‡ Information for this product line is available on the Industrial Controls Catalog website: www.ab.com/catalogs.

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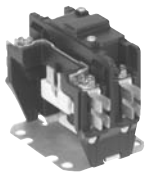
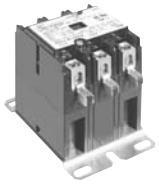
‡ Information for this product line is available on the Industrial Controls Catalog website: www.ab.com/catalogs.

Definite-Purpose Contactors

				
Bulletin	400			
Features	• Compact size • Feed-through wiring • Class B (130 °C) coil insulation • Double “E” magnet assembly • Snap-on auxiliary contacts • Combination pressure and quick connect terminals • Ability to accept ring terminals • Double-break contacts			
No. of Poles	1 & 2	3	3	4
FLA Rating	20/25…30	25…40	50…90	20/25…40
Arc Cover	Optional	Standard	Standard	Standard
Termination	• 1/4 in. QC, #10…32 screw • Box lugs optional	• 1/4 in. QC, #10…32 screw • Box lugs optional (25…30 A) • Coil screws optional	• Box lug, standard • Option available to accept ring terminals	• 1/4 in. QC, #10…32 screw (25…30 A) • Box lugs (40 A) • Coil screws optional
Certifications	• CSA Certified (File No. LR1234) • UL Recognized (File No. E3125, Guide No. NLDX2) • CE Marked — SEMKO Certified	• CSA Certified (File No. LR1234) • UL Recognized (File No. E3125, Guide No. NLDX2) • CE Marked — SEMKO Certified	• CSA Certified (File No. LR1234) • UL Recognized (File No. E3125, Guide No. NLDX2) • CE Marked — SEMKO Certified	• CSA Certified (File No. LR1234) • UL Recognized (File No. E3125, Guide No. NLDX2) • CE Marked — SEMKO Certified
Product Selection	**Page 1-6**	**Page 1-7**	**Page 1-8**	**Page 1-9**

Definite Purpose Contactors

Overview/Catalog Number Explanation

2-pole

4-pole

Bulletin 400

- Available in the following ranges:
  1-Pole: 20/25…30 A, 600V max.
  2-Pole: 20/25…30 A, 600V max.
  3-Pole: 20/25…90 A, 600V max.
  4-Pole: 20/25…40 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.

Table of Contents

Standards Compliance

- UL 508
- CSA C22.2 No. 14
- EN/IEC 60947-4-1
- Meets the material restrictions of the EU RoHS Directive

Certifications

- UL Recognized (File No. E3125, Guide No. NLDX2)
- CSA Certified (File No. LR1234)
- CE Marked
- SEMKO Certified

Catalog Number Explanation

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

a

Current Rating	
Code	Full Load Amps [A]
DP25	20/25
DP30	30
DP40	40
DP50	50
DP60	60
DP75	75
DP90	90

b

Enclosure Code	
Code	Enclosure
N	No enclosure/No exceptions

c

Nominal Coil Voltage	
Code	50/60 Hz Frequency
J	24
D	120
A	208/240
F	277
LF	347
B	480

d

Number of Poles	
Code	Description
1	1 pole
2	2 poles
3	3 poles
4	4 poles

e

Modifications	
Code	Description
B	Box lug with DP25 or DP30 in 2nd position
D	400-DRA factory attached to DP (20/25…40 A)
E	2 poles with 3-pole base
K	6…32 screw coil terminal with DP25, DP30, or DP40 in 2nd position
R	Ring terminal for DP40…DP90
S	10…32 SEMS terminal
T	Coil terminals down
U	Coil terminals on load side (T1/2, T2/4, T3/6) without quick connect line/load terminals
X	Without quick connect terminals on line and load

e (cont'd)

Modifications	
3-Pole 20/25, 30, and 40 A only	
Code	Description
AB1	Auxiliary contact – 1 N.O./1 N.C. with Quick Connect
A1	Auxiliary contact – SPDT with QC
A2	Auxiliary contact – 2 SPDT with QC
3-Pole 50…90 A only	
Code	Description
AB	Auxiliary contact – 1 N.O./1 N.C. with QC
A	Auxiliary contact – SPDT with QC
4-Pole 20/25, 30, and 40 A only	
Code	Description
AB4	Auxiliary contact – 1 N.O./1 N.C. with QC
A4	Auxiliary contact – SPDT with QC

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Preferred availability cat. nos. are printed in **bold**

Allen-Bradley

Contactors

	Number of Poles	FLA Rating	Arc Cover	Standard Termination	Certifications	Page Number
	1	20…30	Optional	#10…32 screw with 1/4 in. QC		1-6
	2	20…30				
	3	20…30	Standard	#10…32 screw with 1/4 in. QC		1-7
		40		Box lug (option available to accept ring terminals)		
	3	50, 60	Standard	Box lug (option available to accept ring terminals)		1-8
		75, 90	Standard			
	4	20…30	Standard	#10…32 screw with 1/4 in. QC		1-9
		40		Box lug (option available to accept ring terminals)		

1

20/25…30 FLA 1- & 2-Pole

1-Pole Contactor with Shunt

2-Pole Contactor with Optional Arc Cover

Full Load Amps	Number of Poles	Maximum Continuous Ampere Rating [A]		Line Voltage	Locked Rotor Amps	Resistive Amps Rating	Maximum Horsepower		Cat. No.
		Tungsten Lamp Loads❄	Ballast Lighting Load‡				Voltage	Single Phase	
20/25∗	1	25		240/277	150	30	120	1	400-DP25N⊗1
				480	50	30	240	2	
				600	40	30			
20/25∗	2	25		240/277	150	35	120	2	400-DP25N⊗2
				480	125	35	240	3	
				600	100	35			
30∗	1	28		240/277	150	40	120	1	**400-DP30N⊗1**
				480	75	40	240	2	
				600	50	40			
30∗	2	28		240/277	150	40	120	2	**400-DP30N⊗2**
				480	125	40	240	3	
				600	100	40			

∗ Coil terminal screws are not available on 1- and 2-pole contactors.
❄ Max. 480V line 277V load
‡ Fluorescent

⊗ Coil Voltage Code for 1- and 2-Pole Contactors

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no.
Example: **Cat. No. 400-DP25N⊗1** becomes **Cat. No. 400-DP25NJ1**. For other voltages, consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]	24	120	208/240	277	480
Code	**J**	**D**	**A**	F	**B**

Coil Technical Data

		20/25 & 30 A One-Pole Contactors					20/25 & 30 A Two-Pole Contactors				
Nominal Coil Voltage		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 (Ω)		16.5	420	1850	2650	3050	11	250	1000	1600	3050

Arc Cover

Description	Cat. No.
20/25 & 30 A 1-Pole	**400-C1**
20/25 & 30 A 2-Pole	**400-C2**

20/25…40 FLA 3-Pole

30 FLA Contactor 3-Pole with optional Coil Terminal Screws

Full Load Amps	Number of Poles	Maximum Continuous Ampere Rating [A] Tungsten Lamp Loads❄	Maximum Continuous Ampere Rating [A] Ballast Lighting Load‡	Line Voltage	Locked Rotor Amps	Resistive Amps Rating	Maximum Horsepower Voltage	Maximum Horsepower Single Phase	Maximum Horsepower Three Phase	Cat. No.
20/25	3	25		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	28		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	35	—	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	

∗ 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-DP40N⊗3-R**.

❄ Max. 480V line 277V load

‡ Fluorescent

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

[V]	24	120	208/240	277	347	480
Code	**J**	**D**	**A**	F	LF	**B**

Coil Technical Data

Nominal Coil Voltage		24	120	208/240	277	347	480
Maximum Pickup Volts		18	88	177	220	277	384
Drop-Out Volts Range		6…15	20…70	40…140	65…185	85…225	150…270
Nominal Inrush VA	50 Hz	72	72	72	72	72	72
	60 Hz	64	64	64	64	64	64
Nominal Sealed VA	50 Hz	7.2	7.2	7.2	7.2	7.2	7.2
	60 Hz	6	6	6	6	6	6
Nominal DC Resistance (Ohms)		5.8	147	597	837	1330	2425

Auxiliary Contacts

Description	Cat. No.
1 N.O./1 N.C. w/QCs§	**400-AB1**
SPDT w/QCs♣	**400-A1**
2 SPDT w/QCs§	**400-A2**

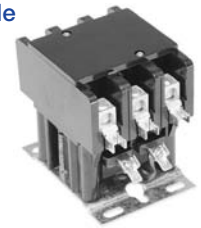
§ Contact rating single-circuit N.O. or N.C.:

