.76	0.76	0.76	—	—	—	—
W26	0.84	0.84	0.84	—	—	—	—
W27	0.93	0.93	0.93	—	—	—	—
W28	1.02	1.02	1.02	—	—	—	—
W29	1.13	1.13	1.13	—	—	—	71
W30	1.25	1.25	1.25	—	—	—	78
W31	1.38	1.38	1.38	—	—	—	85
W32	1.49	1.49	1.49	—	—	—	92
W33	1.61	1.61	1.61	—	—	—	100
W34	1.74	1.74	1.74	—	—	—	109
W35	1.89	1.89	1.89	—	—	—	119
W36	2.04	2.04	2.04	—	—	—	130
W37	2.22	2.22	2.22	—	—	—	140
W38	2.49	2.49	2.49	—	—	—	153
W39	2.75	2.75	2.75	—	—	—	166
W40	3.03	3.03	3.03	—	—	—	180
W41	3.37	3.37	3.37	—	—	—	200
W42	3.73	3.73	3.73	—	—	—	222
W43	4.13	4.13	4.13	—	—	—	248
W44	4.55	4.55	4.55	—	—	—	267
W45	5.02	5.02	5.02	—	—	—	295
W46	5.53	5.53	5.53	—	—	—	—
W47	6.08	6.08	6.08	—	—	—	—
W48	6.68	6.68	6.68	—	—	—	—
W49	7.34	7.34	7.34	—	—	—	—
W50	8.07	8.07	8.07	8.31	—	—	—
W51	8.95	8.95	8.95	9.26	—	—	—
W52	9.83	9.83	9.83	10.2	—	—	—
W53	—	10.8	10.8	11.1	—	—	—
W54	—	11.6	11.6	12.1	12.5	—	—
W55	—	12.7	12.7	13.1	13.8	—	—
W56	—	13.8	13.8	14.5	15.2	—	—
W57	—	14.9	14.9	15.8	16.5	—	—
W58	—	15.7	15.7	16.9	17.9	—	—
W59	—	17.0	17.0	18.1	19.7	—	—
W60	—	18.4	18.4	19.8	21.8	—	—
W61	—	—	20.0	21.6	24.2	—	—
W62	—	—	21.8	23.7	26.5	—	—
W63	—	—	24.5	26.0	29.3	—	—
W64	—	—	27.8	28.6	32.0	33.5	—
W65	—	—	—	31.0	36.0	37.0	—
W66	—	—	—	34.0	38.0	40.5	—
W67	—	—	—	37.0	42.0	44.5	—
W68	—	—	—	40.0	46.0	49.0	—
W69	—	—	—	43.0	50.0	54.0	—
W70	—	—	—	46.0	53	59	—
W71	—	—	—	—	58	64	—
W72	—	—	—	—	62	69	—
W73	—	—	—	—	66	74	—
W74	—	—	—	—	70	79	—
W75	—	—	—	—	74	84	—
W76	—	—	—	—	80	90	—
W77	—	—	—	—	85	96	—
W78	—	—	—	—	89	102	—
W79	—	—	—	—	94	108	—
W80	—	—	—	—	—	116	—
W81	—	—	—	—	—	123	—
W82	—	—	—	—	—	131	—
W83	—	—	—	—	—	139	—

TABLE 172					
Heater Element Cat. No.	Full Load Amperes				
	Size 0	Size 1	Size 2	Size 3	Size 4
JJ14	0.19	0.19	—	—	—
JJ13	0.21	0.21	—	—	—
JJ12	0.23	0.23	—	—	—
JJ11	0.26	0.26	—	—	—
JJ10	0.29	0.29	—	—	—
JJ9	0.31	0.31	—	—	—
JJ8	0.35	0.35	—	—	—
JJ7	0.38	0.38	—	—	—
JJ6	0.41	0.41	—	—	—
JJ5	0.46	0.46	—	—	—
JJ4	0.50	0.50	—	—	—
JJ3	0.56	0.56	—	—	—
JJ2	0.61	0.61	—	—	—
JJ1	0.67	0.67	—	—	—
J1	0.75	0.75	—	—	—
J2	0.82	0.82	—	—	—
J3	0.91	0.91	—	—	—
J4	1.00	1.00	—	—	—
J5	1.11	1.11	—	—	—
J6	1.22	1.22	—	—	—
J7	1.34	1.34	—	—	—
J8	1.47	1.47	—	—	—
J9	1.62	1.62	—	—	—
J10	1.78	1.78	—	—	—
J11	1.96	1.96	—	—	—
J12	2.17	2.17	—	—	—
J13	2.40	2.40	—	—	—
J14	2.65	2.65	—	—	—
J15	2.92	2.92	—	—	—
J16	3.21	3.21	—	—	—
J17	3.54	3.54	—	—	—
J18	3.91	3.91	—	—	—
J19	4.30	4.30	—	—	—
J20	4.75	4.75	—	—	—
J21	5.22	5.22	—	—	—
J22	5.76	5.76	—	—	—
J23	6.36	6.36	—	—	—
J24	7.03	7.03	—	—	—
J25	7.75	7.75	8.08	—	—
J26	8.57	8.57	8.90	—	—
J27	9.44	9.44	9.86	—	—
J28	10.4	10.4	10.8	—	—
J29	11.4	11.4	11.9	13.1	—
J30	12.7	12.7	13.2	14.5	—
J31	14.0	14.0	14.5	15.9	—
J32	15.4	15.4	15.9	17.6	—
J33	17.0	17.0	17.6	19.4	—
J34	18.7	18.7	20.5	21.3	—
J35	—	20.6	22.4	23.4	—
J36	—	22.8	24.6	25.7	—
J37	—	25.1	27.1	28.5	31.5
J38	—	27.9	29.8	31.5	35.0
J39	—	—	33.0	35.0	38.5
J40	—	—	36.0	39.0	43.0
J41	—	—	40.0	44.0	47.0
J42	—	—	43.0	48	51
J43	—	—	47.0	53	56
J44	—	—	—	58	61
J45	—	—	—	62	67
J46	—	—	—	69	73
J70	—	—	—	75	81
J71	—	—	—	81	90
J72	—	—	—	89	99
J73	—	—	—	96	108
J74	—	—	—	—	118
J75	—	—	—	—	129
J76	—	—	—	—	140

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters, Continued

TABLE 177	
Heater Element Cat. No.	Full Load Amperes
	Size 5
W29	70
W30	76
W31	82
W32	90
W33	98
W34	106
W35	115
W36	125
W37	137
W38	150
W39	162
W40	176
W41	191
W42	210
W43	230
W44	248
W45	270

TABLE 178	
Heater Element Cat. No.	Full Load Amperes
	Size 5
J5	68
J6	75
J7	82
J8	90
J9	99
J10	108
J11	118
J12	128
J13	140
J14	154
J15	168
J16	184
J17	200
J18	220
J19	233
J20	258
J21	282

TABLE 180	
Heater Element Cat. No.	Full Load Amps
	24/32 A/Size 00
W10	0.19
W11	0.20
W12	0.23
W13	0.25
W14	0.28
W15	0.31
W16	0.34
W17	0.37
W18	0.40
W19	0.44
W20	0.49
W21	0.55
W22	0.61
W23	0.69
W24	0.77
W25	0.86
W26	0.93
W27	1.02
W28	1.11
W29	1.22
W30	1.33
W31	1.50
W32	1.60
W33	1.70
W34	1.90
W35	2.01
W36	2.28
W37	2.50
W38	2.72
W39	3.00
W40	3.34
W41	3.67
W42	4.00
W43	4.40
W44	5.00
W45	5.52
W46	5.95
W47	6.60
W48	7.20
W49	8.00
W50	8.76
W51	9.60
W52	10.7
W53	11.9
W54	13.0
W55	14.2
W56	15.5
W57	16.9
W58	18.0
W59	20.0
W60	21.7
W61	24.0
W62	26.2
W63	29.0
W64	34.0

Refer to Heater Element Selection Procedure on page 1-152 before using tables.

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters, Continued

TABLE 181						
Heater Element Cat. No.	Full Load Amperes					
	Size 24 A	Size 32 A	Size 40 A	Size 62A	Size 125 A	Size 165 A
W10	0.19	0.19	0.19	—	—	—
W11	0.20	0.2	0.21	—	—	—
W12	0.22	0.22	0.23	—	—	—
W13	0.24	0.24	0.25	—	—	—
W14	0.27	0.27	0.28	—	—	—
W15	0.29	0.29	0.31	—	—	—
W16	0.32	0.32	0.34	—	—	—
W17	0.36	0.36	0.37	—	—	—
W18	0.39	0.39	0.41	—	—	—
W19	0.44	0.44	0.45	—	—	—
W20	0.49	0.49	0.50	—	—	—
W21	0.54	0.54	0.55	—	—	—
W22	0.6	0.60	0.60	—	—	—
W23	0.67	0.67	0.66	—	—	—
W24	0.74	0.74	0.73	—	—	—
W25	0.84	0.84	0.80	—	—	—
W26	0.9	0.90	0.88	—	—	—
W27	1	1.00	0.97	—	—	—
W28	1.1	1.10	1.06	—	—	—
W29	1.22	1.22	1.16	—	—	—
W30	1.31	1.31	1.27	—	—	—
W31	1.43	1.43	1.39	—	—	—
W32	1.55	1.55	1.51	—	—	—
W33	1.66	1.66	1.65	—	—	—
W34	1.8	1.80	1.80	—	—	—
W35	1.97	1.97	1.96	—	—	—
W36	2.12	2.12	2.15	—	—	—
W37	2.33	2.33	2.36	—	—	—
W38	2.59	2.59	2.60	—	—	—
W39	2.84	2.84	2.86	—	—	—
W40	3.15	3.15	3.16	—	—	—
W41	3.46	3.46	3.48	—	—	—
W42	3.84	3.84	3.85	—	—	—
W43	4.27	4.27	4.23	—	—	—
W44	4.73	4.73	4.68	—	—	—
W45	5.36	5.36	5.18	—	—	—
W46	5.82	5.82	5.68	—	—	—
W47	6.33	6.33	6.28	—	—	—
W48	6.97	6.97	6.94	—	—	—
W49	7.63	7.63	7.71	—	—	—
W50	8.49	8.49	8.45	—	—	—
W51	9.24	9.24	9.29	9.40	—	—
W52	10.1	10.1	10.3	10.4	—	—
W53	11.1	11.1	11.4	11.5	—	—
W54	12.2	12.2	12.5	12.6	—	—
W55	13.6	13.6	13.7	13.8	—	—
W56	14.6	14.6	15.0	15.1	—	—
W57	15.7	15.7	16.3	16.4	—	—
W58	17.2	17.2	17.6	17.7	—	—
W59	18.9	18.9	18.9	19.1	—	—
W60	20.5	20.5	20.9	21.1	—	—
W61	22.2	22.2	22.9	23.2	25.1	—
W62	24.3	24.3	25.0	25.7	27.5	—
W63	—	26.4	27.6	28.5	30.5	—
W64	—	28.5	30.0	30.5	33.5	—
W65	—	32.5	32.0	33.0	36.5	—
W66	—	—	34.0	35.5	40	43.0
W67	—	—	37.0	38.5	44	47.0
W68	—	—	39.0	41.5	48.5	51
W69	—	—	41.0	45.0	53	56
W70	—	—	—	48.5	58	61
W71	—	—	—	53	62	66
W72	—	—	—	56	67	72
W73	—	—	—	58	72	77
W74	—	—	—	60	77	83
W75	—	—	—	62	82	89
W76	—	—	—	—	88	95
W77	—	—	—	—	94	102
W78	—	—	—	—	98	108
W79	—	—	—	—	102	116
W80	—	—	—	—	108	123
W81	—	—	—	—	117	130
W82	—	—	—	—	125	137
W83	—	—	—	—	—	150
W84	—	—	—	—	—	160
W85	—	—	—	—	—	165

TABLE 182	
Heater Element Cat. No.	Full Load Amps
	24/32 A/Size 00
JJ14	0.21
JJ13	0.22
JJ12	0.24
JJ11	0.26
JJ10	0.28
JJ9	0.30
JJ8	0.34
JJ7	0.38
JJ6	0.42
JJ5	0.47
JJ4	0.52
JJ3	0.58
JJ2	0.64
JJ1	0.71
J1	0.79
J2	0.89
J3	0.98
J4	1.10
J5	1.22
J6	1.35
J7	1.47
J8	1.59
J9	1.76
J10	1.94
J11	2.10
J12	2.30
J13	2.50
J14	2.76
J15	3.00
J16	3.24
J17	3.57
J18	3.90
J19	4.31
J20	4.77
J21	5.20
J22	5.80
J23	6.40
J24	7.02
J25	7.97
J26	8.80
J27	9.82
J28	11.0
J29	12.2
J30	13.6
J31	15.0
J32	17.0
J33	18.2
J34	20.8
J35	24.0

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters, Continued

TABLE 183						
Heater Element Cat. No.	Full Load Amperes					
	Size 24 A	Size 32 A	Size 40 A	Size 62A	Size 125 A	Size 165 A
JJ14	0.20	0.20	0.19	—	—	—
JJ13	0.21	0.21	0.21	—	—	—
JJ12	0.23	0.23	0.23	—	—	—
JJ11	0.25	0.25	0.26	—	—	—
JJ10	0.27	0.27	0.28	—	—	—
JJ9	0.29	0.29	0.31	—	—	—
JJ8	0.33	0.33	0.34	—	—	—
JJ7	0.37	0.37	0.38	—	—	—
JJ6	0.41	0.41	0.42	—	—	—
JJ5	0.45	0.45	0.46	—	—	—
JJ4	0.50	0.50	0.51	—	—	—
JJ3	0.55	0.55	0.57	—	—	—
JJ2	0.62	0.62	0.63	—	—	—
JJ1	0.68	0.68	0.69	—	—	—
J1	0.78	0.78	0.77	—	—	—
J2	0.84	0.84	0.86	—	—	—
J3	0.93	0.93	0.95	—	—	—
J4	1.05	1.05	1.06	—	—	—
J5	1.17	1.17	1.18	—	—	—
J6	1.30	1.30	1.32	—	—	—
J7	1.44	1.44	1.44	—	—	—
J8	1.61	1.61	1.58	—	—	—
J9	1.80	1.80	1.72	—	—	—
J10	1.93	1.93	1.88	—	—	—
J11	2.12	2.12	2.06	—	—	—
J12	2.30	2.30	2.25	—	—	—
J13	2.50	2.50	2.48	—	—	—
J14	2.73	2.73	2.73	—	—	—
J15	2.95	2.95	3.01	—	—	—
J16	3.20	3.20	3.31	—	—	—
J17	3.54	3.54	3.65	—	—	—
J18	3.90	3.90	4.02	—	—	—
J19	4.28	4.28	4.42	—	—	—
J20	4.65	4.65	4.87	—	—	—
J21	5.18	5.18	5.37	—	—	—
J22	5.75	5.75	5.91	—	—	—
J23	6.40	6.40	6.50	—	—	—
J24	7.10	7.10	7.19	—	—	—
J25	7.82	7.82	7.94	—	—	—
J26	8.75	8.75	8.78	9.30	—	—
J27	9.63	9.63	9.71	10.2	—	—
J28	10.9	10.9	10.7	11.1	—	—
J29	12.0	12.0	11.8	12.1	—	—
J30	13.2	13.2	13.1	13.4	—	—
J31	14.9	14.9	14.5	14.9	—	—
J32	16.4	16.4	16.0	16.5	—	—
J33	17.6	17.6	17.7	18.3	—	—
J34	19.4	19.4	19.6	20.2	—	—
J35	22.7	22.7	21.7	22.4	—	—
J36	24.2	24.2	23.9	24.8	26.6	—
J37	—	26.9	26.4	27.4	29.6	—
J38	—	30.0	29.3	30.5	33.0	—
J39	—	34.0	33.0	33.5	37.0	—
J40	—	—	36.0	37.0	41.0	45.1
J41	—	—	38.5	41.0	45.5	46
J42	—	—	40.5	45.5	51.0	52
J43	—	—	—	50.0	56.0	57
J44	—	—	—	54.0	61.0	63
J45	—	—	—	57.0	67.0	69
J46	—	—	—	60.0	73.0	76
J70	—	—	—	63.0	79.0	84
J71	—	—	—	—	87.0	92
J72	—	—	—	—	95.0	102
J73	—	—	—	—	101	112
J74	—	—	—	—	111	123
J75	—	—	—	—	122	135
J76	—	—	—	—	—	150
J77	—	—	—	—	—	158
J78	—	—	—	—	—	161

TABLE 187				
Heater Element Cat. No.	Full Load Amperes			
	Cat. No. 592-BOV16	Cat. No. 592-COV16	Cat. No. 592-DOV16	Cat. No. 592-EOV16
JJ14	0.19	—	—	—
JJ13	0.21	—	—	—
JJ12	0.23	—	—	—
JJ11	0.26	—	—	—
JJ10	0.28	—	—	—
JJ9	0.31	—	—	—
JJ8	0.34	—	—	—
JJ7	0.38	—	—	—
JJ6	0.42	—	—	—
JJ5	0.46	—	—	—
JJ4	0.51	—	—	—
JJ3	0.57	—	—	—
JJ2	0.63	—	—	—
JJ1	0.69	—	—	—
J1	0.77	—	—	—
J2	0.86	—	—	—
J3	0.95	—	—	—
J4	1.06	—	—	—
J5	1.18	—	—	—
J6	1.32	—	—	—
J7	1.44	—	—	—
J8	1.58	—	—	—
J9	1.72	—	—	—
J10	1.88	—	—	—
J11	2.06	—	—	—
J12	2.25	—	—	—
J13	2.48	—	—	—
J14	2.73	—	—	—
J15	3.01	—	—	—
J16	3.31	—	—	—
J17	3.65	—	—	—
J18	4.02	—	—	—
J19	4.42	—	—	—
J20	4.87	—	—	—
J21	5.37	—	—	—
J22	5.91	—	—	—
J23	6.50	—	—	—
J24	7.19	—	—	—
J25	7.94	—	—	—
J26	8.78	9.3	—	—
J27	9.71	10.2	—	—
J28	10.7	11.1	—	—
J29	11.8	12.1	—	—
J30	13.1	13.4	—	—
J31	14.5	14.9	—	—
J32	16.0	16.5	—	—
J33	17.7	18.3	—	—
J34	19.6	20.2	—	—
J35	21.7	22.4	—	—
J36	23.9	24.8	26.6	—
J37	26.4	27.4	29.6	—
J38	29.3	30.5	33.0	—
J39	33.0	33.5	37.0	—
J40	36.0	37.0	41.0	41.5
J41	38.5	41.0	45.5	46.0
J42	42.5	45.5	51	52
J43	—	50	56	57
J44	—	56	61	63
J45	—	59	67	69
J46	—	62	73	76
J70	—	68	79	84
J71	—	—	87	92
J72	—	—	95	102
J73	—	—	105	112
J74	—	—	116	123
J75	—	—	125	135
J76	—	—	—	155
J77	—	—	—	165
J78	—	—	—	172

Refer to Heater Element Selection Procedure on page 1-152 before using tables.