[V]		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

1

50…90 FLA 3-Pole



50 & 60 FLA 3-Pole

75 & 90 FLA 3-Pole

Full Load Amps	Number of Poles	Maximum Continuous Ampere Rating [A]		Line Voltage	Locked Rotor Amps	Resistive Amps Rating	Maximum Horsepower			Cat. No.
		Tungsten Lamp Loads❄	Ballast Lighting Load‡				Voltage	Single Phase	Three Phase	
50✶	3	53		240 480 600	300 250 200	65 65 65	110/120	3	—	400-DP50N⊗3
							200/208	7.5	15	
							220…240	10	15	
							480	—	25	
							600	—	25	
60✶	3	53		240 480 600	360 300 240	75 75 75	110/120	5	—	**400-DP60N⊗3**
							200/208	7.5	25	
							220…240	10	25	
							480	—	30	
							600	—	30	
75✶	3	63	—	240 480 600	450 375 300	93 93 93	110/120	5	—	400-DP75N⊗3
							200/208	10	20	
							240	15	25	
							480	—	40	
							600	—	40	
90✶	3	63	—	240 480 600	540 450 360	120 120 120	110/120	7.5	—	400-DP90N⊗3
							200/208	15	25	
							240	20	30	
							480	—	50	
							600	—	50	

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

❄ Max. 480V line 277V load

‡ Fluorescent

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no.
Example: **Cat. No. 400-DP50N⊗3** becomes **Cat. No. 400-DP50NJ3**. For other voltages, consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]	24	120	208/240	277	480
Code	**J**	**D**	**A**	F	**B**

Coil Technical Data

Nominal Coil Voltage		24		120		208/240		277		480	
		50 & 60 A	75 & 90 A	50 & 60 A	75 & 90 A	50 & 60 A	75 & 90 A	50 & 60 A	75 & 90 A	50 & 60 A	75 & 90 A
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 N.O./1 N.C. w/QCs§	**400-AB**
SPDT w/QCs♣	**400-A**

§ Contact rating single-circuit N.O. or N.C.:

[V]		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

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Preferred availability cat. nos. are printed in **bold**

20/25…40 FLA 4-Pole

4-Pole

Full Load Amps	Number of Poles	Maximum Continuous Ampere Rating [A]		Line Voltage	Locked Rotor Amps	Resistive Amps Rating	Maximum Horsepower			Cat. No.
		Tungsten Lamp Loads❄	Ballast Lighting Load‡				Voltage	Single Phase	Three Phase	
20/25	4	25		240/277 480 600	150 125 100	35 35 35	110/120	2	—	**400-DP25N⊗4**
							200/208	—	7.5	
							240/277	5	10	
							480	—	15	
							600	—	20	
30	4	—		240/277 480 600	180 150 120	40 40 40	110/120	2	—	400-DP30N⊗4
							200/208	—	10	
							240/277	5	10	
							480	—	15	
							600	—	20	
40	4	—		240/277 480 600	240 200 160	50 50 50	110/120	3	—	**400-DP40N⊗4**
							200/208	—	10	
							240/277	7.5	10	
							480	—	20	
							600	—	25	

❄ Max. 480V line 277V load
‡ Fluorescent

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no.
Example: **Cat. No.400-DP25N⊗4** becomes **Cat. No. 400-DP25NJ4**. For other voltages, consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]	24	120	208/240	277	347	480
Code	**J**	**D**	**A**	F	LF	**B**

Coil Technical Data

Nominal Coil Voltage		24	120	208/240	277	347	480
Maximum Pickup Volts		18	88	177	220	277	384
Drop-Out Volts Range		6…15	20…70	40…140	65…185	85…225	150…270
Nominal Inrush VA	50 Hz	82	82	82	82	82	82
	60 Hz	73	73	73	73	73	73
Nominal Sealed VA	50 Hz	9	9	9	9	9	9
	60 Hz	7.2	7.2	7.2	7.2	7.2	7.2
Nominal DC Resistance (Ohms)		5.25	133	540	760	1205	2195

Auxiliary Contacts

Description	Cat. No.
1 N.O./1 N.C. w/QCs∗	**400-AB4**
SPDT w/QCs§	**400-A4**

∗ Contact rating for single circuit N.O. or N.C.:

[V]		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

1

Accessories

Description		For Use With	Cat. No.
	Mechanical Interlock Kit	20/25…40 A 3-pole	**400-MK1**
	DIN Rail Adapter	20/25…40 A 1-…4-pole	**400-DRA**

Modifications

Description		Suffix Code
Box lug with DP25 or DP30 in second position		B
Molded coil (not available with 1 or 2 in fifth position)		C
Factory-installed DIN Rail adapter (20…40 A)		D
2-pole with 3-pole base		E
#6…32 screw coil terminal with DP25, DP30, or DP40 in second position (3- & 4-pole only)		K
Ring terminal for DP40…DP90		R
#10…32 SEMS terminals with DP25, DP30, or DP40 in second position		S
Coil terminals down		T
Coil terminals on load side (T1/2, T2/4, T3/6) without quick connect (QC) line/load terminals		U
Without QC terminals on line and load		X
Auxiliary contact – 1 N.O./1 N.C. with QC	✶	AB1
Auxiliary contact – SPDT with QC	✶	A1
Auxiliary contact – 2 SPDT with QC	✶	A2
Auxiliary contact – 1 N.O./1 N.C. with QC	❄	AB
Auxiliary contact – SPDT with QC	❄	A

✶ 3-pole – 20/25, 30, and 40 A only.
❄ 3-pole – 50…90 A only.

20/25…30 FLA 1- & 2-Pole

Line and Load Terminals		#10…32 screw
Wire Size Min.…Max.		16…8 AWG (stranding must be split for #8 wire)
Mechanical Life		1 000 000 operations
Electrical Life		250 000 operations
Recommended Tightening Torque		25 lb•in
Quick Connects	Power terminals	Dual 0.250 QC (2)
	Coil 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…65 °C (-40…150 °F)
Mounting Position	Vertical	All positions
	Horizontal	Base down only
Weight	1-Pole 2-Pole	0.5 lb 0.6 lb

20/25…40 FLA 3-Pole

Line and Load Terminals		#10…32 screw or box lug
Wire Size Min.…Max.	#10…32 screw	16…8 AWG (stranding must be split for #8 wire)
	Box Lug	14…4 AWG
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…65 °C (-40…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 Min.…Max.		14…2 AWG
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…65 °C (-40…150 °F)
Mounting Position	Vertical	All positions
	Horizontal	Base down only
Weight		2 lb

75…90 FLA 3-Pole

Line and Load Terminals		Box lug
Wire Size Min.…Max.		14…1/0 AWG
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…65 °C (-40…150 °F)
Mounting Position	Vertical	All Positions
	Horizontal	Base down only
Weight		4 lb

20/25…40 FLA 4-Pole

Line and Load Terminals		#10…32 screw or box lug
Wire Size Min.…Max.	#10…32 screw	16…8 AWG (stranding must be split for #8 wire)
	Box lug	14…4 AWG
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…65 °C (-40…150 °F)
Mounting Position	Vertical	All positions
	Horizontal	Base down only
Weight		1.5 lb

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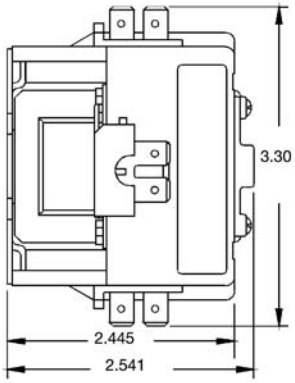
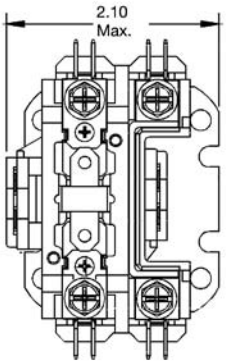
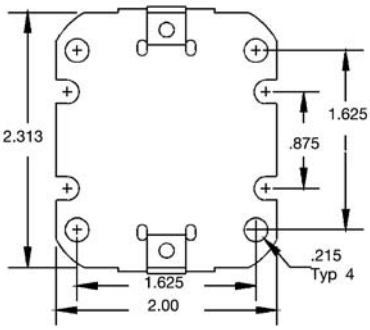
20/25…30 FLA 1- & 2-Pole

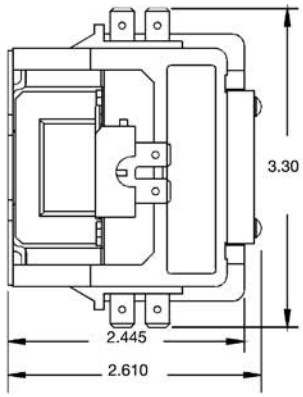
Dimensions shown in inches. Dimensions are not intended to be used for manufacturing purposes.

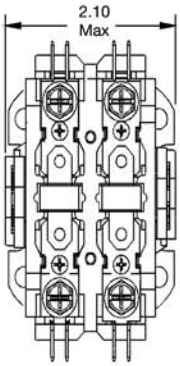


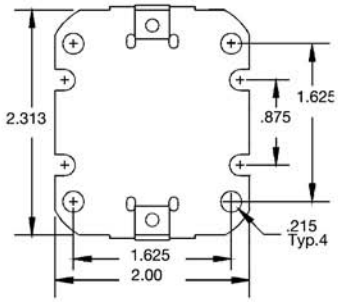




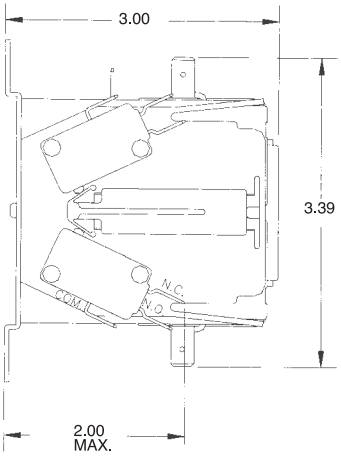
2 pole

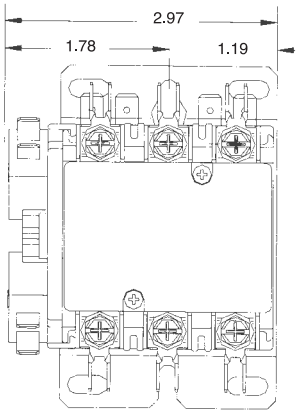


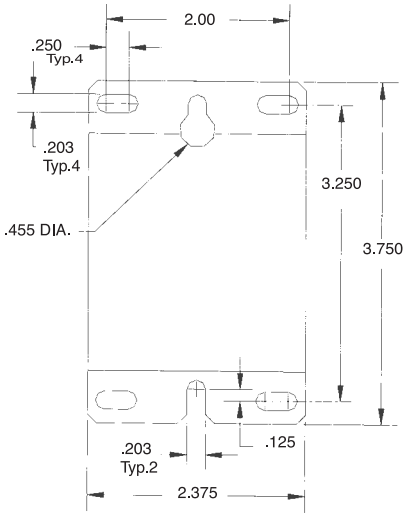




20/25…40 FLA 3-Pole

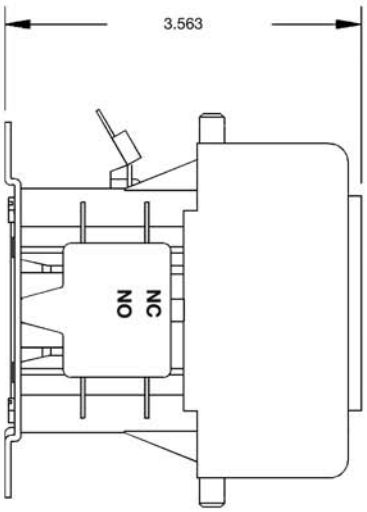


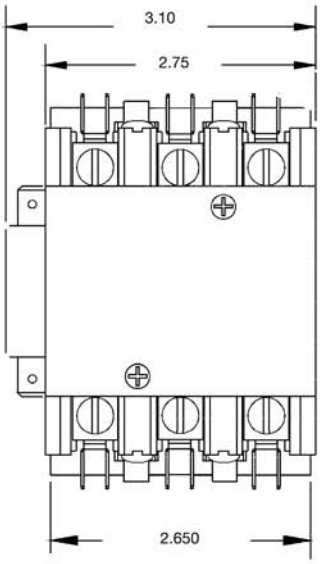


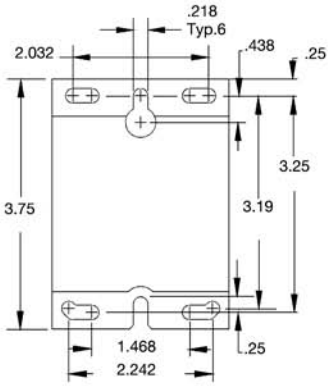


Dimensions shown in inches. Dimensions are not intended to be used for manufacturing purposes.

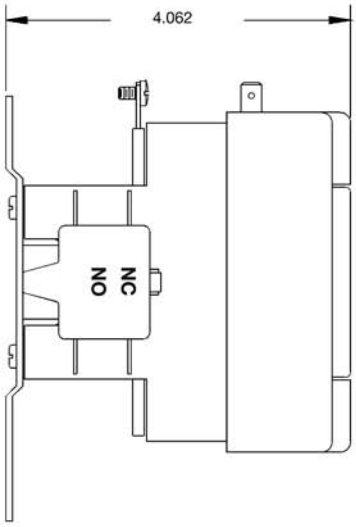
50 & 60 FLA 3-Pole

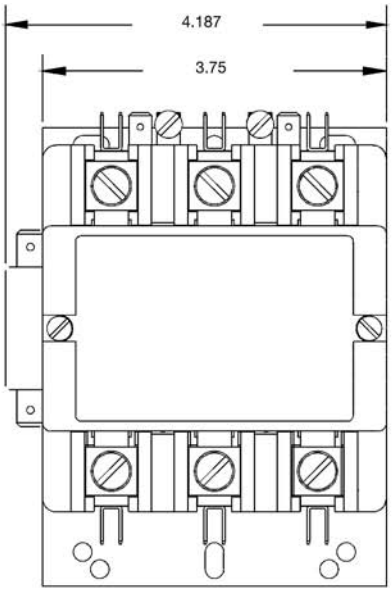


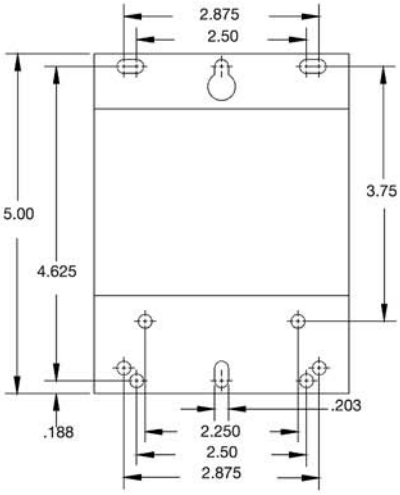




75 & 90 FLA 3-Pole





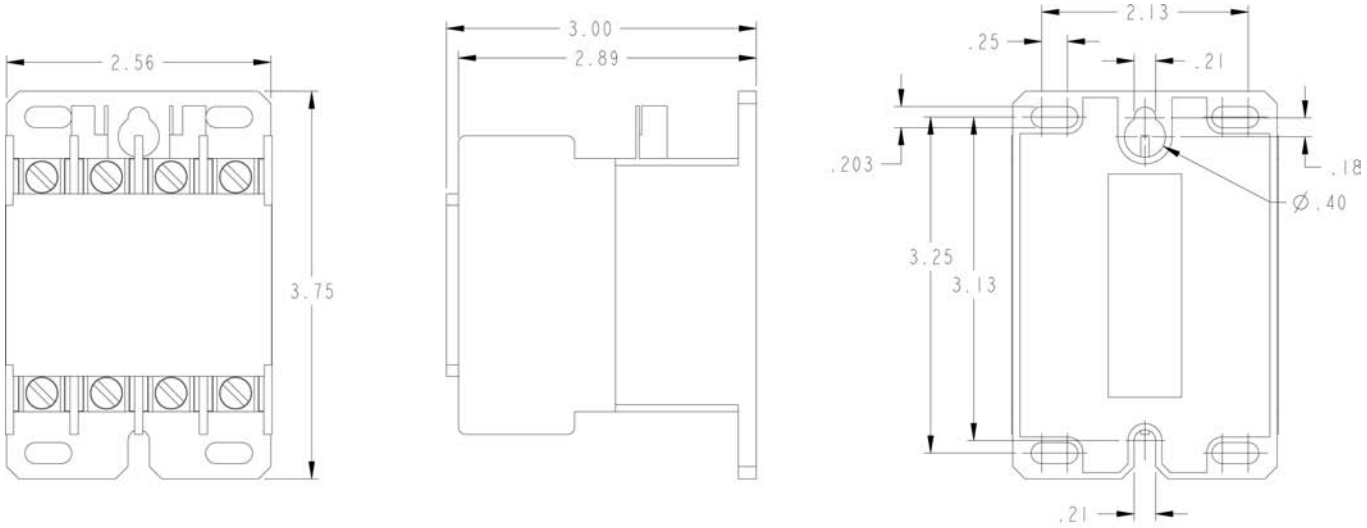


Definite Purpose Contactors

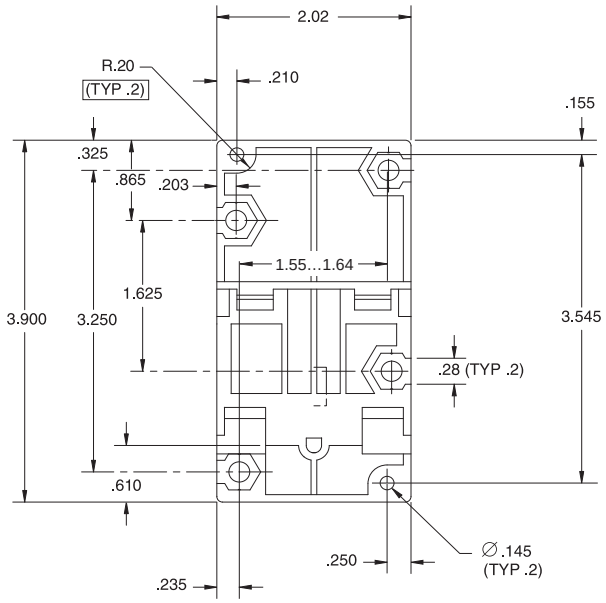
Approximate Dimensions, Continued

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

25…40 FLA 4-Pole



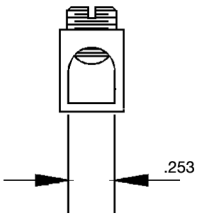
DIN Rail Adaptors



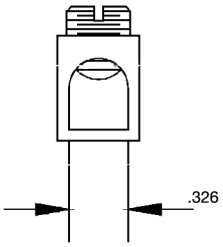
Terminations

Standard on DP25 and DP30
#10…32 combination Phillips, slotted & 5/16 hex head #12 washer