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters, Continued

TABLE 191				
Heater Element Cat. No.	Full Load Amperes			
	Cat. No. 592-BOV16	Cat. No. 592-COV16	Cat. No. 592-DOV16	Cat. No. 592-EOV16
W10	0.20	—	—	—
W11	0.22	—	—	—
W12	0.24	—	—	—
W13	0.26	—	—	—
W14	0.29	—	—	—
W15	0.32	—	—	—
W16	0.35	—	—	—
W17	0.38	—	—	—
W18	0.42	—	—	—
W19	0.47	—	—	—
W20	0.51	—	—	—
W21	0.56	—	—	—
W22	0.61	—	—	—
W23	0.67	—	—	—
W24	0.74	—	—	—
W25	0.81	—	—	—
W26	0.89	—	—	—
W27	0.98	—	—	—
W28	1.08	—	—	—
W29	1.19	—	—	—
W30	1.30	—	—	—
W31	1.43	—	—	—
W32	1.55	—	—	—
W33	1.70	—	—	—
W34	1.90	—	—	—
W35	2.02	—	—	—
W36	2.22	—	—	—
W37	2.43	—	—	—
W38	2.68	—	—	—
W39	2.96	—	—	—
W40	3.25	—	—	—
W41	3.58	—	—	—
W42	3.94	—	—	—
W43	4.30	—	—	—
W44	4.72	—	—	—
W45	5.22	—	—	—
W46	5.78	—	—	—
W47	6.38	—	—	—
W48	7.06	—	—	—
W49	7.83	—	—	—
W50	8.55	—	—	—
W51	9.41	9.48	—	—
W52	10.5	10.6	—	—
W53	11.6	11.7	—	—
W54	12.7	12.8	—	—
W55	14.0	14.1	—	—
W56	15.3	15.4	—	—
W57	16.7	16.9	—	—
W58	18.0	18.3	—	—
W59	19.3	19.9	—	—
W60	21.3	21.9	—	—
W61	23.3	24.2	26.1	—
W62	25.6	26.8	28.7	—
W63	28.1	29.6	31.5	—
W64	31.0	32.5	34.5	—
W65	34.0	35.0	38.0	41.0
W66	36.0	37.5	41.5	44.5
W67	38.0	41.0	45.5	48.5
W68	41.0	45.0	49.5	53
W69	—	48.0	54	58
W70	—	52	59	63
W71	—	57	64	68
W72	—	60	70	74
W73	—	63	76	80
W74	—	65	81	86
W75	—	68	87	92
W76	—	—	93	98
W77	—	—	100	105
W78	—	—	105	112
W79	—	—	110	120
W80	—	—	120	128
W81	—	—	—	136
W82	—	—	—	145
W83	—	—	—	154
W84	—	—	—	162
W85	—	—	—	170

TABLE 192				
Heater Element Cat. No.	Full Load Amperes			
	Size 40 A	Size 68 A	Size 120 A	Size 184 A
W10	0.21	—	—	—
W11	0.23	—	—	—
W12	0.25	—	—	—
W13	0.27	—	—	—
W14	0.30	—	—	—
W15	0.34	—	—	—
W16	0.37	—	—	—
W17	0.41	—	—	—
W18	0.45	—	—	—
W19	0.50	—	—	—
W20	0.55	—	—	—
W21	0.60	—	—	—
W22	0.65	—	—	—
W23	0.71	—	—	—
W24	0.78	—	—	—
W25	0.86	—	—	—
W26	0.95	—	—	—
W27	1.04	—	—	—
W28	1.14	—	—	—
W29	1.25	—	—	—
W30	1.36	—	—	—
W31	1.50	—	—	—
W32	1.65	—	—	—
W33	1.82	—	—	—
W34	2.01	—	—	—
W35	2.21	—	—	—
W36	2.45	—	—	—
W37	2.67	—	—	—
W38	3.00	—	—	—
W39	3.31	—	—	—
W40	3.65	—	—	—
W41	4.06	—	—	—
W42	4.49	—	—	—
W43	4.98	—	—	—
W44	5.48	—	—	—
W45	6.06	—	—	—
W46	6.68	—	—	—
W47	7.35	—	—	—
W48	8.09	—	—	—
W49	8.90	9.03	—	—
W50	9.80	9.96	—	—
W51	10.9	11.1	—	—
W52	12.0	12.2	—	—
W53	13.2	13.3	—	—
W54	14.3	14.6	—	—
W55	15.7	15.8	—	—
W56	17.1	17.5	—	—
W57	18.6	19.1	—	—
W58	19.7	20.5	—	—
W59	21.4	21.9	—	—
W60	23.4	24.1	25.6	—
W61	25.8	26.4	27.8	—
W62	28.4	29.1	30.0	—
W63	31.0	32.0	34.0	—
W64	35.5	35.5	38.5	—
W65	38.5	39.0	42.5	43.5
W66	41.0	42.5	44.5	47.5
W67	—	47.5	50	52
W68	—	53	54	58
W69	—	57	60	61
W70	—	60	65	66
W71	—	65	73	74
W72	—	71	78	80
W73	—	—	87	89
W74	—	—	94	97
W75	—	—	100	104
W76	—	—	109	113
W77	—	—	113	125
W78	—	—	121	133
W79	—	—	—	142
W80	—	—	—	153
W81	—	—	—	165
W82	—	—	—	170
W83	—	—	—	184

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters, Continued

TABLE 195				
Heater Element Cat. No.	Full Load Amperes			
	Cat. No. 592-TPD200 184 A	Cat. No. 592-TPD300 304 A	Cat. No. 592-TPD400 496 A	NEMA Size 6 Cat. No. 592-TPD630 608 A
W26	—	—	—	115
W27	43*	—	78	125
W28	45*	—	85	135
W29	50*	—	94	147
W30	54*	—	104	165
W31	59*	—	114	179
W32	65*	—	125	196
W33	70	—	139	216
W34	75	127	150	232
W353	81	138	160	260
W36	89	151	175	287
W37	98	166	195	315
W38	110	183	215	350
W39	120	198	235	385
W40	132	218	260	420
W41	143	239	293	465
W42	155	260	320	515
W43	170	285	350	570†
W44	193	310	380	630
W45	—	—	415	—
W46	—	—	455	—
W47	—	—	500	—
W48	—	—	550	—

TABLE 196				
Heater Element Cat. No.	Full Load Amperes			
	Cat. No. 592-TPD200 184 A	Cat. No. 592-TPD300 304 A	Cat. No. 592-TPD400 496 A	NEMA Size 6 Cat. No. 592-TPD630 608 A
J7	64*	—	115	195
J8	72*	—	127	220
J9	74*	—	140	239
J10	85*	125	155	260
J11	87*	142	170	285
J12	96	155	186	315
J13	107	172	205	340
J14	116	188	215	375
J15	128	205	145	410
J16	139	225	270	450
J17	153	250	296	495
J18	168	275	330	540†
J19	184	305	360	590
J20	200	—	400	640
J21	215	—	440	—
J22	—	—	480	—
J23	—	—	520	—

* Exceeds 20 seconds at six times rating, providing Class 30 protection.

† Maximum element for NEMA Size 6.

TABLE 198				
Heater Element Cat. No.	Full Load Amperes			
	Size 40 A	Size 68 A	Size 120 A	Size 184 A
JJ14	0.22	—	—	—
JJ13	0.24	—	—	—
JJ12	0.27	—	—	—
JJ11	0.30	—	—	—
JJ10	0.33	—	—	—
JJ9	0.36	—	—	—
JJ8	0.40	—	—	—
JJ7	0.44	—	—	—
JJ6	0.48	—	—	—
JJ5	0.53	—	—	—
JJ4	0.58	—	—	—
JJ3	0.65	—	—	—
JJ2	0.71	—	—	—
JJ1	0.78	—	—	—
J1	0.87	—	—	—
J2	0.95	—	—	—
J3	1.05	—	—	—
J4	1.16	—	—	—
J5	1.28	—	—	—
J6	1.41	—	—	—
J7	1.55	—	—	—
J8	1.70	—	—	—
J9	1.87	—	—	—
J10	2.06	—	—	—
J11	2.27	—	—	—
J12	2.51	—	—	—
J13	2.78	—	—	—
J14	3.07	—	—	—
J15	3.38	—	—	—
J16	3.72	—	—	—
J17	4.10	—	—	—
J18	4.52	—	—	—
J19	4.98	—	—	—
J20	5.49	—	—	—
J21	6.04	—	—	—
J22	6.66	—	—	—
J23	7.35	—	—	—
J24	8.13	—	—	—
J25	8.96	9.03	—	—
J26	9.90	9.95	—	—
J27	10.9	11.0	—	—
J28	12.0	12.3	—	—
J29	13.2	13.8	—	—
J30	14.6	15.3	—	—
J31	16.1	17.1	—	—
J32	18.6	18.8	—	—
J33	20.9	21.1	—	—
J34	22.8	23.5	24.5	—
J35	25.1	26.0	29.9	—
J36	28.5	29.1	33.0	—
J37	33.0	33.5	35.0	—
J38	35.5	36.0	39.5	—
J39	38.5	39.5	44.0	42.0
J40	42.0	44.0	47.5	48.5
J41	—	50.0	54	55
J42	—	56.0	59	62
J43	—	61.0	65	68
J44	—	67.0	72	75
J45	—	70.0	78	81
J46	—	—	87	90
J70	—	—	95	98
J71	—	—	105	108
J72	—	—	118	120
J73	—	—	126	131
J74	—	—	—	148
J75	—	—	—	160
J76	—	—	—	179
J77	—	—	—	198

Refer to Heater Element Selection Procedure on page 1-152 before using tables.

Heater Element Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters, Continued

TABLE 347	
Heater Element Cat. No.	Full Load Amps
	Size 5
W29	77
W30	83
W31	90
W32	98
W33	107
W34	116
W35	126
W36	138
W37	150
W38	164
W39	178
W40	194
W41	212
W42	232
W43	254
W44	279
W45	—
W46	—
W47	—
W48	—
W49	—

TABLE 547	
Heater Element Cat. No.	Full Load Amps
	Size 5
J5	72
J6	79
J7	87
J8	94
J9	103
J10	113
J11	124
J12	135
J13	148
J14	162
J15	177
J16	194
J17	212
J18	232
J19	254
J20	278
J21	—

Refer to Heater Element Selection Procedure on page 1-152 before using tables.

Single Phase NEMA Manual Starting Switches

Product Overview/Product Selection



Type 1 General Purpose Enclosure with Neon Pilot Light

Bulletin 600

- Starting and overload protection of small 1Ø AC/DC motors used on the following:
 - unit heaters
 - stokers
 - refrigeration compressors
 - fans
 - pumps

Bulletin 600 manual switches consist of a snap switch combined with a thermal overload device operating on the solder-ratchet principle. The switch is designed to prevent being held closed under a sustained motor overload. To reset the overload mechanism, the switch lever is moved to the OFF position. The motor can be restarted by pushing the switch lever to the ON position. Applications include compressors, fans and pumps.

- Hazardous Location:
 - UL Listed (File No. E10314)
 - CSA (LR11924)

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Standards Compliance and Certifications

UL Listed — Enclosed Products (File No. E14841; Guide No. NLRV)
 UL — Open Style Products (File No. E14841; Guide No. NLRV2)
 CSA Certified LR1234
 American Bureau of Shipping CE Marked (Per 60947)

Your order must include: 1) Cat. No. of the switch, 2) Cat. No. of the heater element(s), and 3) if required, Cat. No. of any accessories.

Ratings

Single Pole — 1 HP 115...230V AC, 1 HP 277V AC, Open Type without Enclosure or Type 1 General Purpose Enclosure

Two Pole — 1 HP 115...230V AC, 1 HP 277V AC, Open Type without Enclosure or Type 1 General Purpose Enclosure, 3/4 HP 115...230V DC

Selector Switch — 1 HP 115...230V AC, 1 HP 277V AC, Open Type without Enclosure or Type 1 General Purpose Enclosure






Heater Element — See page 1-151 for heater element selection table.

Description		Open Type Without Enclosure Includes Legend Plate	Type 1 General Purpose Enclosure Surface Mounting	Type 1 General Purpose Enclosure Flush Mounting Includes Flush Plate but not Switch Box	Type 4 Watertight Enclosure	Type 7 & 9 Enclosure Class I, Groups C & D Class II, Groups E, F & G - Divisions 1 & 2 - Hazardous Locations
		Cat. No.	Cat. No.	Stainless Steel Flush Plate Cat. No.		
Switch Only						
Toggle Type	— 1-Pole	600-TOX4	600-TAX4	600-TQX4	—	—
	— 2-Pole	600-TOX5	600-TAX5	600-TQX5	600-TCX5	600-TEX5
Key Type	— 2-Pole	600-TOX49	600-TAX49	600-TQX49	—	—
Lever Type	— 1-Pole	600-TOX149	600-TAX149	—	—	—
Switch with Neon Pilot Light (115 or 230V)						
Toggle Type	— 1-Pole	600-TOX216	600-TAX216	600-TQX216	—	—
	— 2-Pole	600-TOX109	600-TAX109	600-TQX109		
Key Type	— 2-Pole	600-TOX110	600-TAX110	600-TQX110	—	—
Switch with Incandescent Pilot Light						
Toggle Type	— 2-Pole 115V	—	—	—	600-TCD7	600-TED7
	— 2-Pole 230V	—	—	—	600-TCA7	600-TEA7
Switch and "Hand-Off-Auto" Selector Switch (for use on AC only)						
Toggle Type	— 2-Pole	—	600-TAX9	600-TQX9	600-TCX9	600-TEX9
Switch with Neon Pilot Light and "Hand-Off-Auto" Selector Switch (115 or 230V, AC only)						
Toggle Type	— 2-Pole	—	600-TAX142	600-TQX142	—	—
Key Type	— 2-Pole	—	600-TAX145	—	—	—
Two Switch Units in One Enclosure						
Toggle Type	— 2-Pole	—	600-TAX10	—	600-TCX10	600-TEX10
Two Switch Units in One Enclosure Neon Pilot Light on Both Units (115 or 230V)						
Toggle Type	— 2-Pole	—	600-TAX144	600-TQX144	—	—
Two Speed Switch						
Toggle Type	— 2-Pole	—	600-TAX298	—	—	—
Two Speed Switch with Neon Pilot Lights (115 or 230V)						
Toggle Type	— 2-Pole	—	600-TAX293	600-TQX293	—	—
Separate Cover and Switch Assembly*						
Toggle Type	—2-Pole	—	—	—	—	600-N12
Selector Switch						
Hand-Off-Auto						

* For use with Bulletin 800H, Type 7 and 9, Series C or later bases. See page 10-153 for Base Listings.

Single Phase NEMA Manual Starting Switches

Accessories — Field-Installed/Modification — Factory Installed — Approximate Dimensions

Description	NEMA Enclosure Type	Cat. No.
<p>Pilot Light Replacement Bulb Incandescent* (Mfg. Designation #120 PSB-120V) Note: Pilot lights as used on Bulletin 600 switches indicate whether the motor is running only if the switch is used to control the motor directly. If a thermostat, pressure switch or some other pilot device controls the operation of the motor, the pilot light on the Bulletin 600 switch merely indicates whether the power is ON or OFF.</p> 	4, 7 and 9	800S-N60
<p>Locking Attachment (For Toggle Operated Only)</p> 	1 (Switches in the Type 4 and Type 7 and 9 enclosures are supplied as standard with provisions for locking in the OFF or ON position.)	600-N1
<p>Drain (For 3/4 in. (19 mm) Conduit Opening)</p> 	7 and 9	800H-NP21
<p>Flange Seal (Provides NEMA Type 3 rating for outdoor locations in addition to maintaining NEMA Type 7 and 9 integrity) Note: An approved drain Cat. No. 800H-NP21 is required for condensation when this option is used (refer to local Electrical Code).</p> 	3, 7, and 9	800H-NP20
<p>Sealing Well (See applicable codes and laws) (Not available for use with Cat. No. 600-TEX5) Note: When using a sealing well with integral flange seal for NEMA Type 3 outdoor applications, an approved drain fitting must be provided (refer to local Electrical Code).</p> 	3, 7, and 9 (With integral flange seal)	2 wire: 800H-NPRD90 4 wire: 800H-NPRD91
	7 and 9 (Without integral flange seal)	2 wire: 800H-NPD90 4 wire: 800H-NPD91

* All other devices with the pilot light option utilize a neon lamp. For replacement information consult your local Allen-Bradley distributor. (For Type 1 enclosure use replacement bulb 40268-313-51)

Modifications — Factory-Installed

Flange Seal (see applicable codes and laws) — This option provides a Type 3 rating in addition to maintaining a Type 7 and 9 integrity. Add the letter “S” to the end of the Cat. No. Example: **Cat. No.600-TEX9S.**

Conduit Openings — If two 3/4 in. (19 mm) pipe taps (one on top and one on bottom) are required, add the number “12” to the end of the Cat. No. Example: **Cat. No. 600-TEX512.**

Note: All single unit devices are provided with one 3/4 in (19 mm) pipe tap on the bottom. By reversing the switch base, the pipe tap can be located on the top.

All dual units are provided as standard with one 3/4 in (19 mm) pipe tap on top and two on the bottom with 2 threaded plugs included. If 1/2 in (12.7 mm) openings are required, reducers should be used.

Drain — In order to install a drain on single unit devices (i.e. **Cat. No. 600-TEX5**) an additional conduit opening is required. See “Conduit Openings” above.