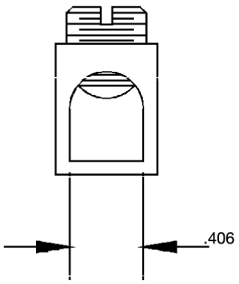
Special on DP25, DP30, and DP40
#10…32 Sems screw with pressure plate



40 FLA Lug 14…4 AWG



50 and 60 FLA Lug 14…2 AWG



75 and 90 FLA Lug 14…1/0 AWG

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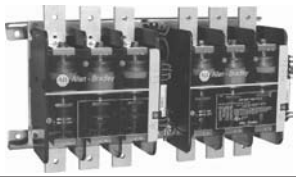
Vacuum Contactors and Starters

			
Bulletin	**1102C**	**1109**	**1104C**
Features	• Up to 1500V AC maximum • Space-saving design • Contacts sealed from harsh contamination – improved performance • Improved arc extinguishing above 600V – reduced contact erosion for higher voltages • Minimal mechanical movement minimizes downtime • DC magnet assembly reduces power consumption	• Up to 1500V AC maximum • Effective arc extinguishing above 600V • Compact size • Contacts sealed from harsh contamination – improved performance • Minimal mechanical movement minimizes downtime • DC magnet assembly reduces power consumption	• 1500V AC maximum • Effective arc extinguishing above 600V • Contacts sealed from harsh contamination – improved performance • Minimal mechanical movement minimizes downtime • DC magnet assembly reduces power consumption
Typical Industry Applications	• Mining and metals • Process equipment • Chemical processing • Conveyors • Pumps • Petroleum • Hoists • Mining equipment	• Mining and metals • Process equipment • Chemical processing • Conveyors • Pumps • Petroleum • Hoists • Mining equipment • Other harsh environments where voltages above 600V are used	• Pharmaceutical industry • Petroleum industry • Cement and metal processing • Pulp and paper industries • Cranes and hoists • Chemical Processing • Pumps • Mining • Foundries
Horsepower Ratings Motor Voltage	• 200…1500V • 50…1200 Hp	• 200…1500V • 50…1200 Hp	• 200…1500V • 60…1200 Hp
Capacitor Switching	• 240…1500V • 62…1250 kVAR	—	—
Transformer Primary Switching	• 240…1500V • 55…2076 kVA	—	—
Continuous Current Rating [A]	200…600 A	200…600 A	200…600 A
Certifications	cULus Listed (File No. E3125 Guide No. NLDX / NLDX7)	cULus Listed (File No. E3125 Guide No. NLDX / NLDX7)	cULus Listed (File No. E3125 Guide No. NLDX / NLDX7)
Product Selection	**Page 1-16**	**Page 1-17**	**Page 1-18**

Non-Reversing Vacuum Contactors

Overview/Catalog Number Explanation/Product Selection

Bulletin 1102C

- 1500V AC maximum
- Current ratings: 200, 400, and 600 A
- Visual ON/OFF indicator
- Line and load terminals up front for ease of wiring
- Typical industry applications include:
  - Foundries
  - Chemical processing
  - Conveyors
  - Pumps
  - Cranes
  - Mining equipment

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

Table of Contents

Standards Compliance

UL 508
CSA 22.2 No. 14
EN60947-4 (1000V)

Certifications

cULus Listed (File No. E3125, Guide No. NLDX, NLDX7)

Configuration of a Basic Vacuum Contactor

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.

1102C –	B	O	D	93
	a	*b*	*c*	*d*

a

Continuous Current Rating [A]	
Code	Description
B	200
C	400
D	600

b

NEMA Enclosure Type	
Code	Type
O	Open type — no enclosure

c

Control Voltage		
Code	Voltage	Frequency
A	230…240V AC	60 Hz
B	460…480V AC	60 Hz
D	120V AC	60 Hz
N	380…415V AC	60 Hz
G	125V DC	—
H	250V DC	—

d

Options	
Code	Description
93	3-pole contactor

Product Selection

3-Phase, 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		
62	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
200	366	500	830	1250	249	450	620	1384	2076	600	1102C-DO⊗93

Motor Switching Ratings														
200V / 208V		220V / 240V		380V / 415V		440V / 480V		550V / 600V		1000V		1500V		
[Hp]	[kW]	[Hp]	[kW]	[Hp]	[kW]	[Hp]	[kW]	[Hp]	[kW]	[Hp]	[kW]	[Hp]	[kW]	Cat. No.‡
60	45	75	56	100	75	150	112	200	150	300	224	500	373	**1102C-BO⊗93**
125	93	150	112	200	150	300	224	400	298	700	522	1000	746	1102C-CO⊗93
200	149	200	149	350	261	400	298	600	447	1000	746	1200	895	1102C-DO⊗93

⊗ Control Voltage Code

The cat. no. is incomplete. To complete the cat. no., select a control voltage code from the table below and insert into the cat. no. Example: **Cat. No. 1102C-BO⊗93** becomes **Cat. No. 1102C-BOD93**.

[V]‡		120	125	240	250	380…415	440…480
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 (page 1-19).

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Preferred availability cat. nos. are printed in **bold**

Bulletin 1109

- 1500V AC maximum
- Current ratings: 200, 400, and 600 A
- Time-proven eutectic or solid-state overload protection with current transformers
  - – E1 Plus overload relay with wide 5:1 adjustment range
- Line and load terminals up front for ease of wiring
- Visual ON/OFF indicator
- Snap-on side-mount auxiliary contacts

The Bulletin 1109 open-type starter is designed for use up to 1500V. Vacuum starters are particularly well-suited in mining, pumping, and other harsh environments where voltages above 600V are used. The Bulletin 1109 line uses vacuum bottles to enclose the power-switching contacts within the starter. The use of vacuum technology results in particularly effective arc extinguishing above 600V and results in a very compact, long-lasting starter.

Table of Contents

Standards Compliance

UL 508
CSA 22.2 No. 14
EN60947-4 (1000V)

Certifications

cULus Listed (File No. E3125, Guide No. NLDX, NLDX7)

1

Configuration of a Basic Vacuum 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.

1109 – B (*a*) O (*b*) D (*c*) – EEJ (*d*)

a

Continuous Current Rating [A]	
Code	Description
B	200
C	400
D	600

b

NEMA Enclosure Type	
Code	Type
O	Open type — no enclosure

c

Control Voltage		
Code	Voltage	Frequency
A	230…240V AC	60 Hz
B	460…480V AC	60 Hz
D	120V AC	60 Hz
G	125V DC	—
H	250V DC	—
N	380…415V AC	60 Hz

d

Overload Relay Code			
Code	Description	Current Range [A]	Starter Size
Blank	Eutectic alloy	Heater elements	200, 400, 600
EEJ	E1 Plus solid-state	40…200	200
EEW		80…400	400
EEM		120…600	600

Product Selection

3-Phase, 200…1500V, 60 Hz

Motor Switching Ratings													
200…208V		220…240V		440…480V		550…600V		1000V		1500V		Continuous Current Rating [A]	Cat. No.
[Hp]	[kW]	[Hp]	[kW]	[Hp]	[kW]	[Hp]	[kW]	[Hp]	[kW]	[Hp]	[kW]		
50	37	75	56	150	112	200	149	300	224	500	373	200	**1109-BO⊗-✪**
125	93	150	112	300	224	350	261	700	522	850	634	400	**1109-CO⊗-✪**
200	149	200	149	400	298	600	447	1000	746	1200	895	600	**1109-DO⊗-✪**

⊗ Control Voltage Code

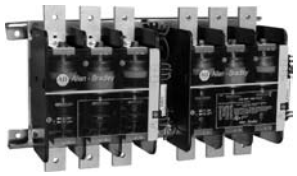
The cat. no. is incomplete. To complete the cat. no., select a control voltage code from the table below and insert into the cat. no.
Example: **Cat. No. 1109-BO⊗** becomes **Cat. No. 1109-BOD**.

	[V]	120	125	240	250	380…415	440…480
AC	50/60 Hz	D	—	A	—	N	B

✪ 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 1-202 to complete the cat. no.
Example: **Cat. No. 1109-BOD-✪** becomes **Cat. No. 1109-BOD-EEJ**.

1



Bulletin 1104C

- 1500V AC maximum
- Current ratings: 200, 400, and 600 A
- Visual ON/OFF indicator
- Line and load terminals up front for ease of wiring
- Typical industry applications include:
  - Mining equipment
  - Foundries
  - Chemical processing
  - Conveyors
  - Cranes and hoists
  - Pumps

The Bulletin 1104C reversing contactor consists of two Bulletin 1102C vacuum contactors mounted vertically on a common base. Contactors are mechanically and electrically interlocked to avoid both contactors being closed simultaneously. Vacuum contactors are particularly well-suited for mining, pumping, and other applications where voltages above 600V are used.

Table of Contents

Standards Compliance

UL 508
CSA C22.2, No. 14

Certifications

cULus Listed
(File No. E3125;
Guide No. NLDX, NLDX7)

Configuration of a Basic Vacuum Contactor

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.

1104C – B O D 93
a b c d

a

Continuous Current Rating [A]	
Code	Description
B	200
C	400
D	600

b

NEMA Enclosure Type	
Code	Type
O	Open type — No enclosure

c

Control Voltage		
Code	Voltage	Frequency
A	230…240V AC	60 Hz
D	120V AC	60 Hz
G	125V DC	—

d

Options	
Code	Description
93	3-pole contactor only

Product Selection
3-Phase, 1500V Maximum, 60 Hz

Motor Switching Ratings														Cont. Current Rating [A]	Cat. No.‡
240…208V		220…240V		380…415V		440…480V		550…600V		1000V		1500V			
[Hp]	[kW]	[Hp]	[kW]	[Hp]	[kW]	[Hp]	[kW]	[Hp]	[kW]	[Hp]	[kW]	[Hp]	[kW]		
60	45	75	56	100	75	150	112	200	150	300	224	500	375	200	1104C-BO⊗
125	93	150	112	200	149	300	224	400	298	700	522	1000	746	400	1104C-CO⊗
200	149	200	149	350	261	400	298	600	447	1000	746	1200	895	600	1104C-DO⊗

⊗ Control Voltage Code

The cat. no. is incomplete. To complete the cat. no., select a control voltage code from the table below and insert into the cat. no.
Example: **Cat. No. 1104C-BO⊗93** becomes **Cat. No. 1104C-BOD93**.

	[V]‡	120	125	240
AC	50/60 Hz	**D**	—	**A**
DC	—	—	G	—

✶ 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 (page 1-19).

Accessories

Auxiliary Contacts

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

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

Control Module

Side-mounted module for DC input voltage

Continuous Current Rating [A]	Input Voltage	Cat. No.
200/400/600	125V DC	1195C-N5
	250V DC	1195C-N6

Control Pak

Side-mounted module for DC coil power

Continuous Current Rating [A]	Input Voltage	Cat. No.
200	110/120V AC	**1102C-CP2D**
	220/240V AC	1102C-CP2A
	380/415V AC	1102C-CP2N
	440/480V AC	1102C-CP2B
400/600	110/120V AC	**1102C-CP46D**
	220/240V AC	1102C-CP46A
	380/415V AC	1102C-CP46N
	440/480V AC	1102C-CP46B

Coil Kit

Contains DC coil mounted in the sheet metal frame assembly that attaches to the contactor mounting plate

Continuous Current Rating [A]	Input Voltage	Control Pak Voltage	Cat. No.
200	108V DC	110/120V AC	1102C-PK2D
		220/240V AC	1102C-PK2A
		380/415V AC	1102C-PK2N
		440/480V AC	1102C-PK2B
	125V DC	—	1102C-PK2G
	250V DC	—	1102C-PK2H
400	108V DC	110/120V AC	1102C-PK4D
		220/240V AC	1102C-PK4A
		380/415V AC	1102C-PK4N
		440/480V AC	1102C-PK4B
	125V DC	—	1102C-PK4G
	250V DC	—	1102C-PK4H
600	108V DC	110/120V AC	1102C-PK6D
		220/240V AC	1102C-PK6A
		380/415V AC	1102C-PK6N
		440/480V AC	1102C-PK6B
	125V DC	—	1102C-PK6G
	250V DC	—	1102C-PK6H

Vacuum Interrupter Phase Assembly Kit

Replacement for one vacuum interrupter phase

Current Rating of Interrupter [A]	Cat. No.
200 A Vacuum Interrupter Phase Assembly	1102C-VB2
400 A Vacuum Interrupter Phase Assembly	1102C-VB4
600 A Vacuum Interrupter Phase Assembly	1102C-VB6

1

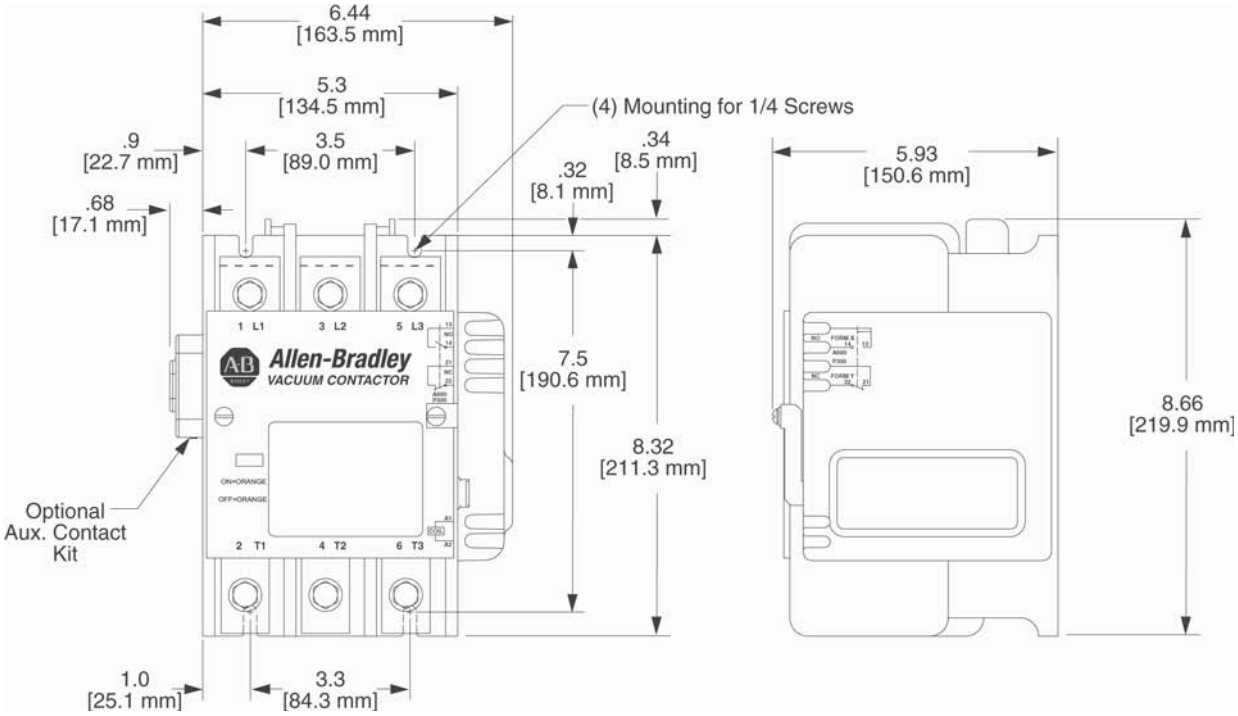
Specifications

	200 A	400 A	600 A
Standards	EN 60947-4 1000V UL 508 CSA 22.2 1500V	EN 60947-4 1000V UL 508 CSA 22.2 1500V	EN 60947-4 1000V UL 508 CSA 22.2 1500V
Power Ratings			
Insul. & Operating Voltage	200…1500V	200…1500V	200…1500V
Rated Fequency	50…400 Hz	50…400 Hz	50…400 Hz
Making Current Capacity	1600 A	3200 A	4800 A
Breaking Current Capacity	1600 A	3200 A	4800 A
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
Short Circuit Withstand (Max.)	10 kA symmetrical amps @ 1500V AC	18 kA symmetrical amps @ 1500V AC	30 kA symmetrical amps @ 1500V AC
Mechanical Life	1 200 000	1 000 000	750 000
Elect. Life AC3 Duty	500 000	500 000	250 000
Switching Frequency (Mechanical) 1102C, 1109 1104C	1000/hr (max.) 1.5/s (full cycle)	1000/hr (max.) 1.5/s (full cycle)	1000/hr (max.) 1.5/s (full cycle)
Withstand current for 3 sec [kA]	3.2	6.0	6.5
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	1200VA	1100VA	1600VA
Sealed Power VA	12VA	12VA	14VA
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 m)	6600 ft (2000 m)	6600 ft (2000 m)
Ambient Storage	-65…+160 °F (-54…71 °C)	-65…+160 °F (-54…71 °C)	-65…+160 °F (-54…71 °C)
Operating Temperature	-40…+135 °F (-40…57 °C)	-40…+135 °F (-40…57 °C)	-40…+135 °F (-40…57 °C)
Vibration/Shock	40 Hz-2 G/50 G	40 Hz-2 G/50 G	40 Hz-2 G/50 G