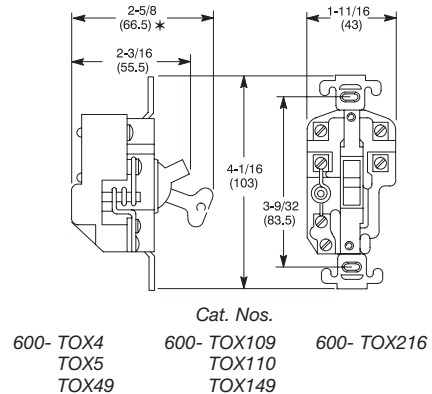
Sealing Well with Integral Flange Seal for Type 3, 7 and 9 — To order this option insert the letter “R” at the end of the listed Cat. No. Example: **Cat. No. 600-TEX5R.**

Sealing Well without Integral Flange Seal for Type 7 and 9 — To order this option insert the letter “K” at the end of the listed Cat. No. Example: **Cat. No. 600-TEX5K.**

Approximate Dimensions

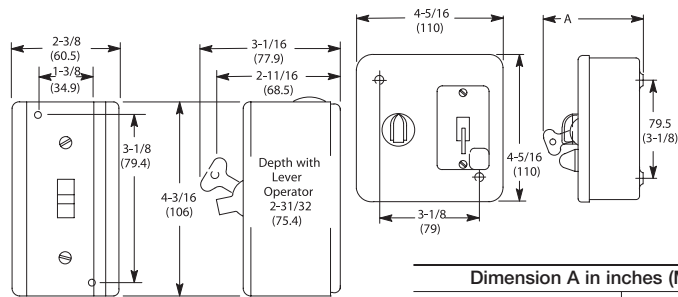
Dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Open Type without Enclosure



Dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Type 1 General Purpose Enclosure Surface Mounting

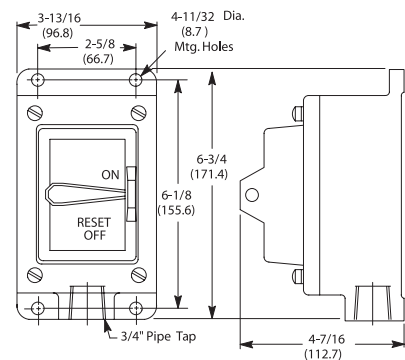


Dimension A in inches (Millimeters)	
Key Inserted	1-1/8 (79.5)
Selector Switch	2-3/4 (70)
Toggle Operator	2-9/16 (65)

Cat. Nos.
 600- TAX4 600- TAX109 600- TAX216
 TAX5 TAX110
 TAX49 TAX149

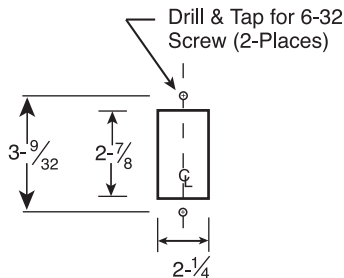
Cat. Nos.
 600- TAX9 600- TAX142 600- TAX145
 TAX10 TAX144

Type 4 Watertight Enclosure; Type 7 and 9 Hazardous Locations Enclosure

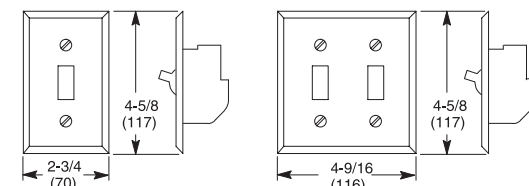


Cat. Nos.
 600- TCX5 600- TEX45

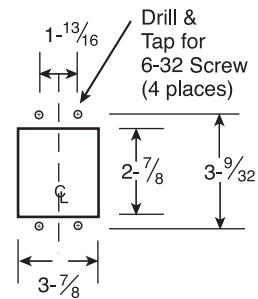
Type 1 General Purpose Enclosure Flush Mounting



Cut-Out and Drilling Layout

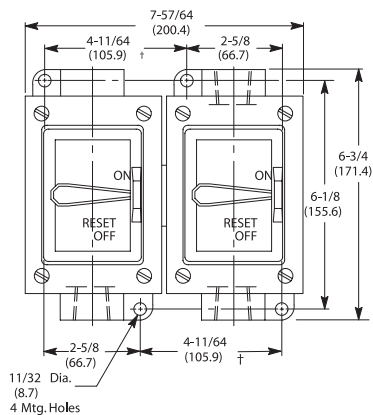


Cat. Nos. Cat. Nos.
 600- TQX4 600- TQX109 600- TQX9 600- TQX144
 TQX5 TQX110 TQX142
 TQX49 TQX216



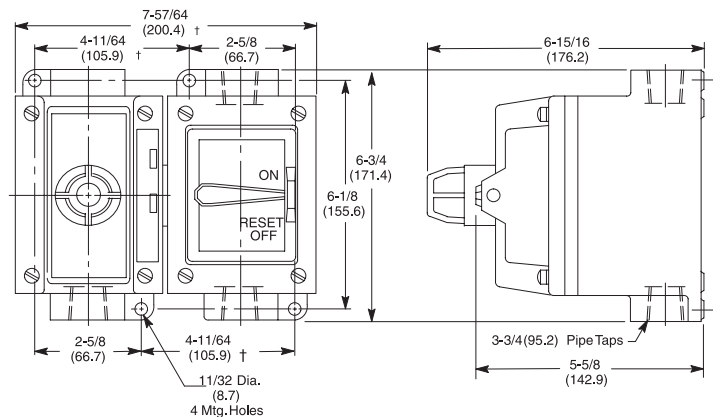
Cut-Out and Drilling Layout

Type 4 Watertight Enclosure, Type 7 & 9



Cat. Nos.
 600- TCX9 600- TEX9
 TCX142 TEX10

Type 7 & 9 Hazardous Locations Enclosure



Cat. Nos.
 600- TCA7 600- TEA7
 TCD75 TED7

* Lever Type Dimension is 2-17/32 in (64.5).

† This dimension may vary up to ±1/8 in (3.2). Mounting holes should be located at time of installation using device as a template.

Single and Three Phase NEMA Manual Starting Switches



Open Type
without Enclosure

Bulletin 609

- Contact position indicator
- Locking features
- Wide range of enclosures:
Open type without enclosure, Types 1, 4/4X, 3R 7&9 and 12

Bulletin 609 manual starting switches are designed for use on motor starting installations where remote push button control is not required and where undervoltage protection is not needed. The motor is started at full line voltage, and thermal type overload protection is provided. Bulletin 609RS manual starting switches are designed for manually reversing AC polyphase motors; the Bulletin 609TS manual switches are designed for operating 2-speed, separate winding wye connected motors. These switches incorporate two of the standard Bulletin 609 manual starting switches mounted on a common base plate. A mechanical interlock is provided to prevent both switches from being closed at the same time.

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Standards and Certifications

See below.

Your order must include: 1) Cat. No. of the manual starting switch, 2) Cat. No. of the heater element(s), and 2) if required, Cat. No. of any accessories.

Standards and Certifications

- NEMA/EEMAC ICS2 (Industrial Controls and Systems)
- UL 508
- ABS 4/5.115
- USCG 46
- CFR 111.70
- UL Listed (File No. E14841; Guide No. NLRV)
- CSA Certified (LR 1234)
- American Bureau of Shipping (ABS)
- CE Marked (Per 60947)
- Hazardous Location:
UL Listed (File No. E10314)
CSA Certified (LR 11924)

Single and Three Phase NEMA Manual Starting Switches

Product Selection

Single- and Three-Phase NEMA Manual Starting Switches

Type of Operator	Phase	Size	Maximum Horsepower Rating						Open Type without Enclosure	Type 1 General Purpose Enclosure Surface Mounting*	Type 12 Dusttight Industrial Use Enclosure	Type 4/4X Watertight, Corrosion-Resistant Enclosure Fiberglass-Reinforced Polyester†	Hazardous Locations		
			Motor Voltage										Type 7 & 9 Enclosure Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –	Type 3R, 7 & 9§ Enclosure Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –	
			AC, 60 Hz			AC, 50 Hz		DC							
			115V	200V	230V	460V... 575V	380V... 415V	115V... 125V	230V... 250V	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.
Push Button	1 Ø	0	1	—	2	—	—	—	—	609-AOX	609-AAX	609-AJX	609-ACX	609-AEX	609-AHX
		1	2	—	3	—	—	—	—	609-BOX	609-BAX	609-BJX	609-BCX	609-BEX	609-BHX
		1 P	3	—	5	—	—	—	—	609-XOX	609-XAX	609-XJX	609-XCX	609-XEX	609-XHX
	3 Ø	0	—	3	3	5	5	—	—	609-AOW	609-AAW	609-AJW	609-ACW	609-AEW	609-AHW
		1	—	7-1/2	7-1/2	10	10	—	—	609-BOW	609-BAW	609-BJW	609-BCW	609-BEW	609-BHW
		1 P	—	—	—	—	—	—	—	—	—	—	—	—	—
Toggle Lever	1 Ø	0	1	—	2	—	—	—	—	609T-AOX	609T-AAX	—	—	—	—
		1	2	—	3	—	—	—	—	609T-BOX	609T-BAX	—	—	—	—
		1 P	3	—	5	—	—	—	—	609T-XOX	609T-XAX	—	—	—	—
	3 Ø	0	—	3	3	5	5	—	—	609T-AOW	609T-AAW	—	—	—	—
		1	—	7-1/2	7-1/2	10	10	—	—	609T-BOW	609T-BAW	—	—	—	—
		1 P	—	—	—	—	—	—	—	—	—	—	—	—	—
Push Button	DC†	0	—	—	—	—	—	1	1-1/2	609D-AOZ	609D-AAZ	—	609D-ACZ	609D-AEZ	609D-AHZ
		1	—	—	—	—	—	1-1/2	2	609D-BOZ	609D-BAZ	—	609D-BCZ	609D-BEZ	609D-BHZ
Toggle Lever	DC†	0	—	—	—	—	—	1	1-1/2	609DT-AOZ	609DT-AAZ	—	—	—	—
		1	—	—	—	—	—	1-1/2	2	609DT-BOZ	609DT-BAZ	—	—	—	—

Bulletin 609RS — Manual Reversing Switches

Push Button	3 Ø	0	—	3	3	5	5	—	—	609-AOW21	609-AAW21	—	—	—	—
		1	—	7-1/2	7-1/2	10	10	—	—	609-BOW21	609-BAW21	—	—	—	—
Toggle Lever	3 Ø	0	—	3	3	5	5	—	—	609T-AOW21	609T-AAW21	—	—	—	—
		1	—	7-1/2	7-1/2	10	10	—	—	609T-BOW21	609T-BAW21	—	—	—	—

Bulletin 609TS — Manual 2-Speed Switches

Push Button	3 Ø	0	—	3	3	5	5	—	—	609-AOW22	609-AAW22	—	—	—	—
		1	—	7-1/2	7-1/2	10	10	—	—	609-BOW22	609-BAW22	—	—	—	—
Toggle Lever	3 Ø	0	—	3	3	5	5	—	—	609T-AOW22	609T-AAW22	—	—	—	—
		1	—	7-1/2	7-1/2	10	10	—	—	609T-BOW22	609T-BAW22	—	—	—	—

* Type 1 General Purpose Flush Mounting Enclosures with Pull Box are also available. Order as follows. Change the second letter of the listed Cat. No. from "A" to "L". Example: **Cat. No. 609-ALX**. For a stainless steel flush plate, change the second letter of the listed Cat. No. from "A" to "Q". Example: **Cat. No. 609-AQX**.

† DC Manual Starters are not UL Listed.

‡ Fiberglass-Reinforced Polyester Hubs are included with each starter.

§ These enclosures include a cover gasket and drain. It is recommended that a breather also be installed.

Breather	Cat. No. 1401-N1	(Can be installed at the top of an enclosure.)
Drain	Cat. No. 1401-N2	(Can be installed at the bottom of an enclosure.)
Breather-Drain Combination	Cat. No. 1401-N3	(Can be installed at the top of an enclosure as a breather or bottom as a drain.)

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Single and Three Phase NEMA Manual Starting Switches

Accessories — Field Installed — Factory Installed

Pilot Light Kits

Kits are available for field installation of pilot lights in Type 1 General Purpose surface or flush mounting enclosures. As standard, a clear pilot light lens is supplied. Pilot lights are not available for Bulletin 609RS or 609TS manual starters.

Volts (V)	Cat. No.
120	609-N10
240	609-N20
480	609-N40
600	609-N60

Pilot Lights Factory Installed

To order, add the following suffix code after the last letter in the listed Cat. No. Example: **Cat. No. 609-AAXD4**. Available for Type 1 General Purpose Enclosure only.

Volts (V)	Suffix Code
120	D4
240	A4
480	B4
600	C4

Replacement lamp is ANSI part number B2A (NE-51H), **Cat. No. 609-N9**.

Fusing

The Bulletin 609 is suitable for general installation in accordance with the local Electrical Code.

Group Fusing

The Bulletin 609 Sizes 0 and 1 in Type 1, 4X and 12 enclosures are UL Listed for group fusing with Class J fuses only. See chart below for maximum fuse ratings.

Full Load Current of Smallest Motor Amperes (A)	Maximum Fuse Ratings (A)	
	Nominal System Voltages	
	120...240V	480...600V
0.45...2.99	30	30
3.00...6.49	60	30
6.50...18.0	100	—



Toggle Lever Type Switch in Type 1 Enclosure
(with Cover Removed)

Bulletin 609U

- Contact position indicator
- Locking features
- Wide range of enclosures:
open type, enclosure Types 1, 4/4X, 3R 7&9 and 12
- Undervoltage protection

Bulletins 609U and 609TU are the same as the standard Bulletin 609 Manual Starters except for the addition of Undervoltage Protection. These starters provide full line voltage starting, thermal overload protection, as well as Undervoltage Protection. Typical applications are on woodworking machinery, metal sawing machines, and many other machine tools where Undervoltage Protection is needed to meet safety standards. The Undervoltage Protection is accomplished by an electromechanical solenoid which is energized whenever line voltage is present. The solenoid is designed to mechanically open the starter contacts upon power failure, and keep them open even if power is returned to the unit. Only after the starter has been manually reset by pushing the operator to the stop position, can the starter be re-energized. Open Type Bulletin 609U and 609TU switches can replace the Bulletin 609 switches in Types 1 and 12 enclosures of the latest construction without any field modification of the enclosure.

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Standards and Certifications

See below.

Your order must include: 1) Cat. No. of the manual starting switch with undervoltage protection, 2) Cat. No. of the heater element(s), and 2) if required, Cat. No. of any accessories.

Standards and Certifications

- | | | |
|---|--|--|
| <ul style="list-style-type: none"> • NEMA/EEMAC ICS2
(Industrial Controls and Systems) • UL 508 • ABS 4/5.115 • USCG 46 • CFR 111.70 | <ul style="list-style-type: none"> • UL Listed (File No. E14841; Guide No. NLRV) • CSA Certified (LR 1234) • American Bureau of Shipping (ABS) • CE Marked (Per 60947) | <ul style="list-style-type: none"> • Hazardous Location:
UL Listed (File No. E10314)
CSA Certified (LR 11924) |
|---|--|--|

Manual Starting Switches

Product Selection

With Undervoltage Protection

Type Of Operator	Phase	Size	Maximum Horsepower Rating					Open Type without Enclosure	Type 1 General Purpose Enclosure Surface Mounting*	Type 12 Dusttight, Industrial Use Enclosure	Type 4/4X Watertight, Corrosion-Resistant Enclosure Fiberglass-Reinforced Polyester†	Hazardous Locations	
			Motor Voltage									Type 7 & 9 Enclosure Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –	Type 3R, 7 & 9‡ Enclosure Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 –
			AC, 60 Hz										
			115V	200V	230V	50 Hz 380... 415V	460... 575V					Cat. No.	Cat. No.
Push Button	1 Ø	0	1	—	2	—	—	609U-AO⊗	609U-AA⊗	609U-AJ⊗	609U-AC⊗	609U-AE⊗	609U-AH⊗
		1	2	—	3	—	—	609U-BO⊗	609U-BA⊗	609U-BJ⊗	609U-BC⊗	609U-BE⊗	609U-BH⊗
		1P	3	—	5	—	—	609U-XO⊗	609U-XA⊗	609U-XJ⊗	609U-XC⊗	—	—
	3 Ø	0	—	3	3	5	5	609U-AO⊗	609U-AA⊗	609U-AJ⊗	609U-AC⊗	609U-AE⊗	609U-AH⊗
		1	—	7-1/2	7-1/2	10	10	609U-BO⊗	609U-BA⊗	609U-BJ⊗	609U-BC⊗	609U-BE⊗	609U-BH⊗
Toggle Lever	1 Ø	0	1	—	2	—	—	609TU-AO⊗	609TU-AA⊗	—	—	—	—
		1	2	—	3	—	—	609TU-BO⊗	609TU-BA⊗	—	—	—	—
		1P	3	—	5	—	—	609TU-XO⊗	609TU-XA⊗	—	—	—	—
	3 Ø	0	—	3	3	5	5	609TU-AO⊗	609TU-AA⊗	—	—	—	—
		1	—	7-1/2	7-1/2	10	10	609TU-BO⊗	609TU-BA⊗	—	—	—	—

⊗Voltage Suffix Code for 1Ø

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 609U-AO⊗** becomes **Cat. No. 609U-AOXA**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		24V	110...115V	115...120V	200...208V	220...230V	230...240V	240V	277V
Common Control	50 Hz	—	XS	—	—	XP	—	XG	—
	60 Hz	—	XE	XD	XH	XF	XA	—	—
Separate Control	50 Hz	—	XWS	—	—	XWP	—	XWT	—
	60 Hz	XWJ	—	XWD	XWH	—	XWA	—	XWF

⊗Voltage Suffix Code for 3Ø

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 609U-AA⊗** becomes **Cat. No. 609U-AAAH**. For other voltages, consult your local Allen-Bradley distributor.

Voltage		24V	110V	115...120V	200...208V	220...230V	230...240V	240V	277V	380V	415V	440...460V	460...480V	500V	550V	575...600V
Common Control	50 Hz	—	—	—	—	P	—	VP	—	VN	WL	Q	—	WM	R	—
	60 Hz	—	—	—	H	F	A	—	G	—	—	N	B	—	WC	C
Separate Control	50 Hz	K	S	—	—	—	—	—	—	—	—	—	—	—	—	—
	60 Hz	WJ	E	D	—	—	—	—	WF	—	—	—	—	—	—	—

* Type 1 General Purpose Flush Mounting Enclosures with Pull Box are also available. Order as follows. Change the second letter of the listed Cat. No. from "A" to "L". Example: **Cat. No. 609U-ALX**. For a stainless steel flush plate, change the second letter of the listed Cat. No. from "A" to "Q". Example: **Cat. No. 609U-AQX**.

† Fiberglass-Reinforced Polyester Hubs are included with each starter.

‡ These enclosures include a cover gasket and drain. It is recommended that a breather also be installed.

Breather Cat. No. 1401-N1 (Can be installed at the top of an enclosure.)
 Drain Only Cat. No. 1401-N2 (Can be installed at the bottom of an enclosure.)
 Breather-Drain Combination Cat. No. 1401-N3 (Can be installed at the top of an enclosure as a breather or bottom as a drain.)

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With Undervoltage Protection

Remote Stop Function

A remote stop function may be added by removing a short jumper (see typical diagram) and wiring a push button or limit switch in series with the solenoid. After operation of the emergency stop, the starter must be manually reset.

Note: The remote stop terminal block and jumper are not available on devices in the Type 7 and 9 enclosure.

Accessories

Pilot Light Kits

Kits are available for field installation of pilot lights in Type 1 General Purpose surface or flush mounting enclosures. A clear lens is provided as standard. Pilot lights are not available for Bulletin 609RS or 609TS manual starters.

Volts (V)	NEMA Type	Cat. No.
120	Type 1	609-N10
240		609-N20
480		609-N40
600		609-N60

Pilot Lights Factory Installed

To order, add the number "4" after the last letter in the listed Cat. No. Example: **Cat. No. 609U-AAXD** becomes **Cat. No. 609U-AAXD4**.

Available for Type 1 General Purpose Enclosure only.

Replacement lamp is ANSI part number B2A (NE-51H), A-B. Catalog # 609-N9.

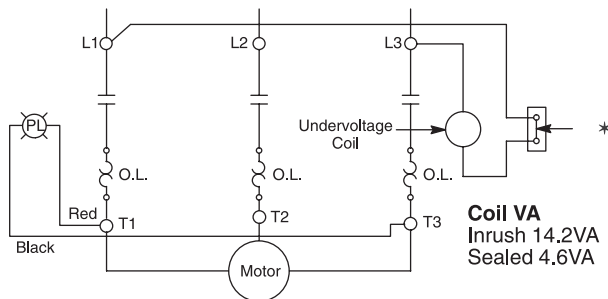
Group Fusing

The Bulletin 609U and 609TU Sizes 0 and 1 in Type 1, 4/4X and 3R/12 enclosures are UL Listed for group fusing with Class J fuses only. See chart below for maximum fuse ratings.

Full Load Current of Smallest Motor Amperes (A)	Maximum Fuse Ratings (A)	
	Nominal System Voltages	
	120...240V	480...600V
0.45...2.99	30	30
3.00...6.49	60	30
6.50...18.0	100	—

Typical Wiring Diagram

(See Applicable Codes and Laws)



* Remove Jumper "A" to connect remote stop operator wires to vacated terminals.

Note: Jumper not available on devices in Type 7 and 9 Enclosure.