Approximate Dimensions

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

Bulletin 1102C (200 A)



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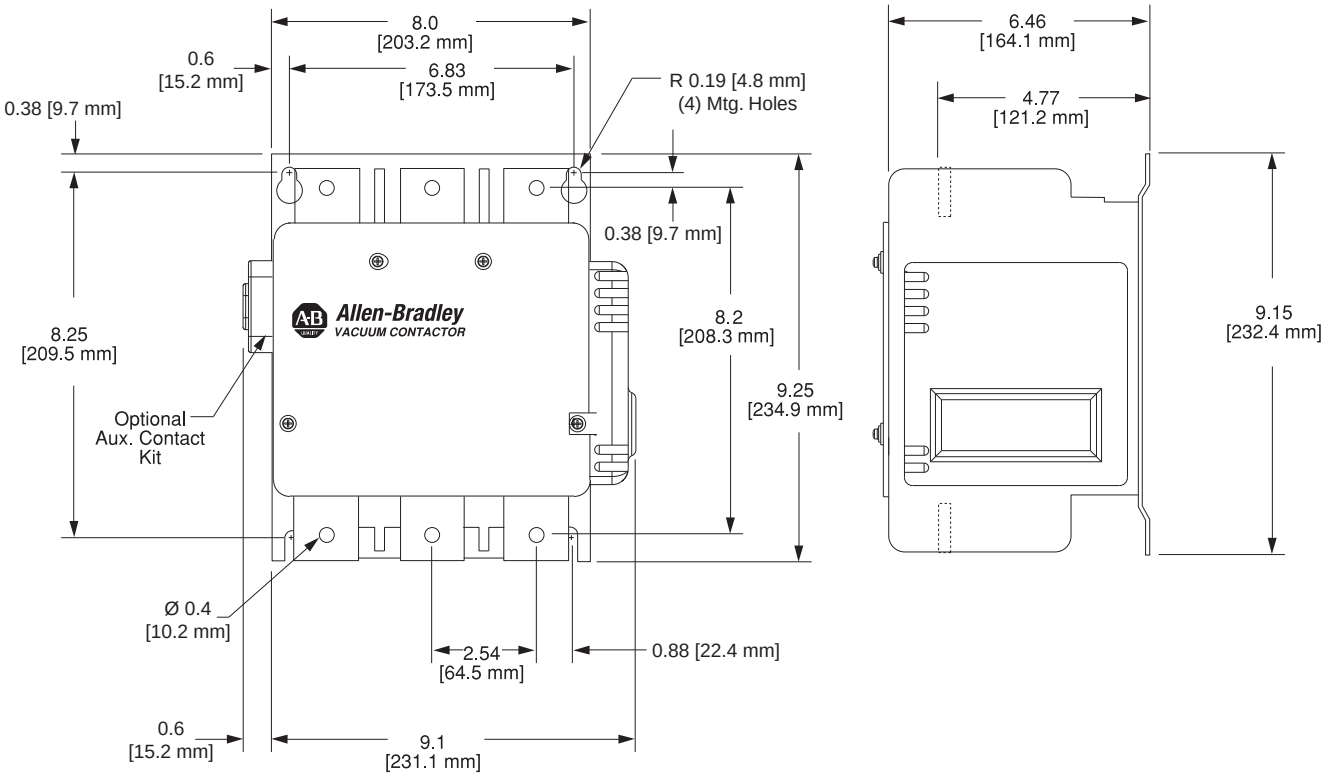
Allen-Bradley

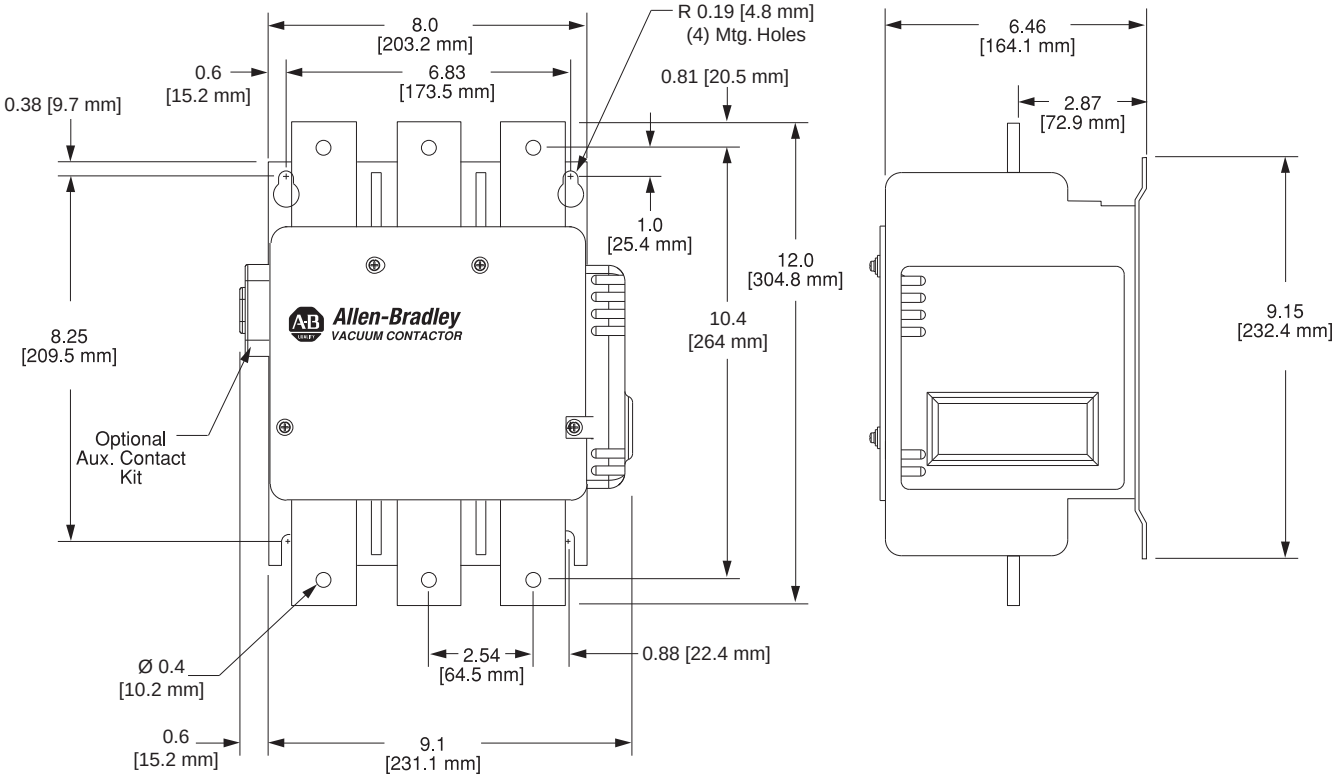
1

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

Bulletin 1102C (400 A and 600 A)



400A



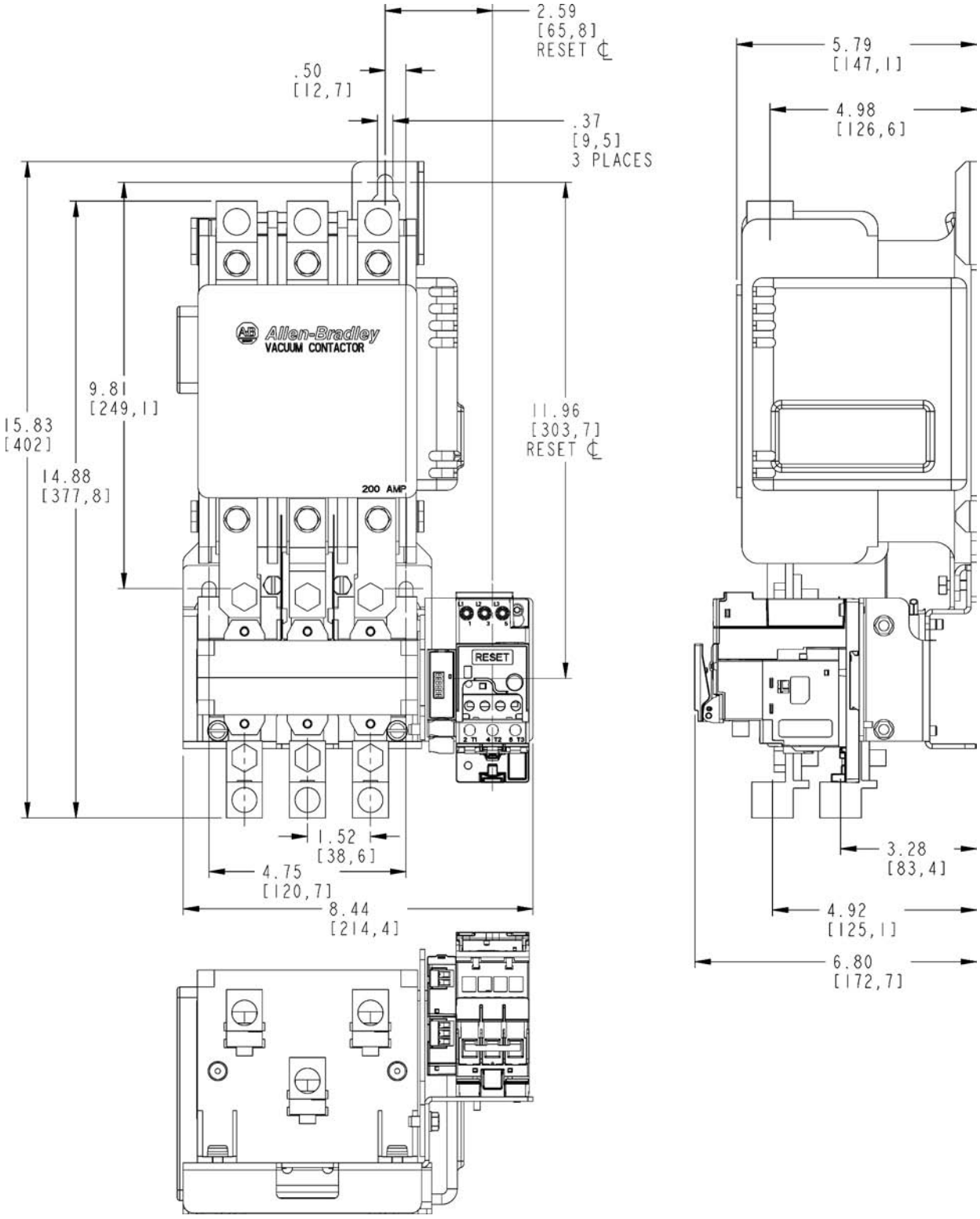
600A

1

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

Bulletin 1109 (200 A)

With E1 Plus Overload



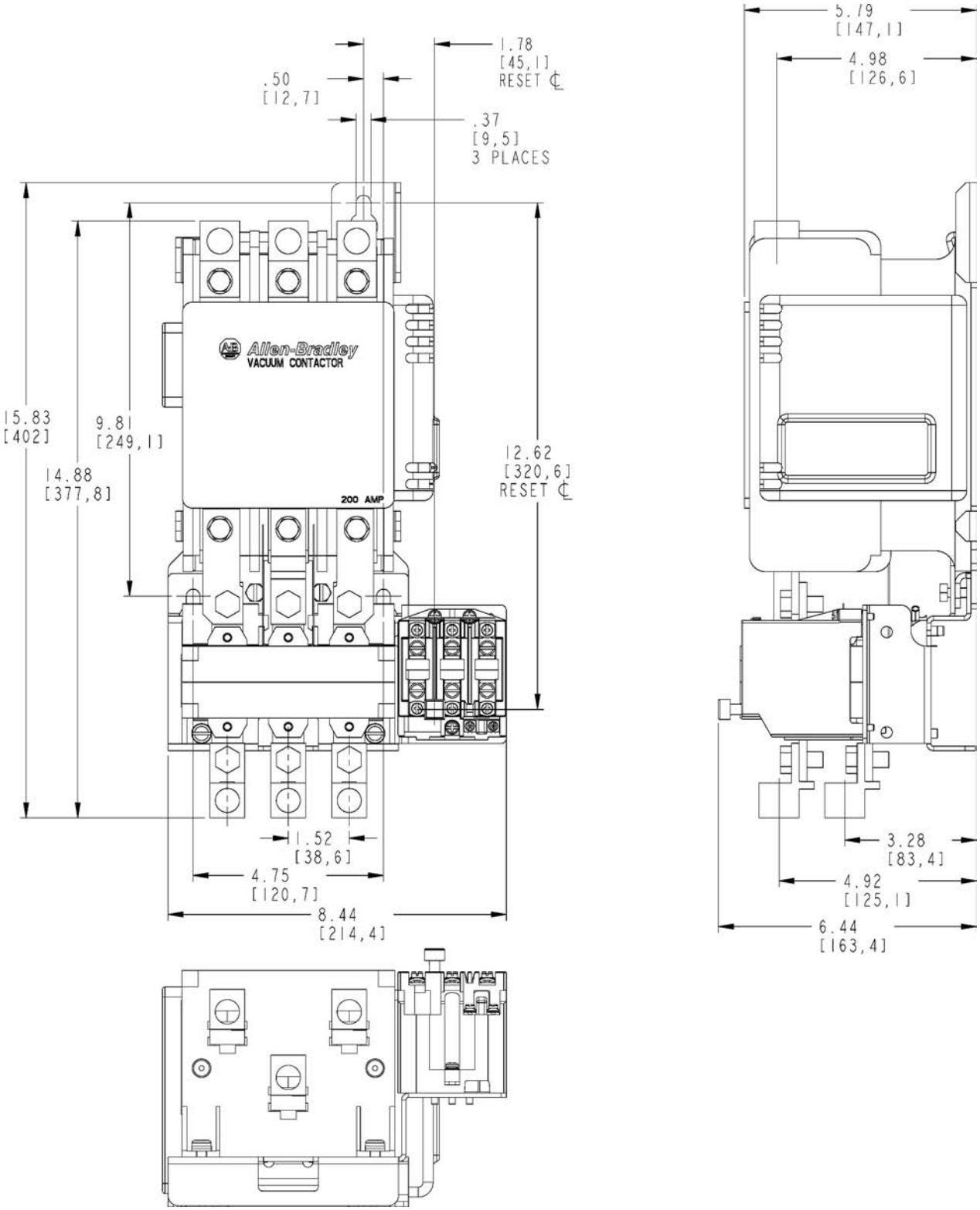
Visit our website: www.ab.com/catalogs
Preferred availability cat. nos. are printed in **bold**

Allen-Bradley

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

Bulletin 1109 (200 A), Continued

With Eutectic Overload

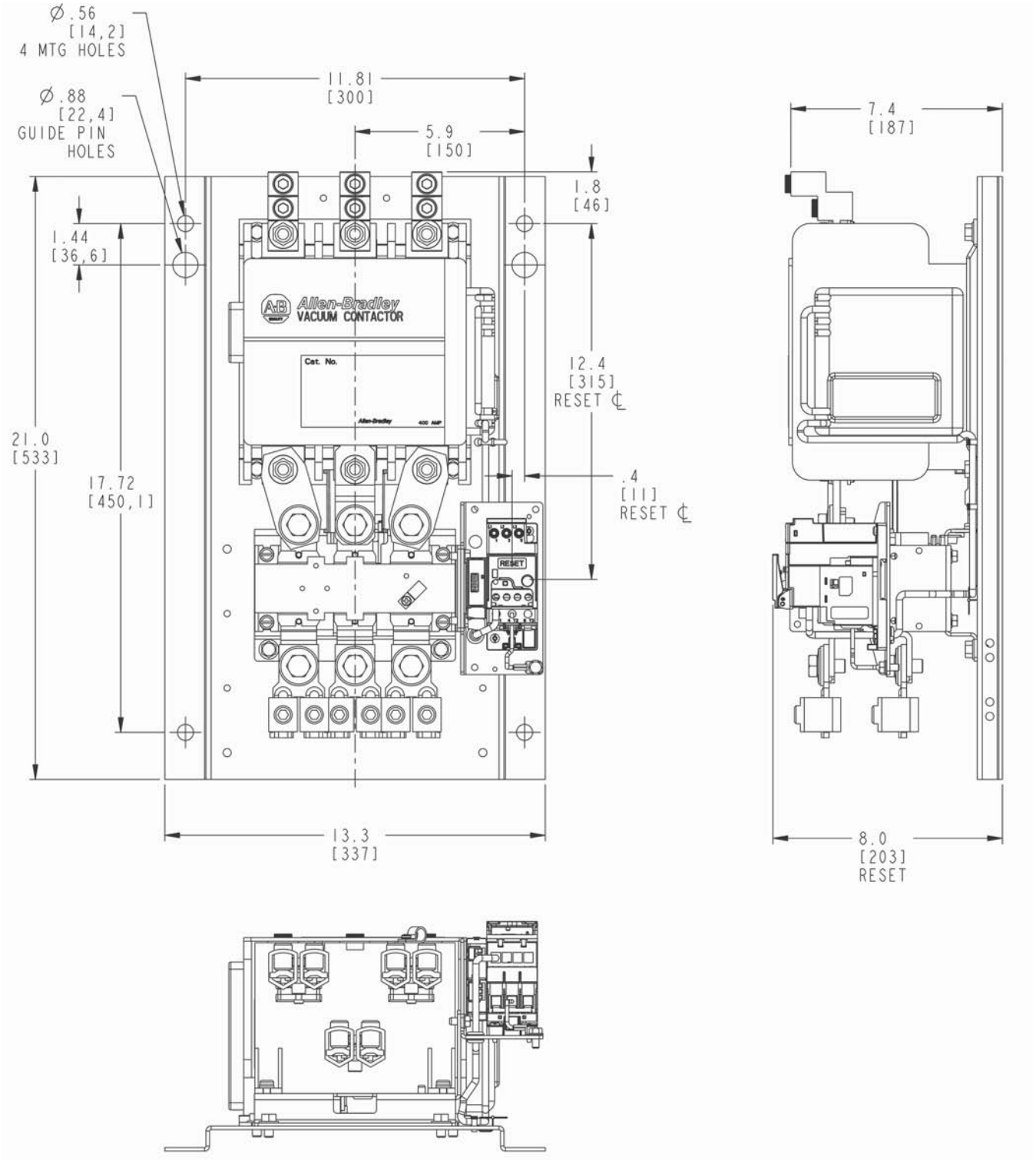


1

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

Bulletin 1109 (400 A)