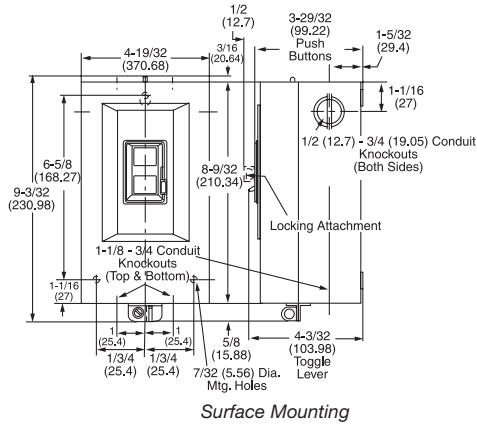
Manual Starting Switches

Approximate Dimensions

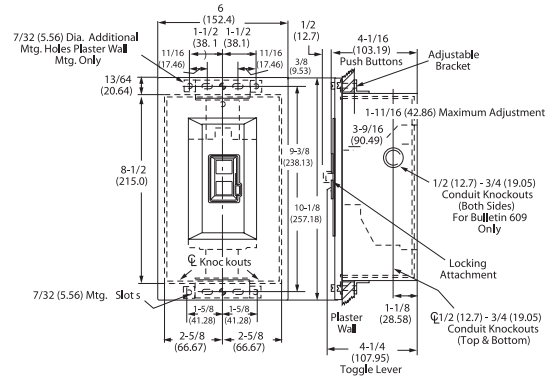
Bulletin 609 – 609U

Dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

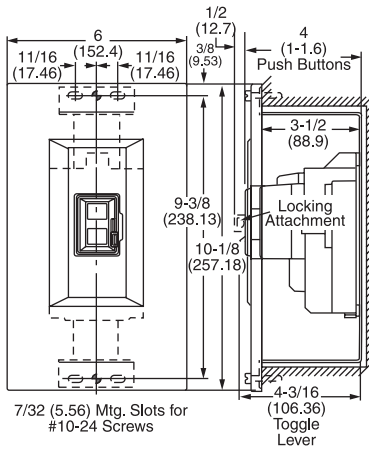
NEMA Type 1



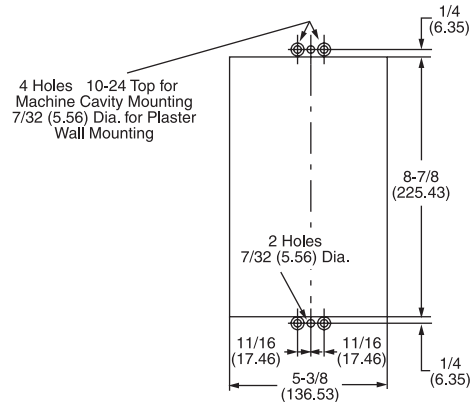
Surface Mounting



Flush Mounting for Plaster Wall



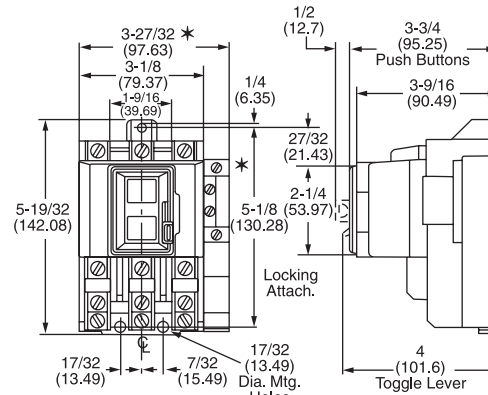
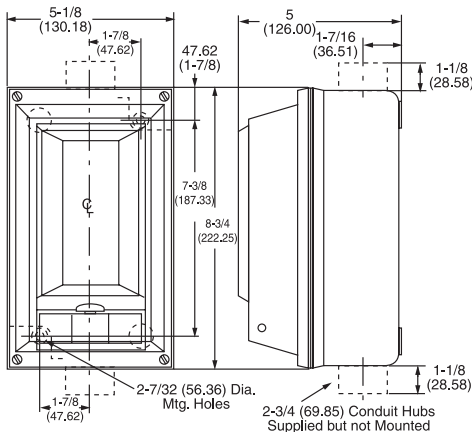
Flush Mounting for Machine Cavity



Flush Mounting Cavity and Drilling Layout

FM003

NEMA Type 4/4X



Open Type — Without Enclosure

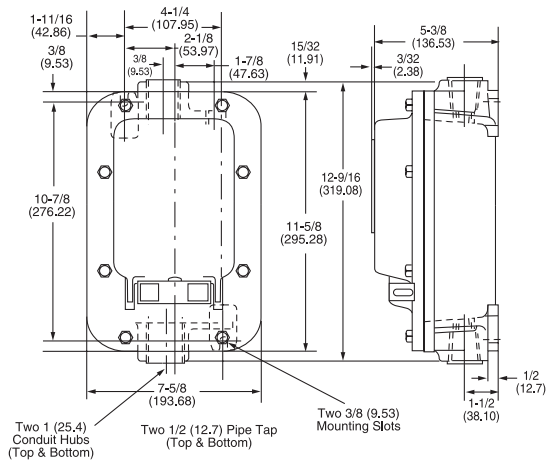
* Undervoltage solenoid applies only to Bulletins 609U and 609TU.

Product Selection — page 1-186

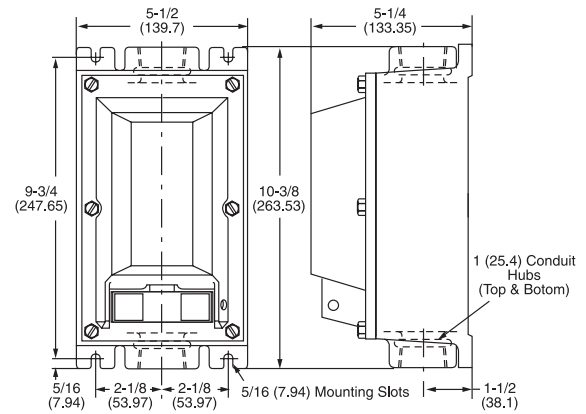
Bulletin 609 – 609U, Continued

Dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

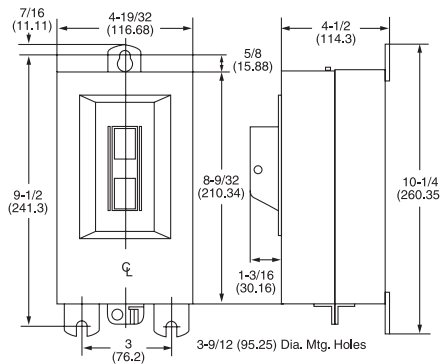
NEMA Type 3R, 7 & 9



NEMA Type 7 & 9

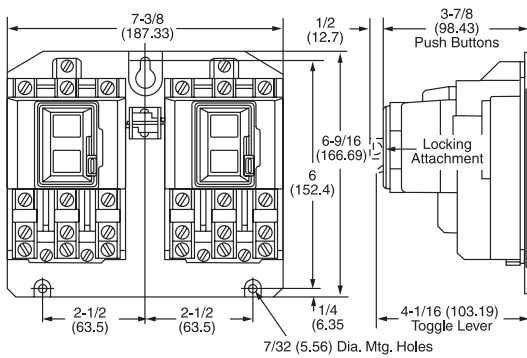


NEMA Type 12

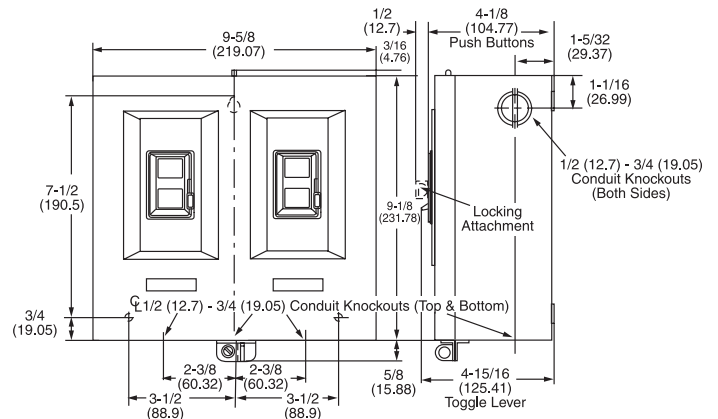


Bulletin 609RS – 609TS

Open Type Without Enclosure



NEMA Type 1



Variable-Depth Flange-Mounted Disconnect Switches

Fusible and Non-Fusible Kits



Cat. No. 1494V-DN30-988
Disconnect Switch Kit
(handle and connecting rod not shown)

Bulletin 1494V — Variable-Depth Flange-Mounted Disconnect Switches

Industrial rated disconnect switch for use in flange constructed enclosures with working depths up to 21⁵/₈ in

- 3 pole, 600V AC Rating
- 30 A, 60 A, 100 A, 200 A, 400 A, and 600 A Ratings
- Can Accommodate Class E, H, J, and R Fuses
- Available in a Non-Fusible Version
- Complete Kits with Accessories
- Accessories Field Installed
- Disconnect Switch Linked to the Handle at all Times
- Visible Blade Construction for Safety
- Convertible to right hand or left hand flange operation
- Can be used with Enclosure Types 1, 3R, 4, 4X and 12
- Lockable Handle

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- Specifications 1-208
- Approximate Dimensions 1-210

Standards and Certifications

- UL Listed (File No. E47426) per UL 98
- CSA Certified (File No. LR1234) per CSA C22.2 No. 4
- CE Certified

Configuration of a Disconnect Switch Kit

The information below is for reference purposes. Not all combinations will produce a valid Cat. No. Refer to the tables on the following pages for product selection.

1494V – DR 233 – A – B – FF

a b c d

a

Disconnect Switch	
Code	Description
1494V	Variable-Depth Flange mounted

b

Fusing	
Code	Description
DN	Non-fusible
DH	Class H fuse clips
DJ	Class J fuse clips
DR	Class R fuse clips

c

Switch and Fuse Rating	
Non-Fusible	
Code	Description
30	30 A switch
60	60 A switch
100	100 A switch
200	200 A switch
400	400 A switch
600	600 A switch
Fusible	
233	250V, 30 A switch 30 A clips
236	250V, 30 A switch 60 A clips
633	600V, 30 A switch 30 A clips
636	600V, 30 A switch 60 A clips
263	250V, 60 A switch 30 A clips
266	250V, 60 A switch 60 A clips
261	250V, 60 A switch 100 A clips
663	600V, 60 A switch 30 A clips
666	600V, 60 A switch 60 A clips
661	250V & 600V, 60 A switch 100 A clips
616	250V & 600V, 100 A switch 60 A clips
611	250V & 600V, 100 A switch 100 A clips
612	250V & 600V, 100 A switch 200 A clips
621	250V & 600V, 200 A switch 100 A clips
622	250V & 600V, 200 A switch 200 A clips
624	250V & 600V, 200 A switch 400 A clips
642	250V & 600V, 400 A switch 200 A clips
644	250V & 600V, 400 A switch 400 A clips
604	250V & 600V, 600 A switch 400 A clips
606	250V & 600V, 600 A switch 600 A clips

d

Accessories (Field Installed)	
Code	Description
A	Long Connecting Rod
B	Stainless Steel Handle
C	Non-Metallic Handle
D	Line & Load Lugs
E	Protective Fuse Cover
F	(1) N.O. Auxiliary Contact*
FF	(2) N.O. Auxiliary Contacts*
G	(1) N.C. Auxiliary Contact*
GG	(2) N.C. Auxiliary Contacts*

* Maximum of (2) auxiliary contacts

Variable-Depth Flange-Mounted Disconnect Switches

Fusible and Non-Fusible Disconnect Switch Kits

Fusible and Non-Fusible Disconnect Switch Kits

- Non-fusible disconnect switch kit includes: switch, connecting rod, and handle
- Fusible disconnect switch kit includes: switch, connecting rod, handle, trailer fuse block, and fuse clips
- Optional accessories listed below can be added to the Disconnect Switch Kits to create (1) Cat. No. EX: **1494V-DR633-C-D-F**

Complete Disconnect Switch Kits for Type 1, 3R, 4 and 12 Metal Enclosures

Continuous Current Rating (A) 600V AC 250V DC	UL and CSA Applications Maximum HP 3Ø, 60 Hz					AC 1Ø		DC*		IEC Applications Maximum kW (AC23) 3Ø, 50 Hz			Fuse Clip Rating (A)		Fuse Class	Fusible Disconnect Switch Kit	Non-Fusible Disconnect Switch Kit	
	115V	200...208V	230V	460V	575V	115V	230V	125V	250V	220...240V	380...440V	500...600V	250V	600V		Cat. No.	Cat. No.	
	30	3	7.5	7.5	15	20	2	3	3	5	5.5	11	15	30		—	H	1494V-DH233
													30	—	R	1494V-DR233		
													—	30	H, J	1494V-DH633		
													—	30	R	1494V-DR633		
													60	—	H	1494V-DH236		
													60	—	R	1494V-DR236		
													—	60	H, J	1494V-DH636		
													—	60	R	1494V-DR636		
60	3	7.5	7.5	15	20	2	3	3	5	5.5	11	15	30	—	H	1494V-DH263	1494V-DN60	
													30	—	R	1494V-DR263		
													—	30	H, J	1494V-DH663		
													—	30	R	1494V-DR663		
													60	—	H	1494V-DH266		
													60	—	R	1494V-DR266		
													—	60	H, J	1494V-DH666		
													—	60	R	1494V-DR666		
													—	100	H, J	1494V-DH661		
													100	100	R	1494V-DR661		
100	—	25	30	60	75	—	—	—	20	22	45	55	—	60	H, J	1494V-DH616	1494V-DN100	
													—	60	R	1494V-DR616		
													100	100	H, J	1494V-DH611		
													100	100	R	1494V-DR611		
													—	200	J	1494V-DH612		
200	—	50...60	60	125	150	—	—	—	40	48	90	110	—	100	H, J	1494V-DH621	1494V-DN200	
													—	100	R	1494V-DR621		
													200	200	H, J	1494V-DH622		
													200	200	R	1494V-DR622		
													—	400	J	1494V-DH624		
400	—	75	125	250	350	—	—	—	50	90	185	257	—	200	H, J	1494V-DH642	1494V-DN400	
													—	200	R	1494V-DR642		
													400	400	H, J	1494V-DH644		
													400	400	R	1494V-DR644		
													—	400	H, J	1494V-DH604		
													—	400	R	1494V-DR604		
600	—	150	200	400	500	—	—	—	50	150	295	375	600	600	H	1494V-DH606†	1494V-DN600	
													600	600	R	1494V-DR606‡		
													—	600	J	1494V-DJ606†		

* Ratings based on utilizing two poles in series to break one line of the DC supply voltage and the remaining pole breaking the second DC supply line.

† Class J fuses bolt directly to the switch and trailer fuse block.

‡ Use 1494R-N10 lug kit for wiring to the disconnect switch. Use 1494R-N11 lug kit when wiring separately mounted fuse blocks (1491-R621, 1491-N621).

Kit Accessories

Bulletin 1494V Kit Accessories — Field Installed

Description	Suffix Code	Switch Size					
		30 A	60 A	100 A	200 A	400 A	600 A
Longer Connecting Rod 9 1/8 in (min.) — 21 5/8 in (max.)	A	A	A	A	A	A	A
Disconnect Handle — Stainless Steel	B	A	A	A	A	A	A
Disconnect Handle — Non-Metallic	C	A	A	A	A	A	A
Wire Connecting Lugs — Line and Load Side	D	A	A	A	A	A	A
Protective Fuse Cover with Door	E	A	A	A	A	A	A
Auxiliary Contact	1 N.O.	F	A	A	A	A	A
	2 N.O.	FF	A	A	A	A	A
	1 N.C.	G	A	A	A	A	A
	2 N.C.	GG	A	A	A	A	A

Variable-Depth Flange-Mounted Disconnect Switches

Disconnect Switch Components

Disconnect Switches

Continuous Current Rating* (A) 600V AC 250V DC	NEMA, UL, CSA Maximum Rating Hp							IEC Utilization Category AC-23 Maximum Rating kW			Cat. No.† Switch Only
	3Ø, 60 Hz				AC 1Ø		DC†	3Ø, 50 Hz			
	200...208V	230V	460V	575V	115	230	250	220...240V	380...440V	500...600V	
30	7.5	7.5	15	20	2	3	5	5.5	11	15	1494V-DS30
60	15	15	30	50	3	10	10	11	22	37	1494V-DS60
100	25	30	60	75	—	—	20	22	45	55	1494V-DS100
200	§	60	125	150	—	—	40	45	90	110	1494V-DS200
400	75	125	250	350	—	—	50	90	185	257	1494V-DS400
600	150	200	400	500	—	—	50	150	295	375	1494V-DS600

* Also rated operational current for utilization categories AC-20 and AC-21 (IEC 408).

† Ratings based on utilizing two poles in series to break one line of the DC supply voltage and the remaining pole breaking the second DC supply line.

‡ Disconnect Switches are field convertible from right-hand to left-hand flange operation.

§ 50 Hp at 200V AC; 60 Hp at 208V AC.

Connecting Rods

Approximate dimensions are in inches (millimeters). Approximate dimensions are not intended for manufacturing purposes.

Disconnect Switch Size (A)	Enclosure Depth*		Cat. No.
	Minimum	Maximum	
30, 60, 100, 200	6-3/4 (172)	9-1/8 (232)	1494V-RA3
	9-1/8 (232)	21-5/8 (585)	1494V-RA4
400, 600	9 (229)	9-1/4 (235)	1494V-RB1
	9 (229)	21-5/8 (585)	1494V-RB2

* Enclosure depth is measured from the top of the flange to the disconnect switch mounting surface (mm).

► Two per installation required.

Operating Handles

Handle Type	Description	Mounting	Disconnect Switch Size (A)	Cat. No.
Type 1, 3R, 4, 4X, 12	Non-Metallic	Right or Left Flange	30, 60, 100, 200	1494F-P1
		Right Flange Only	400, 600	1494V-R2
Type 1, 3R, 4, 12	Painted Metal	Right or Left Flange	30, 60, 100, 200	1494F-M1
			400, 600	1494V-H2
Type 4, 4X	Stainless Steel	Right or Left Flange	30, 60, 100, 200	1494F-S1
			400, 600	1494V-W2

Trailer Fuse Block Kits

For Class H, J, or R fuses, select the proper fuse clip kit from the table below.

Disconnect Switch Size (A)	Cat. No.
30	1494V-FS30
60	1494V-FS60
100	1494V-FS100*
200	1494V-FS200
400	1494V-FS400
600	1494V-FS600+ ‡

* The 100 A disconnect size with 60 A fuse clips, also requires Adapter Kit, 1401-N170.

‡ For use with Class J fuses that bolt directly to the switch (fuse clips not required).

‡ The 600 A disconnect size with 400 A fuse clips, requires Trailer Fuse Block Kit, 1494V-FS400.

For 600V Class H fuses, use Single Pole Fuse Block 1491-N621-(3) required. For 600V Class R fuses, use Single Pole Fuse Block 1491-R621-(3) required. (Use 1494R-N11 Lug Kit for wiring to the disconnect switch.)

Fuse Clip Kits

• Includes six clips and mounting hardware

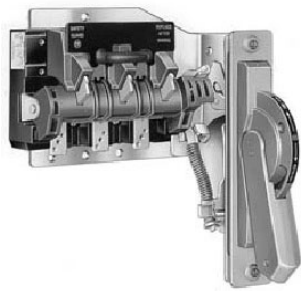
Fuse Class	Fuse Clip Rating (A)		For Use With	Cat. No.
	250V	600V		
H, J	30	—	1494F, 1494G, 1494M, 1494R, 1494V Disconnect Switches	1401-N41
	60	30		1401-N42
	—	60		1401-N43
	100	100		1401-N44
	200	200		1401-N45
	400	400		1401-N46
J	600	600		*
R	30	—		1401-N50
	60	30		1401-N51
	—	60		1401-N52
	100	100		1401-N53
	200	200		1401-N54
H, R	400	400		1401-N55
	600	600		11

* Fuse clips not required: fuse bolts directly to terminal.

11 Included with Bulletin 1491 separately mounted fuse blocks.

Fixed-Depth Flange-Mounted Disconnect Switches

Fusible and Non-Fusible Type



Cat. No. 1494F-NF30
Disconnect Switch and
Operating Mechanism

Bulletin 1494F — Fixed-Depth Flange-Mounted Disconnect Switches

Industrial rated disconnect switch pre-assembled on a mounting bracket for use in flange constructed enclosures.

- 3 pole, 600V AC Rating
- 30 A, 60 A, 100 A, and 200 A Ratings
- Can Accommodate Class E, H, J, and R Fuses
- Available in a Non-Fusible Version
- Accessories Field Installed
- Disconnect Switch Linked to the Handle at all Times
- Visible Blade Construction for Safety
- Available in left-hand or right-hand flange operation
- Can be used with Enclosure Types 1, 12
- Lockable handle

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Dimensions 1-211

Standards and Certifications

- UL Listed (File No. E47426) per UL 98
- CSA Certified (File No. LR1234) per CSA C22.2 No. 4
- CE Certified

Fusible and Non-Fusible Disconnect Switch Kits

- Non-Fusible disconnect switch includes: switch, operating mechanism and handle
- Fusible disconnect switch includes: switch, operating mechanism and handle (select the proper Fuse Block Adapter Plate with Fuse Clips from the table below.
- Line and Load Lugs located in the Accessories section on page 1-205.

Disconnect Switches for Type 1 and Type 12 Enclosures.

Continuous Current Rating (A) 600V AC 250V DC	UL and CSA Applications Maximum Hp				AC 1Ø			DC*	IEC Applications Maximum kW (AC23)			Fusible		Non-Fusible	
												Open Type without Enclosure		Open Type without Enclosure	
	3Ø, 60 Hz				115V	230V	250V	3Ø, 50 Hz			Flange Construction		Flange Construction		
	200... 208V	230V	460V	575V				220... 240V	380... 440V	500... 600V	Right Hand	Left Hand	Right Hand	Left Hand	
												Cat. No.	Cat. No.	Cat. No.	Cat. No.
30	7.5	7.5	15	20	2	3	5	5.5	11	15	1494F-NF30	1494F-NFL30	1494F-N30	1494F-NL30	
60	15	15	30	40	3	10	10	11	22	30	1494F-NF60	1494F-NFL60	1494F-N60	1494F-NL60	
100	30	30	60	75	—	—	20	22	45	55	1494F-NF100	1494F-NFL100	1494F-N100	1494F-NL100	
200	60	60	100	100	—	—	40	45	75	75	1494F-NF200	1494F-NFL200	1494F-N200	1494F-NL200	

* Ratings based on utilizing two poles in series to break one line of the DC supply voltage and the remaining pole breaking the second DC supply line.

Fuse Block Adapter Plate with Fuse Clips.

Disconnect Size (A)	Fuse Clip Rating (A)	Class R		Class J	Class H	Class H and E
		250V	600V	600V	250V	600V
		Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.
30	30	1494F-R233	1494F-R633	1494F-J633	1494F-C233	1494F-C633
	60	1494F-R263	1494F-R663	1494F-J663	1494F-C263	1494F-C663
60	30	—	1494F-R636	—	—	1494F-C636
	60	1494F-R266	1494F-R666	1494F-J666	1494F-C266	1494F-C666
	100	1494F-R216	1494F-R616	1494F-J616	1494F-C216	1494F-C616
100	100	1494F-R211	1494F-R611	1494F-J611	1494F-C211	1494F-C611
	200	1494F-R221	1494F-R621	1494F-J621	1494F-C221	1494F-C621
200	200	1494F-R222	1494F-R622	1494F-J622	1494F-C222	1494F-C622
	400	1494F-R242	1494F-R642	1494F-J642	1494F-C242	1494F-C642

Enclosed Disconnect Safety Switches

Fusible and Non-Fusible Kits

Catalog Number Explanation

1494G – B F 3 J 6 – 98 – 203W – 414

a b c d e f g

a

Bulletin Number	
Code	Description
1494G	Enclosed Disconnect Safety Switch in standard-size enclosure (30...600 A)
1494GY	Enclosed Disconnect Safety Switch in large-size enclosure (30...200A)
1494GX	Enclosed Disconnect Safety Switch in extra large-size enclosure (30...100 A)

b

Switch Ratings	
Code	Description
B	30 A
C	60 A
D	100 A
E	200 A
F	400 A
G	600 A

c

Enclosure Type	
Code	Description
F	Type 3R/4/12: Rainproof, watertight, dusttight, painted metal enclosure with screw fasteners and non-metallic handle
C	Type 4/4X: Watertight, corrosion-resistant, stainless steel enclosure with screw fasteners and non-metallic handle
S	Type 4/4X: Watertight, corrosion-resistant, non-metallic enclosure with screw fasteners and non-metallic handle
K	Type 12: Hazardous location (Class II, Division 2, Group F+G and Class III Division 1 and 2) painted metal enclosure with screw fasteners and non-metallic handle

d

Poles	
Code	Description
2	2-pole, 1φ
3	3-pole, 3φ
6	6-pole, 3φ

e

Fusing	
Code	Description
N	Non-fusible
H	Class H Fuse Clips
J	Class J Fuse Clips
R	Class R Fuse Clips

f

Fuse Voltage	
Code	Description
Blank	Non-fusible
2	240V AC/250V DC
6	600V AC/600V DC

g

Options (Factory Installed)	
Code	Description
1S	Momentary Push Button† (Flange-mounted)
1SB	Momentary Push Button† (Bottom-mounted)
3	3-position Selector Switch†
3E	2-position Selector Switch†
3EI	2-position Selector Switch† (Illuminated)
3S	3-position Selector Switch† (Spring Return)
4*	Pilot Light*†
5*	Push-to-test Pilot Light*†
98	N.O. Auxiliary - Disconnect‡
99	N.C. Auxiliary - Disconnect‡
203W	Viewing Window
412	Painted Metal Handle
413	Stainless Steel Handle
414	Protective Fuse Cover
420	1 N.O. and 1 N.C. Interlock
421	2 N.O. and 2 N.C. Interlocks

* Specify lens color by adding one of the following letters: **R** = Red, **A** = Amber, **B** = Blue, **G** = Green

† 3 pole enclosed switches can accommodate (1) pilot device, 6 pole enclosed switches can accommodate (5) pilot devices

‡ Maximum of (2) auxiliary contacts



Cat. No. 1494G-BF3H2
 Enclosed Disconnect Switch

Bulletin 1494G/1494GX/1494GY

- 30...600 A Switch Ratings
- 240V: 2-pole, 1 ϕ and 3-pole, 3 ϕ Versions
- Can Accommodate Class H, R, and J Fuse Clips
- Type 3R/4/12 (Painted Metal), Type 4/4X (Stainless Steel), and Type 4/4X (Non-metallic) Enclosures
- 30...100 A Switch Ratings in Extra-capacity Enclosures
- 30...100A Switch Ratings for 6-pole, 3 ϕ Applications
- Disconnect switch linked to the handle at all times
- Visible blade construction for safety
- Lockable handle
- Options — Factory installed
- Accessories — Field installed

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Standards and Certifications

- cULus Listed (File No. E227497) per UL 98 and CSA C22.2 No. 4
- “At Motor” rated, per UL 508 (30A...100A)

240V, Fusible with Class H Fuse Clips*, (2-pole, 1 ϕ /3-pole, 3 ϕ), standard size enclosure

Continuous Current Rating (A) 600V AC 250V DC	Horsepower					Type 3R/4/12† Painted Metal		Type 4/4X Stainless Steel		Type 4/4X Non-metallic	
	240V AC, 1 ϕ		240V AC, 3 ϕ		250V DC	2-pole, 1 ϕ	3-pole, 3 ϕ	2-pole, 1 ϕ	3-pole, 3 ϕ	2-pole, 1 ϕ	3-pole, 3 ϕ
	Std.	Max.	Std.	Max.		Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.
30	1.5	3	3	7.5	5	1494G-BF2H2	1494G-BF3H2	1494G-BC2H2	1494G-BC3H2	1494G-BS2H2	1494G-BS3H2
60	3	10	7.5	15	10	1494G-CF2H2	1494G-CF3H2	1494G-CC2H2	1494G-CC3H2	1494G-CS2H2	1494G-CS3H2
100	7.5	15	15	30	20	1494G-DF2H2	1494G-DF3H2	1494G-DC2H2	1494G-DC3H2	1494G-DS2H2	1494G-DS3H2
200	15	15	25	60	40	1494G-EF2H2	1494G-EF3H2	1494G-EC2H2	1494G-EC3H2	—	—
400	—	—	50	125	50	—	1494G-FF3H2	—	1494G-FC3H2	—	—
600	—	—	75	200	50	—	1494G-GF3H2	—	1494G-GC3H2	—	—

240V, Fusible with Class H Fuse Clips*, (2-pole, 1 ϕ /3-pole, 3 ϕ), extra large size enclosure

Continuous Current Rating (A) 600V AC 250V DC	Horsepower					Type 3R/4/12† Painted Metal		Type 4/4X Stainless Steel		Type 4/4X Non-metallic	
	240V AC, 1 ϕ		240V AC, 3 ϕ		250V DC	2-pole, 1 ϕ	3-pole, 3 ϕ	2-pole, 1 ϕ	3-pole, 3 ϕ	2-pole, 1 ϕ	3-pole, 3 ϕ
	Std.	Max.	Std.	Max.		Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.
30	1.5	3	3	7.5	5	1494GX-BF2H2	1494GX-BF3H2	1494GX-BC2H2	1494GX-BC3H2	1494GX-BS2H2	1494GX-BS3H2
60	3	10	7.5	15	10	1494GX-CF2H2	1494GX-CF3H2	1494GX-CC2H2	1494GX-CC3H2	1494GX-CS2H2	1494GX-CS3H2
100	7.5	15	15	30	20	1494GX-DF2H2	1494GX-DF3H2	1494GX-DC2H2	1494GX-DC3H2	—	—

240V, Fusible with Class H Fuse Clips*, (2-pole, 1 ϕ /3-pole, 3 ϕ), large size enclosure

Continuous Current Rating (A) 600V AC 250V DC	Horsepower					Type 3R/4/12† Painted Metal		Type 4/4X Stainless Steel		Type 4/4X Non-metallic	
	240V AC, 1 ϕ		240V AC, 3 ϕ		250V DC	2-pole, 1 ϕ	3-pole, 3 ϕ	2-pole, 1 ϕ	3-pole, 3 ϕ	2-pole, 1 ϕ	3-pole, 3 ϕ
	Std.	Max.	Std.	Max.		Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.
30	1.5	3	3	7.5	5	1494GY-BF2H2	1494GY-BF3H2	1494GY-BC2H2	1494GY-BC3H2	—	—
60	3	10	7.5	15	10	1494GY-CF2H2	1494GY-CF3H2	1494GY-CC2H2	1494GY-CC3H2	—	—
100	7.5	15	15	30	20	1494GY-DF2H2	1494GY-DF3H2	1494GY-DC2H2	1494GY-DC3H2	—	—
200	15	15	25	60	40	1494GY-EF2H2	1494GY-EF3H2	1494GY-EC2H2	1494GY-EC3H2	—	—

240V, Fusible with Class H Fuse Clips*, (6-pole, 3 ϕ), standard size enclosure

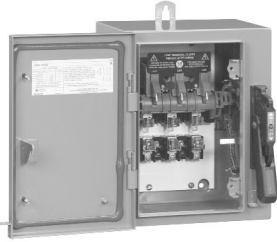
Continuous Current Rating (A) 600V AC 250V DC	Horsepower				Type 3R/4/12 Painted Metal		Type 4/4X Stainless Steel
	240V AC, 3 ϕ				2-pole, 1 ϕ	3-pole, 3 ϕ	6-pole, 3 ϕ †
	Std.		Max.		Cat. No.		Cat. No.
30	3		7.5		1494G-BF6H2		1494G-BC6H2
60	7.5		15		1494G-CF6H2		1494G-CC6H2
100	15		30		1494G-DF6H2		1494G-DC6H2

* Class R and J fuse clips can be supplied as a factory option in place of Class H clips. To order Class R fuse clips, replace “H” from the Cat. No. with “R”. Example: Cat. No. 1494G-BF2H2 becomes 1494G-BF2R2. To order Class J fuse clips, replace “H” from the Cat. No. with “J”. Example: Cat. No. 1494G-BF2H2 becomes 1494G-BF2J2. The same applies to Cat. No. 1494GX and 1494GY.

† Type 12 hazardous location enclosure (Class II, Division 2, Group F+G and Class III, Divisions 1 and 2) can be supplied by replacing the “F” in the listed catalog number with the letter “L”. Example: 1494G-BL3H2.

Enclosed Disconnect Safety Switches

Fusible Type



Cat. No. 1494G-BF3J6
Enclosed Disconnect Switch

Bulletin 1494G/1494GX/1494GY

- 30...600 A Switch Ratings
- 600V: 3-pole, 3 ϕ and 6-pole, 3 ϕ Versions
- Can Accommodate Class H, R, and J Fuse Clips
- Type 3R/4/12 (Painted Metal), Type 4/4X (Stainless Steel), and Type 4/4X (Non-metallic) Enclosures
- 30...100 A Switch Ratings in Extra-capacity Enclosures
- 30...100 A Switch Ratings for 6-pole 3 ϕ Applications
- Disconnect switch linked to the handle at all times
- Visible blade construction for safety
- Lockable handle
- Options — Factory installed
- Accessories — Field installed

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Standards and Certifications

- cULus Listed (File No. E227497) per UL 98 and CSA 22.2 No. 4
- “At Motor” rated per UL 508 (30...100A)

600V, Fusible with Class H Fuse Clips*, (3-pole, 3 ϕ), standard size enclosure

Continuous Current Rating (A) 600V AC 250V DC	Horsepower					Type 3R/4/12† Painted Metal	Type 4/4X Stainless Steel	Type 4/4X Non-metallic
	480V AC		600V AC		250V DC	3-pole, 3 ϕ	3-pole, 3 ϕ	3-pole, 3 ϕ
	Std.	Max.	Std.	Max.		Cat. No.	Cat. No.	Cat. No.
30	5	15	7.5	20	5	1494G-BF3H6	1494G-BC3H6	1494G-BS3H6
60	15	30	15	50	10	1494G-CF3H6	1494G-CC3H6	1494G-CS3H6
100	25	60	30	75	20	1494G-DF3H6	1494G-DC3H6	1494G-DS3H6
200	50	125	60	150	40	1494G-EF3H6	1494G-EC3H6	—
400	100	250	125	350	50	1494G-FF3H6	1494G-FC3H6	—
600	150	400	200	500	50	1494G-GF3H6	1494G-GC3H6	—

600V, Fusible with Class H Fuse Clips*, (3-pole, 3 ϕ), extra large size enclosure

Continuous Current Rating (A) 600V AC 250V DC	Horsepower					Type 3R/4/12† Painted Metal	Type 4/4X Stainless Steel	Type 4/4X Non-metallic
	480V AC		600V AC		250V DC	3-pole, 3 ϕ	3-pole, 3 ϕ	3-pole, 3 ϕ
	Std.	Max.	Std.	Max.		Cat. No.	Cat. No.	Cat. No.
30	5	15	7.5	20	5	1494GX-BF3H6	1494GX-BC3H6	1494GX-BS3H6
60	15	30	15	50	10	1494GX-CF3H6	1494GX-CC3H6	1494GX-CS3H6
100	25	60	30	75	20	1494GX-DF3H6	1494GX-DC3H6	—

600V, Fusible with Class H Fuse Clips*, (3-pole, 3 ϕ), large size enclosure

Continuous Current Rating (A) 600V AC 250V DC	Horsepower					Type 3R/4/12† Painted Metal	Type 4/4X Stainless Steel	Type 4/4X Non-metallic
	480V AC		600V AC		250V DC	3-pole, 3 ϕ	3-pole, 3 ϕ	3-pole, 3 ϕ
	Std.	Max.	Std.	Max.		Cat. No.	Cat. No.	Cat. No.
30	5	15	7.5	20	5	1494GY-BF3H6	1494GY-BC3H6	—
60	15	30	15	50	10	1494GY-CF3H6	1494GY-CC3H6	—
100	25	60	30	75	20	1494GY-DF3H6	1494GY-DC3H6	—
200	50	125	60	150	40	1494GY-EF3H6	1494GY-EC3H6	—

600V, Fusible with Class H Fuse Clips*, (6-pole, 3 ϕ), standard size enclosure

Continuous Current Rating (A) 600V AC 250V DC	Horsepower					Type 3R/4/12† Painted Metal	Type 4/4X Stainless Steel
	480V AC		600V AC		250V DC	6-pole, 3 ϕ	6-pole, 3 ϕ
	Std.	Max.	Std.	Max.		Cat. No.	Cat. No.
30	5	15	7.5	20	5	1494G-BF6J6	1494G-BC6J6
60	15	30	15	50	10	1494G-CF6J6	1494G-CC6J6
100	25	60	30	75	20	1494G-DF6J6	1494G-DC6J6

* Class R and J fuse clips can be supplied as a factory option in place of Class H clips. To order Class R fuse clips, replace “H” from the Cat. No. with “R”. Example: Cat. No. 1494G-BF3H6 becomes 1494G-BF3R6. To order Class J fuse clips, replace “H” from the Cat. No. with “J”. Example: Cat. No. 1494G-BF3H6 becomes 1494G-BF3J6. The same applies to Cat. No. 1494GX and 1494GY.

† Type 12 hazardous location enclosure (Class II, Division 2, Group F+G and Class III, Divisions 1 and 2) can be supplied by replacing the “F” in the listed catalog number with the letter “L”. Example: 1494G-BL3H2.



Cat. No. 1494GX-BF3N
 Enclosed Disconnect Switch

Bulletin 1494G/1494GX/1494GY

- 30...600 A Switch Ratings
- 600V: 3-pole, 3 ϕ and 6-pole, 3 ϕ Versions
- Non-Fusible Versions Only
- Type 3R/4/12 (Painted Metal), Type 4/4X (Stainless Steel), and Type 4/4X (Non-metallic) Enclosures
- 30...100 A Switch Ratings in Extra-capacity Enclosures
- 30...100 A Switch Ratings for 6-pole 3 ϕ Applications
- Disconnect switch linked to the handle at all times
- Visible blade construction for safety
- Lockable Handle
- Options — Factory installed
- Accessories — Field installed

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Standards and Certifications

- cULus Listed (File No. 227497) per UL 98 and CSA 22.2 No. 4
- “At Motor” rated per UL 508 (30A...100A)

600V, Non-Fusible, (3-pole, 3 ϕ), standard size enclosure

Continuous Current Rating (A) 600V AC 250V DC	Horsepower					Type 3R/4/12* Painted Metal	Type 4/4X Stainless Steel	Type 4/4X Non-metallic
	480V AC		600V AC		250V DC	3-pole, 3 ϕ	3-pole, 3 ϕ	3-pole, 3 ϕ
	Std.	Max.	Std.	Max.		Cat. No.	Cat. No.	Cat. No.
30	5	20	7.5	30	5	1494G-BF3N	1494G-BC3N	1494G-BS3N
60	15	50	15	60	10	1494G-CF3N	1494G-CC3N	1494G-CS3N
100	25	60	30	75	20	1494G-DF3N	1494G-DC3N	1494G-DS3N
200	50	125	60	150	40	1494G-EF3N	1494G-EC3N	—
400	100	250	125	350	50	1494G-FF3N	1494G-FC3N	—
600	150	400	200	500	50	1494G-GF3N	1494G-GC3N	—

600V, Non-Fusible, (3-pole, 3 ϕ), extra large size enclosure

Continuous Current Rating (A) 600V AC 250V DC	Horsepower					Type 3R/4/12* Painted Metal	Type 4/4X Stainless Steel	Type 4/4X Non-metallic
	480V AC		600V AC		250V DC	3-pole, 3 ϕ	3-pole, 3 ϕ	3-pole, 3 ϕ
	Std.	Max.	Std.	Max.		Cat. No.	Cat. No.	Cat. No.
30	5	20	7.5	30	5	1494GX-BF3N	1494GX-BC3N	1494GX-BS3N
60	15	50	15	60	10	1494GX-CF3N	1494GX-CC3N	1494GX-CS3N
100	25	60	30	75	20	1494GX-DF3N	1494GX-DC3N	—

600V, Non-Fusible, (3-pole, 3 ϕ), large size enclosure

Continuous Current Rating (A) 600V AC 250V DC	Horsepower					Type 3R/4/12* Painted Metal	Type 4/4X Stainless Steel	Type 4/4X Non-metallic
	480V AC		600V AC		250V DC	3-pole, 3 ϕ	3-pole, 3 ϕ	3-pole, 3 ϕ
	Std.	Max.	Std.	Max.		Cat. No.	Cat. No.	Cat. No.
30	5	20	7.5	30	5	1494GY-BF3N	1494GY-BC3N	—
60	15	50	15	60	10	1494GY-CF3N	1494GY-CC3N	—
100	25	60	30	75	20	1494GY-DF3N	1494GY-DC3N	—
200	50	125	60	150	40	1494GY-EF3N	1494GY-EC3N	—

600V, Non-Fusible, (6-pole, 3 ϕ), standard size enclosure

Continuous Current Rating (A) 600V AC 250V DC	Horsepower					Type 3R/4/12* Painted Metal	Type 4/4X Stainless Steel
	480V AC		600V AC		250V DC	6-pole, 3 ϕ	6-pole, 3 ϕ
	Std.	Max.	Std.	Max.		Cat. No.	Cat. No.
30	5	15	7.5	20	5	1494G-BF6N	1494G-BC6N
60	15	30	15	50	10	1494G-CF6N	1494G-CC6N
100	25	60	30	75	20	1494G-DF6N	1494G-DC6N

* Type 12 hazardous location enclosure (Class II, Division 2, Group F+G and Class III, Divisions 1 and 2) can be supplied by replacing the “F” in the listed catalog number with the letter “L”. Example: 1494G-BL3N.

Enclosed Disconnect Safety Switches

Modifications

Bulletin 1494G/1494GX/1494GY Modifications — Factory-Installed

Description	Enclosure Type	Suffix Code	Switch Rating					
			30	60	100	200	400	600
Momentary Push Button (1 N.O.) (located on enclosure flange)	3R/4/12 painted metal, 4/4X stainless steel	-1S*	A	A	A	A	A	A
Momentary Push Button (located on bottom of enclosure)	3R/4/12 painted metal, 4/4X stainless steel	-1SB*	A	A	A	A	A	A
HAND-OFF-AUTO Selector Switch	3R/4/12 painted metal, 4/4X stainless steel	-3*	A	A	A	A	A	A
3-position Selector Switch	3R/4/12 painted metal, 4/4X stainless steel	-3S*	A	A	A	A	A	A
2-position Selector Switch	3R/4/12 painted metal, 4/4X stainless steel	-3E*	A	A	A	A	A	A
2-position Illuminated Selector Switch	3R/4/12 painted metal, 4/4X stainless steel	-3EI*	A	A	A	A	A	A
Pilot Light	3R/4/12 painted metal, 4/4X stainless steel	-4*†	A	A	A	A	A	A
Push-to-test Pilot Light	3R/4/12 painted metal, 4/4X stainless steel	-5*†	A	A	A	A	A	A
Auxiliary Contact (1 N.O.)	3R/4/12 painted metal, 4/4X stainless steel, 4/4X non-metallic	-98‡	A	A	A	A	A	A
Auxiliary Contact (1 N.C.)	3R/4/12 painted metal, 4/4X stainless steel, 4/4X non-metallic	-99‡	A	A	A	A	A	A
Enclosure Door Viewing Window	3R/4/12 painted metal, 4/4X stainless steel	-203W	A	A	A	A	A	A
Painted Metal Handle	3R/4/12 painted metal	-412	A	A	A	A	S	S
Stainless Steel Handle	4/4X stainless steel	-413	A	A	A	A	S	S
Protective Fuse Cover with Door	3R/4/12 painted metal, 4/4X stainless steel	-414	A	A	A	A	A	A
Electrical Interlock - Early Break (1 N.O. and 1 N.C.)	3R/4/12 painted metal, 4/4X stainless steel	-420	A	A	A	A	A	A
Electrical Interlock - Early Break (2 N.O. and 2 N.C.)	3R/4/12 painted metal, 4/4X stainless steel	-421	A	A	A	A	A	A

A=Available Option

S=Standard

* 3 pole enclosed switches can accommodate (1) pilot device, 6 pole enclosed switches can accommodate (5) pilot devices

† Specify lens color by adding one of the following letters: **R** = Red, **G** = Green, **A** = Amber, **B** = Blue

‡ Maximum of (2) auxiliary contacts



Variable-Depth Flange-Mounted Circuit Breaker Operating Mechanism

Circuit Breaker Kits



Cat. No. 1494V-C150
Circuit Breaker Kit
(Shown without handle and
connecting rod)

Bulletin 1494V — Variable-Depth Flange-Mounted Circuit Breaker Operating Mechanism

Circuit breaker operating mechanisms for use with Allen-Bradley and Cutler-Hammer circuit breakers in a variable depth enclosure.

- 3 pole, 600 VAC Rating
- 150A, 250A, and 400A Circuit Breaker Frame Sizes
- Complete Kits with accessories
- Accessories — Field Installed
- Can be used with Enclosure Types 1, 3R, 4, 4X and 12
- Lockable handle

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Standards and Certifications

- UL Listed (File No. E47426) per UL 98
- CSA Certified (File No. LR1234) per CSA C22.2 No. 4

Circuit Breaker Kits

Circuit Breaker Kits include: connecting rod, operating handle, and circuit breaker operating mechanism (circuit breaker to be supplied by customer)

- Optional accessories listed below can be added to the Circuit Breaker Kits to create (1) Cat. No. Example: **1494V-C150-A-B-F**

3-Pole Circuit Breaker			Operating Mechanism
Brand	Frame Size (A)	Frame Designation	Cat. No.
Allen-Bradley Cutler-Hammer	125	140U-H (MCCB), 140M-H (MCP) EF, HMCPE	1494V-C125
Allen-Bradley Cutler-Hammer	150	140M-I (MPCB + MCP) EHD, FD, FDB, FDC, HFD, HMCP	1494V-C150
Allen-Bradley Cutler-Hammer	250	140U-J (MCCB), 140M-J (MPCB + MCP) EF	1494V-C250A
Cutler-Hammer	250	JD, JDB, JDC, HJD, HMCP	1494V-C250
Allen-Bradley Cutler-Hammer	400	140U-K (MCCB), 140M-K (MPCB + MCP) KD, KDB, KDC, HKD, HMCP	1494V-C400

Kit Accessories

Bulletin 1494V Kit Accessories — Field Installed							
Description	Suffix Code	Switch Size					
		30 A	60 A	100 A	200 A	400 A	600 A
Longer Connecting Rod 9 1/8 in (min.) — 21 5/8 in (max.)	A	A	A	A	A	A	A
Disconnect Handle — Stainless Steel	B	A	A	A	A	A	A
Disconnect Handle — Non-Metallic	C	A	A	A	A	A	A
Auxiliary Contact — includes adapter kit	1 N.O.	F	A	A	A	A	A
	2 N.O.	FF	A	A	A	A	A
	1 N.C.	G	A	A	A	A	A
	2 N.C.	GG	A	A	A	A	A

Variable-Depth Flange-Mounted Circuit Breaker Operating Mechanism

Circuit Breaker Components

Components

Circuit Breaker Operating Mechanism

The mechanism listed must be combined with a connecting rod, operating handle, and a circuit breaker (supplied by customer) to obtain a functional device.

3-Pole Circuit Breaker*			Operating Mechanism
Brand	Frame Size (A)	Frame Designation	Cat. No.
Allen-Bradley Cutler-Hammer	125 125	140U-H (MCCB), 140M-H (MCP) EF, HMCPE	1494V-M41
Allen-Bradley Cutler-Hammer	150 150	140M-I (MPCB + MCP) EHD, FD, FDB, FDC, HFD, HMCP	1494V-M40
Allen-Bradley Cutler-Hammer	250 250	140U-J (MCCB), 140M-J (MPCB + MCP) EF	1494V-M51
Cutler-Hammer	250	JD, JDB, JDC, HJD, HMCP	1494V-M50
Allen-Bradley Cutler-Hammer	400 400	140U-K (MCCB), 140M-K (MPCB + MCP) KD, KDB, KDC, HKD, HMCP	1494V-M60

* Circuit breakers to be provided by customer.

Connecting Rods

Approximate dimensions are in inches (millimeters). Approximate dimensions are not intended for manufacturing purposes.

Circuit Breaker Frame Size (A)	Enclosure Depth		Cat. No.
	Minimum	Maximum	
125, 150, 250, 400	6-3/4 (172)	9-1/8 (232)	1494V-RA3
	9-1/8 (232)	21-5/8 (585)	1494V-RA4

Operating Handle

Handle Type	Description	Mounting	Circuit Breaker Frame Size (A)	Operating Handle
				Cat. No.
Type 1, 3R, 4, 4X, 12	Non-Metallic	Right or Left Flange	125, 150, 250, 400	1494F-P1
Type 1, 3R, 4, 12	Painted Metal	Right or Left Flange	125, 150, 250, 400	1494F-M1
Type 4, 4X	Stainless Steel	Right or Left Flange	125, 150, 250, 400	1494F-S1

Fixed-Depth Flange-Mounted Circuit Breaker Operating Mechanism

Product Selection



Cat. No. 1494D-N4 and
Cat. No. 1494D-N40
(Circuit Breaker Not Included.
Auxiliary Contact and Adapter Kit
Must be Ordered Separately)

Bulletin 1494D — Fixed-Depth Flange-Mounted Circuit Breaker Operating Mechanism

Industrial rated circuit breaker operating mechanism pre-assembled on a mounting bracket for use in flange constructed enclosures. Circuit breaker operating mechanisms for use with Cutler-Hammer circuit breakers in a fixed depth enclosure.

- 3 pole, 600 VAC Rating
- 150A...1200A Frame Sizes
- Accessories — Field-Installed
- Can be used with Enclosure Types 1, 12
- Lockable handle
- Available in right hand or left hand flange operation

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Standards and Certifications

- UL Recognized (File No. E3125) per UL 508
- CSA Certified (File No. LR1234) per CSA C22.2 No. 14

Circuit Breaker Operating Mechanism



The device is complete which includes a handle, operating mechanism, and slide/bail mechanism all pre-assembled on a mounting bracket.

3-Pole Circuit Breaker*			Operator	Slide or Bail
Brand	Frame Size (A)	Frame Designation	Cat. No.	Cat. No.
Cutler-Hammer	150	EHD, FD, FDB, FDC, HFD, HMCP	1494D-N4	1494D-N40
	250	JD, JDB, JDC, HJD, HMCP	1494D-N5	1494D-N50
	400	KD, KDB, KDC, HKD, HMCP		1494D-N60
	600	LD, HLD, LDC, LA, HLA, LC, HLC	1494D-N3	1494D-N31
	800	MA, MDL, HMDL, HMA, MC, ND, HND, NDC		1494D-N41
	1200	NB Tri-Pac		1494D-N41T
	1200	ND, HND, NDC, NB, HNB, NC, HNC		1494D-N43

* Circuit breakers to be provided by customer.

Variable-Depth Flange-Mounted Operating Mechanisms

Remote or Dual Type

 <p><i>Remote Drive Operating Mechanism</i></p>	 <p><i>Main Drive Dual Operating Mechanism (Includes Operating Handle)</i></p>	<p>Bulletin 1494V — Variable-Depth Flange-Mounted Operating Mechanisms</p> <p>Operating mechanism for remote or dual operation of disconnect switches or circuit breakers.</p> <ul style="list-style-type: none"> • Remote: 30A...600A Disconnect Switches • Fusible or Non-Fusible • Remote: 150A...400A Frame Circuit Breakers • Dual: 30A...100A Disconnect Switches • Dual: 150A Frame Circuit Breaker • Can be used with Enclosure Types 1, 3R, 4, 12 • Lockable handle 		<p>Table of Contents</p> <p>Accessories 1-204</p> <p>Specifications 1-209</p> <p>Approximate Dimensions 1-210</p> <p>Standards and Certifications</p> <ul style="list-style-type: none"> • UL Recognized (File No. E3125) per UL 508 • CSA Certified (File No. LR1234) per CSA C22.2 No. 14
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Description

Remote Operating Mechanisms — Allows the handle to be mounted above or below the disconnect switch or circuit breaker.

Dual Operating Mechanisms — Permits the control of (2) disconnect switches or circuit breakers utilizing a common handle.

Operation — Both the Remote and Dual Operating Mechanisms consist of (2) components: a main drive mechanism (which includes the handle) and a remote drive mechanism. To obtain a functional device, these components must be properly combined with a connecting link (supplied by the customer), disconnecting means and connecting rod.

Remote or Dual Operated Mechanisms — Separate Components

Type of Mechanism	Enclosure Type	Size (A)		Frame Designation	Brand	Mounting	Cat. No.*	
		Disconnect Switch	Circuit Breaker					
Remote	Type 1, 3, 3R, 12	30, 60, 100, 200	—	—	—	Right	1494V-H5	
						Left	1494V-HL5	
		400, 600	—	—	—	Right	1494V-H8	
						Left	1494V-HL8	
		—	150, 250, 400	EHD, FD, FDB, FDC, HFD, HMCP, JD, JDB, JDC, HJD, KD, KDB, KDC, HKD	Cutler-Hammer	Right	1494V-H10	
						Left	1494V-HL10	
	Type 4	30, 60, 100, 200	—	—	—	Right	1494V-W5	
						Left	1494V-WL5	
		400, 600	—	—	—	Right	1494V-W8	
						Left	1494V-WL8	
—	150, 250, 400	EHD, FD, FDB, FDC, HFD, HMCP, JD, JDB, JDC, HJD, KD, KDB, KDC, HKD	Cutler-Hammer	Right	1494V-W10			
				Left	1494V-WL10			
Dual	Type 1, 3, 3R, 12	Two 30 A, Two 60 A, Two 100 A, or any combination of Two 30...100 A Switches	—	—	—	Right	1494V-H50	
						Left	1494V-HL50	
		—	Two 150 A	EHD, FD, FDB, FDC, HFD, HMCP	Cutler-Hammer	Right	1494V-H95	
						Left	1494V-HL95	
	Type 4	Two 30 A, Two 60 A, Two 100 A, or any combination of Two 30...100 A Switches	—	—	—	—	Right	1494V-W50
							Left	1494V-WL50
		—	Two 150 A	EHD, FD, FDB, FDC, HFD, HMCP	Cutler-Hammer	Right	1494V-W95	
						Left	1494V-WL95	

* Includes Main and Remote Drive Mechanisms. Does not include rectangular bar stock (1/4 inch) 6.35 mm x (5/8 inch) 15.8 mm connecting bar between disconnecting means and connecting rod, to be supplied by user.

Fixed-Depth Flange-Mounted Operating Mechanisms

Overview/Product Selection



Right Hand Flange-Mounted, Remote Operated, Non-Fusible Disconnect Switch and Operating Mechanism

Bulletin 1494M — Fixed-Depth Flange-Mounted Operating Mechanisms

Operating mechanism for remote operation of a disconnect switch:

- Remote: 30...200 A Disconnect Switch
- Fusible or Non-Fusible
- Can be used with Enclosure Type 1 and 12
- Available in left hand or right hand flange operation
- Lockable handle

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Standards and Certifications

- UL Recognised (File No. E3125) per UL 508
- CSA Certified (File No. LR1234) per CSA C22.2 No. 14

Description

Operation — The remote mechanism consists of (2) components – a disconnect switch and the operating mechanism. To obtain a functional device, these components must be properly combined with a connecting link (supplied by the customer). This method allows the user to determine specific distances required between the disconnect switch and the operating mechanism.

Note: The operating mechanism can only be mounted below the switch.

Product Selection

Fusible and Non-Fusible Disconnect Kits

- Non Fusible disconnect switch includes: switch, operating mechanism and handle
- Fusible disconnect switch includes: switch, operating mechanism and handle (select the proper Fuse Block Adapter Plate with Fuse Clips from the table below)
- Line and Load lugs located in the Accessories section on page 1-204

Complete Disconnect Switch Kit for Type 1 and Type 12*

Continuous Current Rating (A) 600V AC 250V DC	UL and CSA Applications Maximum Hp 3Ø, 60 Hz				AC 1Ø				DC†			IEC Applications Maximum kW (AC23) 3Ø, 50 Hz				Open Type without Enclosure Flange Construction			
												Fusible		Non-Fusible					
	200... 208V	230V	460V	575V	115V	230V	125V	250V	220... 240V	380... 440V	500... 600V	Right Hand	Left Hand	Right Hand	Left Hand				
											Cat. No.	Cat. No.	Cat. No.	Cat. No.					
30	7.5	7.5	15	20	2	3	3	5	5.5	11	15	1494M-NF30	1494M-NFL30	1494M-N30	1494M-NL30				
60	15	15	30	40	3	10	5	10	11	22	30	1494M-NF60	1494M-NFL60	1494M-N60	1494M-NL60				
100	30	30	60	75	—	—	10	20	22	45	55	1494M-NF100	1494M-NFL100	1494M-N100	1494M-NL100				
200	60	60	100	100	—	—	20	40	45	75	75	1494M-NF200	1494M-NFL200	1494M-N200	1494M-NL200				

* Does not include rectangular bar stock 1/4 in. (6.35 mm) x 5/8 in.(15.8 mm) connecting bar between switch and remote operating mechanism and handle to be provided by user.








† Ratings based on utilizing two poles in series to break one line of the DC supply voltage and the remaining pole breaking the second DC supply line.

Fuse Block Adapter Plate Kits with Fuse Clips

Disconnect Size (A)	Fuse Clip Rating (A)	Class R		Class J	Class H	
		250V	600V	600V	250V	600V
		Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.
30	30	1494F-R233	1494F-R633	1494F-J633	1494F-C233	1494F-C633
	60	1494F-R263	1494F-R663	1494F-J663	1494F-C263	1494F-C663
60	—	—	1494F-R636	—	—	1494F-C636
	60	1494F-R266	1494F-R666	1494F-J666	1494F-C266	1494F-C666
	100	1494F-R216	1494F-R616	1494F-J616	1494F-C216	1494F-C616
100	100	1494F-R211	1494F-R611	1494F-J611	1494F-C211	1494F-C611
	200	1494F-R221	1494F-R621	1494F-J621	1494F-C221	1494F-C621
200	200	1494F-R222	1494F-R622	1494F-J622	1494F-C222	1494F-C622
	400	1494F-R242	1494F-R642	1494F-J642	1494F-C242	1494F-C642

Accessories — Field Installed

NEMA Disconnect Switches and Circuit Breaker Operating Mechanisms





	Description	For Use With	Cat. No.	
	Auxiliary Contacts	1 N.O. Contact	1494F, 1494G, 1494M Disconnect Switches	1495-N8
		1 N.C. Contact	1494D, 1494V* Circuit Breakers	1495-N9
 <p>Cat. No. 1495-N21 Cat. No. 1495-N23</p>	Auxiliary Contact Adapter Kit For Circuit Breakers	150 A Frame Cutler-Hammer	1494D, 1494V Circuit Breakers	1495-N21†
		250 A, 400 A Frame Cutler-Hammer	1494V Circuit Breaker	1495-N23†
		250 A Frame Cutler-Hammer	1494D Circuit Breaker	1495-N22†
		400 A Frame Cutler-Hammer	1494D Circuit Breaker	1495-N16†
		600 A, 800 A, 1200 A Frame Cutler-Hammer	1494D Circuit Breaker	1495-N13†
 <p>Cat. No. 595-A Cat. No. 595-B</p>	Auxiliary Contacts	1 N.O. Contact	1494V Disconnect Switch 30A...600A	595-A
		1 N.C. Contact	1494V Disconnect Switch 30A...600A	595-B
	Auxiliary Contact Adapter Kit For Disconnect Switches	400 A and 600 A Disconnect Switch	1494V Disconnect Switch 400 A...600 A	595-N1†
 <p>Cat. No. 895-A1 Cat. No. 895-M11</p>	Auxiliary Contacts	1 N.O. Contact	1494R Disconnect Switch 30 A, 60 A	895-A1
		1 N.C. Contact		895-B1
		1 N.O. and 1 N.C. Contact		895-C1
	Auxiliary Contact Adapter Kit for 1 contact	895-M11		
Auxiliary Contact Adapter Kit for 2 contacts	895-M12			
 <p>Cat. No. 895-A2 Cat. No. 895-M21</p>	Auxiliary Contacts	1 N.O. Contact	1494R Disconnect Switch 100 A, 200 A	895-A2
		1 N.C. Contact		895-B2
		1 N.O. and 1 N.C. Contact		895-C2
	Auxiliary Contact Adapter Kit for 1 contact	895-M21		
Auxiliary Contact Adapter Kit for 2 contacts	895-M22			
 <p>Cat. No. 1495-N33</p>	Electrical Interlocks	1 N.O. and 1 N.C. – early break	1494G Disconnect Switch	1495-N34
	Electrical Interlocks	2 N.O. and 2 N.C. – early break		1495-N35
	Electrical Interlock Adapter Kit	400 A and 600 A Disconnect Switch		1495-N36†

* Requires an adapter kit on new installations.

† One adapter kit enables up to two auxiliary contacts to be installed.

‡ One adapter kit is required to install the electrical interlocks

NEMA Disconnect Switches and Circuit Breaker Operating Mechanisms, Continued

		Description	For Use With	Cat. No.		
 <p>Cat. No. 1494R-N3</p>	Lug Connectors (3 per package)		1494F, 1494G, 1494M, 1494R, 1494V Disconnect Switches	* 1494R-N1§ 1494R-N2§ 1494R-N3§ 1494R-N10§ 1494R-N14 1494R-N11*		
	Disconnect Size (A)	Wire Size				
	30	#14...8 AWG Wire				
	60	#14...4 AWG Wire				
	100	#8...1/0 AWG Wire				
	200	#6...4/0 AWG Wire				
	400...600	2 of #1/0...350 MCM Wire				
	400	2 of #1/0...250 MCM Wire				
600	2 of #1/0...350 MCM Wire	1491 Fuse Blocks				
	Ground Connectors		1494F, 1494G, 1494M, 1494R, 1494V Disconnect Switches	599-GR1 599-GR2 599-GR3		
	Ground Lug Kits					
	30...100 A					
	200...400 A					
		600 A				
	Fuse Clips (6 per package)		1494F, 1494G, 1494M, 1494R, 1494V Disconnect Switches	1401-N41 1401-N42 1401-N43 1401-N44 1401-N45 1401-N46 † 1401-N50 1401-N51 1401-N52 1401-N53 1401-N54 1401-N55 ‡		
	Fuse Class	Fuse Clip Rating (A)				
		250V			600V	
	H, J	30			—	
		60			30	
		—			60	
		100			100	
		200			200	
		400			400	
	J	600			600	
		R			30	—
					60	30
					—	60
					100	100
					200	200
	400				400	
H, R	600	600				
	Protective Fuse Covers		1494G, 1494V	1495-N56> 1495-N59> 1495-N57> 1495-N60> 1495-N61>		
	Protective Fuse Cover with Door	30...100 A			1494G	
		200 A			1494V	
					1494G	
		400...600 A			1494V	

* All terminals of the 30 A switches are furnished with self-lifting pressure plate connectors as standard.

† Fuse clips not required; fuse bolts directly to terminal.

‡ Included with Bulletin 1491 separate mounted fuse blocks.







§ Each kit contains (3) lugs

* Each kits contains (2) lugs

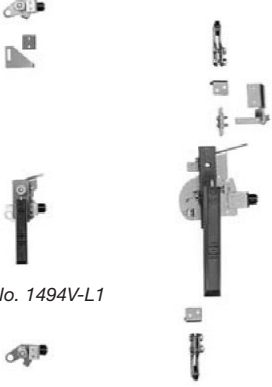


> Requires a minimum enclosure working depth of 8-3/4 in.

Accessories — Field Installed

NEMA Disconnect Switches and Circuit Breaker Operating Mechanisms, Continued

	Description	For Use With	Cat. No.
	<p>Defeat Bracket Extension Kit For use with operating handles that do not align properly with the door catch or door hardware on enclosures with a rolled lip flange construction.</p>	All 1494V handles (except 1494V-R1 and 1494V-R2)	1494V-H12
 <p>Cat. No. 1494R-H3</p>	<p>Alternate Mounting Kits For use where the flange material thickness is greater than 3/16 in. (4.8 mm).</p>	Operating handles 1494V-H1 or 1494V-H11	1494V-H3
	<p>Channel Support Kits For use to prevent flexing of the operating handle mounting surface. This is especially useful when the operating handle is mounted on a channel in a multi-door enclosure.</p>	Applies only to operating handle Cat. Nos. 1494V-H1, W1, H11 and W11 (does not apply to dual or remote operators).	1494V-H4
	<p>Conduit Connectors Metallic Conduit Connectors</p>		
 <p>Cat. No. 1490-N11</p>	<p>Non-Metallic Conduit Connectors</p>		
	<p>Grounding Adapters</p>		
		30 A	1232-N11
	1 in (25.4 mm)	60 A	1232-N12
	1-1/4 in (31.75 mm)	100 A	1232-N13
	1-1/2 in (38.1 mm)	200 A	1232-N14
	2-1/2 in (63.5 mm)	400...600 A	1232-N15
	3 in (76.2 mm)	30 A	1490-N1
	1/2 in (12.7 mm)	30 A	1490-N9
	3/4 in (19 mm)	30 A	1490-N10
	1 in (25.4 mm)	30 A	1490-N11
	1-1/4 in (31.75 mm)	60 A	1490-N11
	1-1/2 in (38.1 mm)	100 A	1490-N5
	2 in (50.8 mm)	200 A	1490-N6
	2-1/2 in (63.5 mm)	200 A	1490-N7
	3 in (76.2 mm)	400...600 A	1490-N8
		30 A	1490-N19
	#14...10 AWG, 1/2 in (12.7 mm)	30 A	1490-N20
	#14...8 AWG, 3/4 in (19 mm)	30 A	1490-N21
	#14...8 AWG, 1 in (24.5 mm)	30 A	1490-N21
	#14...4 AWG, 1-1/4 in (31.8 mm)	60 A	1490-N22
	#8...1/0 AWG, 1-1/2 in (38.1 mm)	100 A	1490-N23
	#8...1/0 AWG, 2 in (50.8 mm)	200 A	1490-N24
	#6...2/0 AWG, 2-1/2 in (63.5 mm)	200 A	1490-N25
	#6...4/0 AWG, 3 in (76.2 mm)	400...600 A	1490-N26

NEMA Disconnect Switches and Circuit Breaker Operating Mechanisms, Continued

	Description	For Use With	Cat. No. §
 <p>Cat. No. 1494V-L1</p> <p>Cat. No. 1494V-L2</p> <p>Cat. No. 1494V-L3</p>	Type 12 Door Hardware Kit Includes: handle, cam, defeater actuator lever, rollers, and shims	All 1494V	1494V-L1*
	Enclosure Height less than 40 in (1016 mm) Top and Side (Right Hand)		1494V-LL1*
	Top and Side (Left Hand)		1494V-L1* and 1494V-L2
	Enclosure Height 40...60 in (1016...1524 mm) Top and Side (Right Hand) Bottom		
	Top and Side (Left Hand) Bottom		
	Enclosure Height greater than 60 in (1524 mm) Top, Side and Bottom (Right Hand)		1494V-LL1* and 1494V-L2
	Top and Side (Left Hand) Bottom		1494V-L3*
	Enclosure Height greater than 60 in (1524 mm) Top, Side and Bottom (Right Hand)		1494V-LL3*
	Top, Side and Bottom (Left Hand)		1494V-L3*
	 <p>Cat. No. 1494F-L2 and 1494F-L3</p>		Type 12 Door Hardware Kit Includes: handle, cam, defeater actuator lever, rollers, and shims
Enclosure Height less than 30 in (762 mm) Top and Side (Right Hand)		1494F-LL1*	
Top and Side (Left Hand)		1494F-L2*	
Top and Bottom (Right Hand)		1494F-LL2*	
Top and Bottom (Left Hand)		1494F-L2* and 1494F-L3	
Enclosure Height 30...48 in (762...1219 mm) Top and Bottom (Right Hand)			
Side			
Top and Bottom (Left Hand) Side		1494F-LL2 and 1494F-L3*	
Enclosure Height greater than 48 in (1219 mm) Top, Side, and Bottom (Right Hand)		1494F-L4†	
Top, Side, and Bottom (Left Hand)		1494F-LL4†	
 <p>Cat. No. 1494F-N20</p>	Master Door Interlock Kits Interlock kits are designed to provide interlocking between the master and auxiliary doors of the same enclosure and for use with Cat. Nos. 1494F-L4 and 1494F-LL4 hardware kits or Cat. Nos. 1494V-L3 and 1494V-LL3 hardware kits. Specify one master door kit and as many auxiliary door kits as necessary (9 maximum). Connecting bars must be supplied by user.	1494F, 1494M, 1494D, 1494V	1494F-N20‡
	Auxiliary Door Interlock Kit		1494F-N21

* Door hardware kit does not include rectangular connecting bars (1/4 in x 1/2 in). To be provided by customer.

† Door hardware kit does not include rectangular connecting bars (1/4 in x 5/8 in). To be provided by customer.

‡ Master door Interlock Kit does not include rectangular connecting bars (3/8 in x 3/8 in). To be provided by customer.

§ If the Allen-Bradley Door Hardware Kits are to be installed in a commercially available enclosure, consult the enclosure manufacturer's application data for proper kit selection.

Specifications

NEMA Disconnect Switches and Circuit Breaker Operating Mechanisms, Continued

Bulletin 1494F, 1494G, 1494M, 1494R, 1494V, Disconnect Switches

Disconnect Switch Electrical Ratings									
Switch Size		30 A	60 A	100 A	200 A	400 A	600 A		
Rated insulation voltage Ui (UL) IEC		(600) 660V							
Ratings UL/CSA/NEMA	HP	230V/60 Hz	7.5	15	30	60	125	200	
		460V/60 Hz	15	30	60	125	250	400	
		575V/60 Hz	20	50	75	150	350	500	
		250V DC	5	10	20	40	50	50	
	Continuous Current	600V AC 250V DC	30 A	60 A	100 A	200 A	400 A	600 A	
Auxiliary Contact Electrical Ratings									
EEMAC/NEMA		A600, P300							
1494V (30A...600A), 1494G (400A...600A)									
Ratings U _e -600V AC -600V DC	AC11				DC11				
	Make or Break				Make or Break				
	▶ [] ◀		◀ [] ▶		▶ [] ◀		◀ [] ▶		
	360 VA		360 VA		138 VA		138 VA		
1494F (30A...200A), 1494G (30A...200A), 1494R (30A...200A), 1494M (30A...200A)									
NEMA/EEMAC		B600, P300							
IEC Ratings		Ui 660V	I _{th} 10A				I _e 6A 3A 1.5A 1.2A		
		ACII U _x	12...120V 220...240V 380...400V 500...600V						
Mechanical									
Degree of protection	Operating handles	Molded Type 1, 3R, 4, 4X, 12, Painted Type 1, 3R, 4, 12 Stainless Steel Type 4, 4X							
Mechanical life (Typical)	20 000 operations (30...200 A)				10 000 operations (400...600 A)				
Switching frequency (operations/hr)	30 A, 60 A, 100 A and 200 A sizes — 300 maximum				400 A and 600 A size — 240 Maximum				
Environmental									
Temperature	Operating	5...40 °C (41...104 °F)							
	Storage	-30...+65 °C (-22...+149 °F)							
Altitude (per IEC 947-5)	2000m per IEC 337-1								
Relative Humidity (per IEC 947-3)	90% at 20 °C and 50% at 40 °C								
Design Specification/Test Requirements									
Dielectric strength	2200V for 1 minute								
Electrical life	6000 operations at rated current								
Short Circuit Withstand Capability	10 000 A: unfused		10 000 A: with Class H fuses		200 000 A: with Class J or Class R fuses				
Construction									
Switch body material	Phenolic								
Contact material	Copper, tin-plated								
Terminals	30 A	#10 - 32 screw and self-lifting pressure plate							
	60 A	1/4 in - 28 screw-lug, copper alloy							
	100 A	5/16 in - 24 screw-lug, copper alloy							
	200 A	3/8 in - 24 screw-lug, copper alloy							
	400 A	1/2 in - 13 screw-lug, copper alloy							
	600 A	1/2 in - 13 screw-lug, copper alloy							
All wire rated (167 °F) 75 °C or higher must be sized per the local Electric Code for (167 °F) 75 °C wire.									
Conductor Size (mm ²)	30 A	#14...8 AWG (1.5...10 mm ²)							
	60 A	#14...4 AWG (2.5...16 mm ²)							
	100 A	#8...1/0 AWG (10...50 mm ²)							
	200 A	#6...4/0 AWG (16...95 mm ²)							
	400 A, 600 A	2 of #1/0 AWG...350 MCM (2 per lug) 2 of 185 mm ² ...350 MCM							
Recommended Torque	30 A	Conductor into Lug			Lug to Terminal				
	60 A	20 lb-in			20 lb-in				
	100 A	45 lb-in			50 lb-in				
	200 A	150 lb-in			90 lb-in				
	400 A	275 lb-in			175 lb-in				
	400 A	325 lb-in			275 lb-in				
	600 A	325 lb-in			275 lb-in				
Mechanisms		Zinc-Plated Steel, Bronze Chromate finish							

NEMA Disconnect Switches and Circuit Breaker Operating Mechanisms, Continued

Bulletin 1494D, 1494V Circuit Breakers

		Electrical Ratings						
Frame Size		150 A	250 A	400 A	600 A	800 A	1200 A	
Rated Insulation voltage Ui (UL) IEC		(600) 660V						
Ratings UL/CSA/NEMA	HP	230V/60Hz 460V/60 Hz 575V/60 Hz	7.5 15 20	15 30 50	30 60 75	60 125 150	125 250 350	200 400 500
		Auxiliary Contacts						
		1494V, 1494D						
NEMA/EEMAC		B600, P300						
IEC Ratings		ACII U ^x		12...120V 220...240V 380...400V 500...600V		I _e		6A 3A 1.5A 1.2A
Maximum Number of Auxiliary Contacts		2						
		Mechanical Data						
Mechanical Life (Typical)		10 000						
		Construction						
Mechanisms		Zinc-plated steel						
		Environmental Data						
Ambient Temperature*		Operating	-20...+40 °C (-4...+104 °F)					
		Storage	-40...+65 °C (-40...+149 °F)					
Altitude (per IEC 947-5)		2000 m per IEC 337-1						
Relative Humidity (per IEC 947-3)		90% @ 20 °C, 50% @ 40 °C						

* Refer to circuit breaker specifications for other limitations.

Bulletin 1491 Fuse Blocks

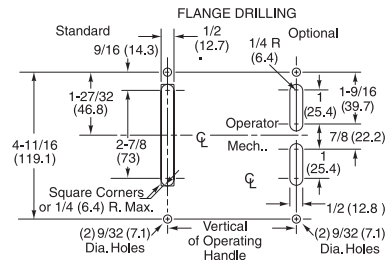
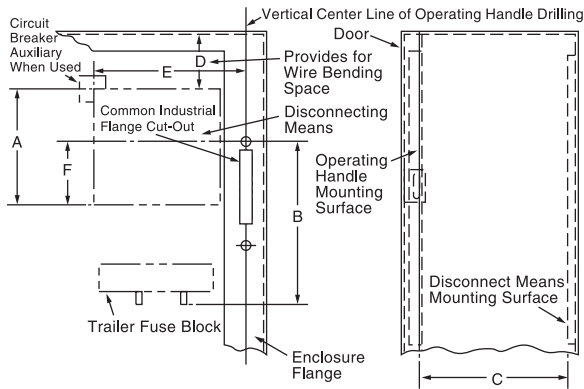
		Electrical				
		Class H	Class J	Class R	Class C	Class CC
UL Fuse Type		HRCI-H	HRCI-J	HRCI-R	HRCI-C	HRCI-MISC
CSA Fuse Type		HRCI-H	HRCI-J	HRCI-R	HRCI-C	HRCI-MISC
Maximum Fuse Cartridge Size		30...600 A	30...600 A	30...600 A	30...600 A	30 A
Maximum Voltage	AC	600V	600V	600V	600V	600V
	DC	250V	250V	250V	250V	250V
Thermal Current Rating		30...600 A	30...600 A	30...600 A	30...600 A	30 A
Maximum Short Circuit Prospective Fault Current		10 kA	200 kA	200 kA	100 kA	200 kA
		Construction				
Fuse Clips		Tin-plated copper alloy				
Terminals		Tin-plated copper alloy				
Fuse Block Base		Phenolic or Porcelain				
		Environmental				
Ambient Temperature	Open	-20...+55 °C (-4...+131 °F)				
	Enclosed	-20...+40 °C (-4...+104 °F)				
	Storage	-40...+65 °C (-40...+149 °F)				
Altitude (per IEC 947-5)		2000 m				
Relative Humidity (per IEC 947-3)		90% at 20 °C and 50% at 40 °C				

Dimensions

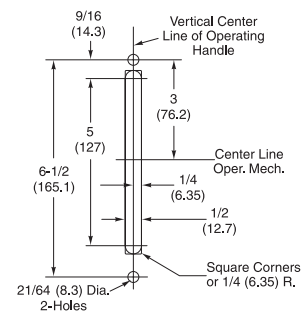
NEMA Disconnect Switches and Circuit Breaker Operating Mechanisms, Continued

Dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Bulletin 1494V



Flange Cut-Out
Bulletin 1494V — 30...200 A



Flange Cut-Out
Bulletin 1494V — 400...600 A

Disconnect Switches*

NEMA Size (A)	A	B†		C		D	E	F
		Max.	Min.	Max.	Min.			
30	6-19/64 (160)	7-31/32 (202)	6-3/4 (171)	21-5/8 (549)	2-3/4 (69.9)	7-9/16 (192)	3-7/8 (98.5)	
60	6-19/64 (160)	8-15/32 (215)	6-3/4 (171)	21-5/8 (549)	2-9/16 (65.1)	7-9/16 (192)	3-7/8 (98.5)	
100	6-19/64 (160)	9-1/8 (231.8)	6-3/4 (171)	28-5/8 (599)	3-37/64 (90.9)	7-9/16 (192)	3-7/8 (98.5)	
200	8-5/64 (205.2)	15-9/64 (384.5)	7-3/4 (197)	21-5/8 (549)	6-35/64 (166.3)	8-25/32 (223)	4-21/32 (118)	
400	15-23/32 (399.2)	18-7/32 (479.2)	9 (229)	21-5/8 (549)	8 (203.2)	11-27/32 (300.8)	8-51/64 (223.3)	
600	15-23/32 (399.2)	17-19/32 (446.8)‡	9 (229)	21-5/8 (549)	12 (304.8)	11-27/32 (300.8)	8-51/64 (223.3)	

* Approximate dimensions are for reference only.

† This approximate dimension will vary by fuse class and size.

‡ Approximate dimension with Class J fuses.

Circuit Breakers§

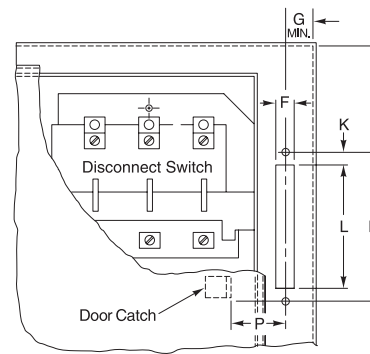
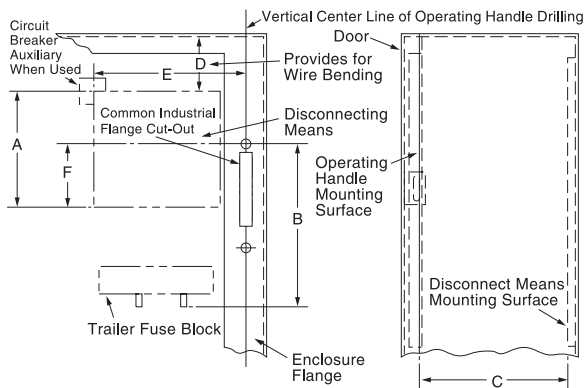
Frame	A	C		D	E	F
		Min.	Max.			
125A 140U-H, 140M-H, EF, HMCPE 150A EHD, FD, FDB, FDC, HFD, HMCP	6 (152.4)	6-3/4 (171.5)	23 (584.2)	6 (152.4)	5-7/16 (138.1)	5 (127)
250A 140U-J, 140M-J, EF 250A JD, JDB, JDC, HJD, HMCP	11-1/4 (285.8)	7-7/8 (200.0)	22-9/16 (573.1)	10 (254)	5-23/32 (145.2)	9-23/32 (246.8)
400 A KD, KDB, KDC, HKD, HMCP	11-3/8 (288.9)	7-7/8 (200.0)	22-9/16 (573.1)	12 (304.8)	7-1/8 (181.0)	9-21/32 (245.3)

§ Approximate dimensions are for reference only.

NEMA Disconnect Switches and Circuit Breaker Operating Mechanisms, Continued

Dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Bulletin 1494F, 1494M Disconnect Switches*



Flange Cut-Out

NEMA Size (A)	A	B†	C		D	E	F	G	H	J	K	L	P	S‡
			Min.	Max.										
Without Door Hardware														
30	5-15/16 (150.8)	10-3/4 (273.1)	6-3/8 (161.9)	—	2-3/16 (55.6)	7-1/2 (190.5)	3-3/4 (95.3)	1-3/16 (30.2)	8-1/2 (215.9)	1-7/16 (36.5)	15/32 (11.9)	7-3/16 (182.6)	2-1/8 (54)	2-1/16 (52.4)
60	5-15/16 (150.8)	13-3/16 (335)	6-3/8 (161.9)	—	2 (50.8)	7-1/2 (190.5)	3-3/4 (95.3)	1-3/16 (30.2)	8-1/2 (215.9)	1-7/16 (36.5)	15/32 (11.9)	7-3/16 (182.6)	2-1/8 (54)	3-1/4 (82.6)
100	7-15/16 (200.4)	16-3/4 (425.5)	8-1/2 (215.9)	—	5 (127)	8-1/4 (209.6)	3-3/4 (95.3)	1-3/16 (30.2)	8-1/2 (215.9)	1-7/16 (36.5)	15/32 (11.9)	7-3/16 (182.6)	2-1/8 (54)	8-9/64 (206.8)
200	10-1/2 (266.7)	20-13/16 (528.6)	9 (228.6)	—	7 (177.8)	11-3/8 (289)	5-9/16 (141.3)	1-1/4 (31.8)	11-1/8 (282.6)	1-11/16 (42.9)	13/16 (20.6)	9-1/2 (241.3)	2-9/32 (57.9)	10-13/32 (264.3)
Small and Intermediate Enclosures with Door Hardware														
30	5-15/16 (150.8)	10-3/4 (273.1)	6-3/8 (161.9)	—	2-3/16 (55.6)	7-1/2 (190.5)	3-3/4 (95.3)	1-3/16 (30.2)	8-1/2 (215.9)	1-7/16 (36.5)	15/32 (11.9)	7-3/16 (182.6)	2-5/32 (54.8)	2-1/4 (57.2)
60	5-15/16 (150.8)	13-3/16 (335)	6-3/8 (161.9)	—	2 (50.8)	7-1/2 (190.5)	3-3/4 (95.3)	1-3/16 (30.2)	8-1/2 (215.9)	1-7/16 (36.5)	15/32 (11.9)	7-3/16 (182.6)	2-5/32 (54.8)	3-1/4 (82.6)
100	7-15/16 (200.4)	16-3/4 (425.5)	8-1/2 (215.9)	—	5 (127)	8-1/4 (209.6)	3-3/4 (95.3)	1-3/16 (30.2)	8-1/2 (215.9)	1-7/16 (36.5)	15/32 (11.9)	7-3/16 (182.6)	2-5/32 (54.8)	8-9/64 (206.8)
200	10-1/2 (266.7)	20-13/16 (528.6)	9 (228.6)	—	7 (177.8)	11-3/8 (289)	5-9/16 (141.3)	1-1/4 (31.8)	11-1/8 (282.6)	1-11/16 (42.9)	13/16 (20.6)	9-1/2 (241.3)	2-5/16 (58.7)	10-13/32 (264.3)
Large Enclosures with Door Hardware														
30	5-15/16 (150.8)	10-3/4 (273.1)	6-3/8 (161.9)	—	2-3/16 (55.6)	7-1/2 (190.5)	3-3/4 (95.3)	1-3/16 (30.2)	8-1/2 (215.9)	1-7/16 (36.5)	15/32 (11.9)	7-3/16 (182.6)	2-1/4 (57.2)	2-3/4 (69.9)
60	5-15/16 (150.8)	13-3/16 (335)	6-3/8 (161.9)	—	2 (50.8)	7-1/2 (190.5)	3-3/4 (95.3)	1-3/16 (30.2)	8-1/2 (215.9)	1-7/16 (36.5)	15/32 (11.9)	7-3/16 (182.6)	2-1/4 (57.2)	3-1/4 (82.6)
100	7-15/16 (200.4)	16-3/4 (425.5)	8-1/2 (215.9)	—	5 (127)	8-1/4 (209.6)	3-3/4 (95.3)	1-3/16 (30.2)	8-1/2 (215.9)	1-7/16 (36.5)	15/32 (11.9)	7-3/16 (182.6)	2-1/4 (57.2)	8-9/64 (206.8)
200	10-1/2 (266.7)	20-13/16 (528.6)	9 (228.6)	—	7 (177.8)	11-3/8 (289)	5-9/16 (141.3)	1-1/4 (31.8)	11-1/8 (282.6)	1-11/16 (42.9)	13/16 (20.6)	9-1/2 (241.3)	2-11/32 (59.5)	10-13/32 (264.3)

* Approximate dimensions are for reference only.
 † This approximate dimension will vary by fuse class and size.
 ‡ Minimum wiring space for the maximum wire size.

Bulletin 1494D Circuit Breakers§

Cutler-Hammer Frame	A	C		D	E	F
		Min.	Max.			
150 A — EHD, FD, FDB, FDC, HFD, HMCP	7-13/16 (198.4)	6-3/8 (161.9)	—	6 (152.4)	5-5/8 (142.9)	6-7/16 (163.5)
250 A — JD, JDB, JDC, HJD, HMCP	11-1/2 (292.1)	8-3/8 (212.7)	—	8 (203.2)	5-13/16 (147.6)	9-7/16 (239.7)
400 A — KD, KDB, KDC, HKD, HMCP	11-1/2 (292.1)	8-3/8 (212.7)	—	12 (304.8)	6-7/8 (174.6)	9-7/16 (239.7)
600 A — LD, HLD, LDC, LA, HLA, LC, HLC	11-3/8 (288.9)	9-1/2 (241.3)	—	8 (203.2)	12 (304.8)	10-17/32 (267.5)
800 A — MA, MDL, HMDL, HMA, MC, ND, HND, NDC	16 (406.4)	9-1/2 (241.3)	—	10 (254)	12-5/16 (312.7)	15-3/32 (183.4)
1200 A — NB TRI-PAK	22 (558.8)	9-1/2 (241.3)	—	10 (254)	12-5/16 (312.7)	21-3/32 (535.8)
1200 A — HNC, ND, HND, NDC, NB, HNB, NC, HNC	16 (406.4)	9-1/2 (241.3)	—	12 (304.8)	12-5/16 (312.7)	25-3/32 (183.4)

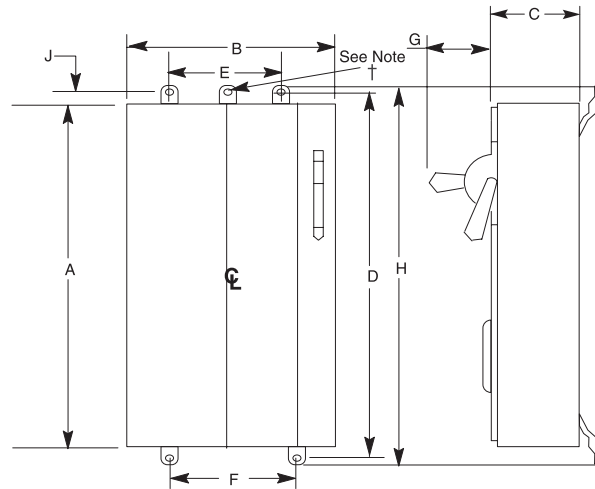
§ Approximate dimensions are for reference only.

Dimensions

NEMA Disconnect Switches and Circuit Breaker Operating Mechanisms, Continued

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

[Bulletin 1494G, 1494GX, 1494GY Enclosed Disconnect Switches](#)
[Type 3R/4/12 \(Enclosure Code "F"\) Painted Metal Enclosures](#)



Size	Fuse Style*	Number of Poles	Bulletin No.	Approximate Dimensions in Inches (Millimeters)								Approx. Shipping Weight in lbs (kg)													
				A Height	B Width	C Depth	D Mounting	E Mounting	F Mounting	G Handle Depth	H		J												
30 A	A	2 or 3	1494G	13 5/16	10 1/2	8 1/4	14 11/16	†	5 1/4	5 9/16	15 21/32	11/32	20												
60 A				(338)	(267)	(210)	(373)		(133)	(141)	(398)	(9)		(9.07)											
30 A	B	2 or 3	1494G	20	10 1/2	10 3/16	21 7/16	†	5 1/4	5 9/16	22 13/32	11/32	30												
60 A				(509)	(267)	(259)	(545)		(133)	(141)	(569)	(9)		(13.6)											
30 A	C	6	1494G	27 1/2	10 1/2	8 1/4	28 7/8	†	5 1/4	5 9/16	29 7/8	13/16	60												
60 A	D													(698)	(267)	(210)	(733)	(133)	(141)	(759)	(21)	(27.21)			
30 A	A													2 or 3	1494GY	30	20 1/2	10 3/16	31 3/8	15 1/4	15 1/4	5 9/16	32 3/8	13/16	90
60 A	B																								
30 A	A	2 or 3	1494GX	31 1/2	10 1/2	10 3/32	32 7/8	†	5 1/4	5 9/16	33 27/32	11/32	70												
60 A	B													(800)	(267)	(257)	(835)	(133)	(141)	(860)	(9)	(31.73)			
100 A	D	6	1494G	50	22	11 1/2	51 3/8	15 1/4	15 1/4	5 9/16	52 11/32	11/32	200												
100 A	A	2 or 3	1494GY											31 1/2	10 1/2	10 3/32	32 7/8	†	5 1/4	5 9/16	33 27/32	11/32	70		
100 A	B			2 or 3	1494G	(800)	(267)	(257)	(835)	(133)	(141)	(860)	(9)											(31.73)	
100 A	A	2 or 3	1494GX	50	22	11 1/2	51 3/8	15 1/4	15 1/4	5 9/16	52 11/32	11/32	200												
200 A	B													2 or 3	1494G	(1270)	(559)	(292)	(1305)	(387)	(387)	(141)	(1330)	(9)	(90.7)
200 A	C	6	1494G	56	30 1/2	13 51/64	57 5/8	20	25 1/4	7 5/8	62 5/8	1	300												
200 A	D													2 or 3	1494GY	(1422)	(775)	(350)	(1464)	(508)	(194)	(1590)	(25.4)	(136.05)	
400 A	A	2 or 3	1494G	50	22	11 1/2	51 3/8	15 1/4	15 1/4	7 5/8	52 11/32	11/32	200												
600 A	A													2 or 3	1494G	(1270)	(559)	(292)	(1305)	(387)	(387)	(194)	(1330)	(9)	(90.7)
400 A	B	2 or 3	1494G	56	30 1/2	13 51/64	57 5/8	20	25 1/4	7 5/8	62 5/8	1	300												
600 A	B													2 or 3	1494G	(1422)	(775)	(350)	(1464)	(508)	(194)	(1590)	(25.4)	(136.05)	

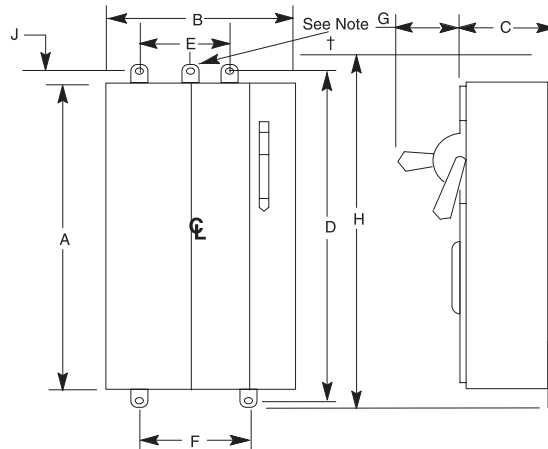
* A = Non-Fusible, Fusible 250V - Class H/R, Fusible 600V - Class J
 B = Fusible 600V - Class H/R
 C = Non-fusible
 D = Fusible 250V - Class H/R, Fusible 600V - Class J

† These enclosures have one top mounting hole located on the center line. All other enclosures have two top mounting holes located as shown.

NEMA Disconnect Switches and Circuit Breaker Operating Mechanisms, Continued

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Bulletin 1494G, 1494GX, 1494GY Enclosed Disconnect Switches
Type 4/4X (Enclosure Code "C") Stainless Steel Enclosure



Size	Fuse Style*	Number of Poles	Bulletin No.	Approximate Dimensions in Inches (Millimeters)									Approx. Shipping Weight in lbs (kg)
				A Height	B Width	C Depth	D Mounting	E Mounting	F Mounting	G Handle Depth	H	J	
30 A	A	2 or 3	1494G	13 5/16 (338)	10 1/2 (267)	8 9/16 (217)	14 11/16 (373)	†	5 1/4 (133)	5 9/16 (141)	15 21/32 (398)	13/16 (21)	20 (9.07)
30 A	B	2 or 3	1494G	27 1/2 (698)	10 1/2 (267)	8 1/4 (210)	28 7/8 (733)	†	7 (178)	5 9/16 (141)	29 3/4 (756)	13/16 (21)	60 (27.21)
	C	6											
	D	6											
60 A	B	2 or 3											
60 A	C	6	1494GY	30 (762)	20 1/2 (521)	9 7/8 (251)	31 3/8 (797)	17 (432)	17 (432)	5 9/16 (141)	32 1/4 (819)	13/16 (21)	90 (40.82)
	D	6											
30 A	A	2 or 3	1494GX	50 (1270)	22 (559)	11 3/16 (284)	51 3/8 (1305)	18 1/2 (470)	18 1/2 (470)	5 9/16 (141)	52 1/4 (1327)	13/16 (21)	200 (90.7)
	B												
60 A	A	2 or 3	1494GY	56 (1422)	30 1/2 (775)	13 51/64 (350)	57 5/8 (1464)	20 (508)	25 1/4 (641)	7 5/8 (194)	58 5/8 (1489)	1 (25.4)	300 (136.05)
	B												
100 A	A	2 or 3	1494GX	56 (1422)	30 1/2 (775)	13 51/64 (350)	57 5/8 (1464)	20 (508)	25 1/4 (641)	7 5/8 (194)	58 5/8 (1489)	1 (25.4)	300 (136.05)
	B												
200 A	A	2 or 3	1494G	56 (1422)	30 1/2 (775)	13 51/64 (350)	57 5/8 (1464)	20 (508)	25 1/4 (641)	7 5/8 (194)	58 5/8 (1489)	1 (25.4)	300 (136.05)
	B												
400 A	A	2 or 3	1494GY	56 (1422)	30 1/2 (775)	13 51/64 (350)	57 5/8 (1464)	20 (508)	25 1/4 (641)	7 5/8 (194)	58 5/8 (1489)	1 (25.4)	300 (136.05)
	B												
600 A	A	2 or 3	1494GX	56 (1422)	30 1/2 (775)	13 51/64 (350)	57 5/8 (1464)	20 (508)	25 1/4 (641)	7 5/8 (194)	58 5/8 (1489)	1 (25.4)	300 (136.05)
	B												

* A = Non-Fusible, Fusible 250V - Class H/R, Fusible 600V - Class J
 B = Fusible 600V - Class H/R
 C = Non-fusible
 D = Fusible 250V - Class H/R, Fusible 600V - Class J

† These enclosures have one top mounting hole located on the center line. All other enclosures have two top mounting holes located as shown.

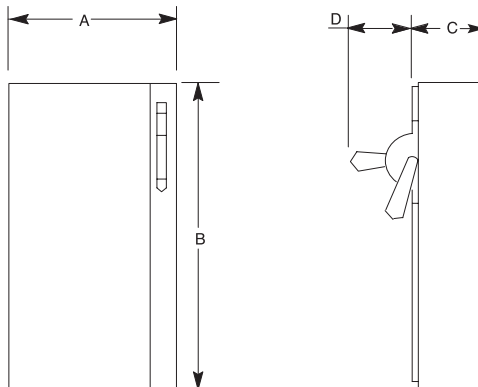
Dimensions

NEMA Disconnect Switches and Circuit Breaker Operating Mechanisms, Continued

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

[Bulletin 1494G, 1494GX, 1494GY Enclosed Disconnect Switches](#)

[Type 4/4X \(Enclosure Code "S"\) Non-metallic, Corrosion-resistant Enclosure](#)



Size	Fuse Style*	Number of Poles	Bulletin No.	Approximate Dimensions in Inches (Millimeters)				Approx. Shipping Weight in lbs (kg)
				A Height	B Width	C Depth	D Handle Depth	
30 A	A	2 or 3	1494G	24 (610)	10 (254)	6 7/8 (175)	4 7/8 (124)	28 (12.7)
	B							
60 A	A	2 or 3	1494GX	24 (610)	21 (533)	9 1/4 (235)	4 7/8 (124)	60 (27.2)
	B							
30 A	A	2 or 3	1494G	24 (610)	21 (533)	9 1/4 (235)	4 7/8 (124)	60 (27.2)
	B							
60 A	A	2 or 3	1494G	24 (610)	21 (533)	9 1/4 (235)	4 7/8 (124)	60 (27.2)
	B							
100 A	A	2 or 3	1494G	24 (610)	21 (533)	9 1/4 (235)	4 7/8 (124)	60 (27.2)
	B							

* A = Non-fusible, Fusible 250V - Class H/R, Fusible 600V - Class J/H/R
 B = Fusible 600V - Class H/R