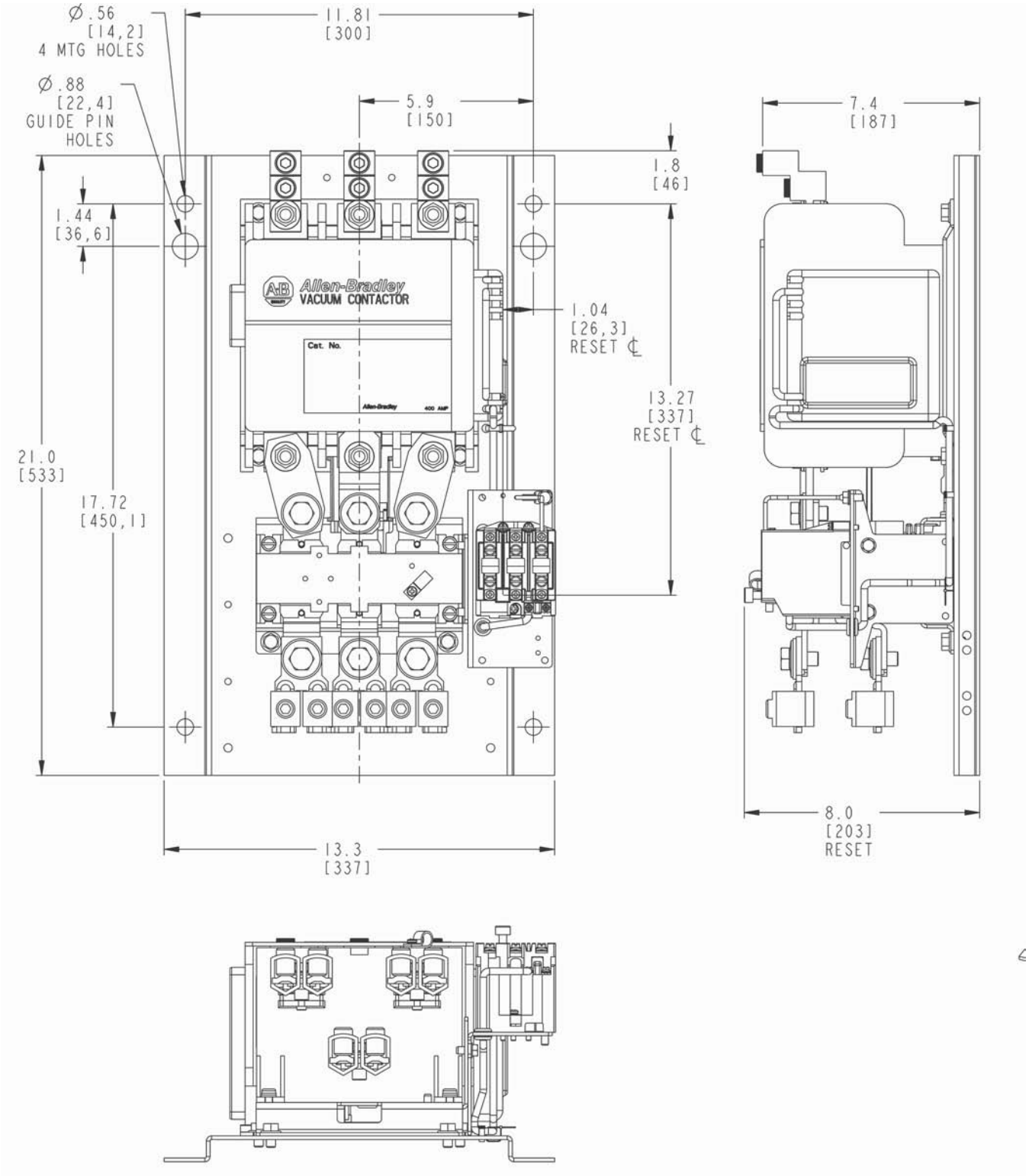
With E1 Plus Overload



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

Bulletin 1109 (400 A), Continued

With Eutectic Overload

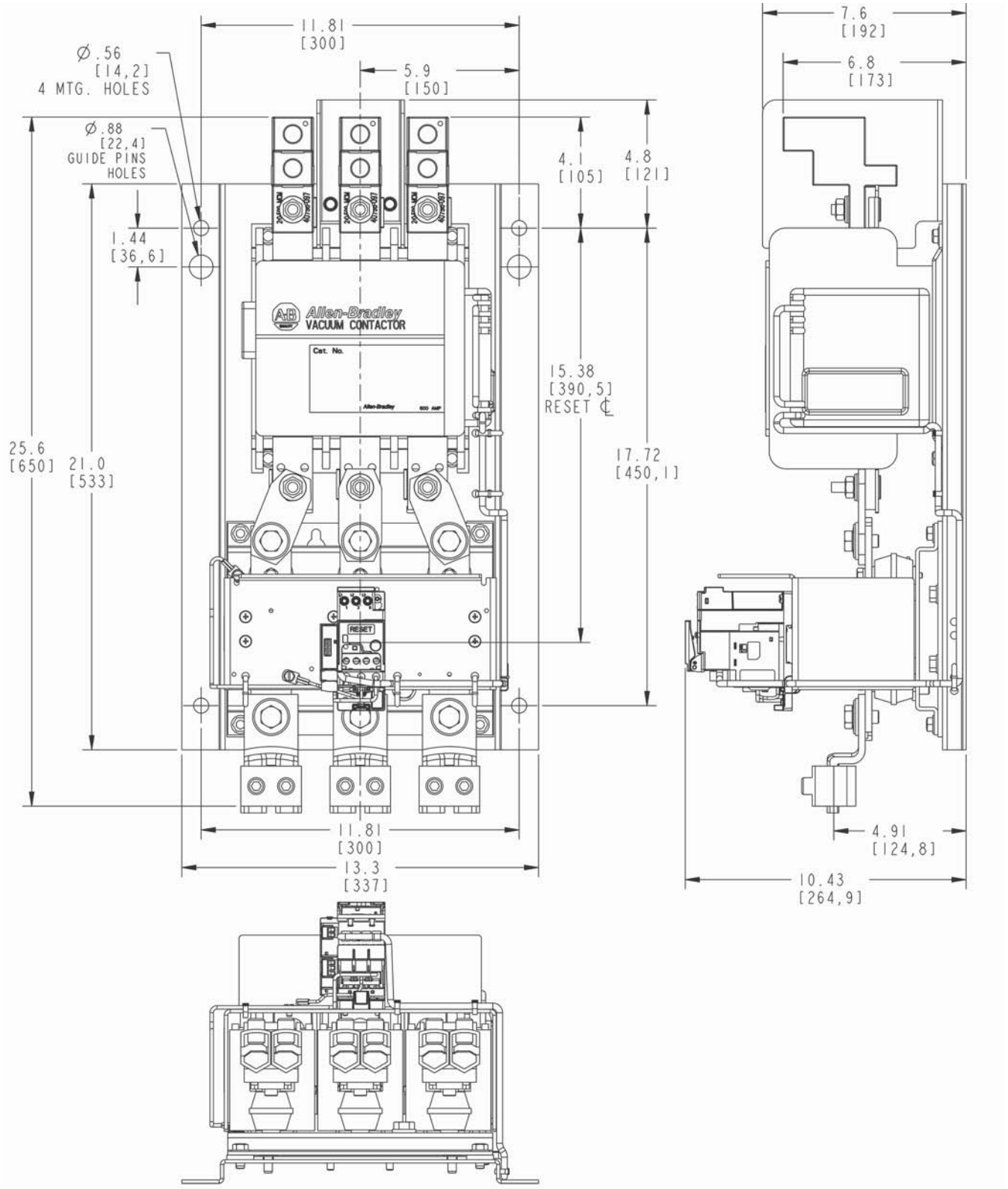


1

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

Bulletin 1109 (600 A)

With E1 Plus Overload

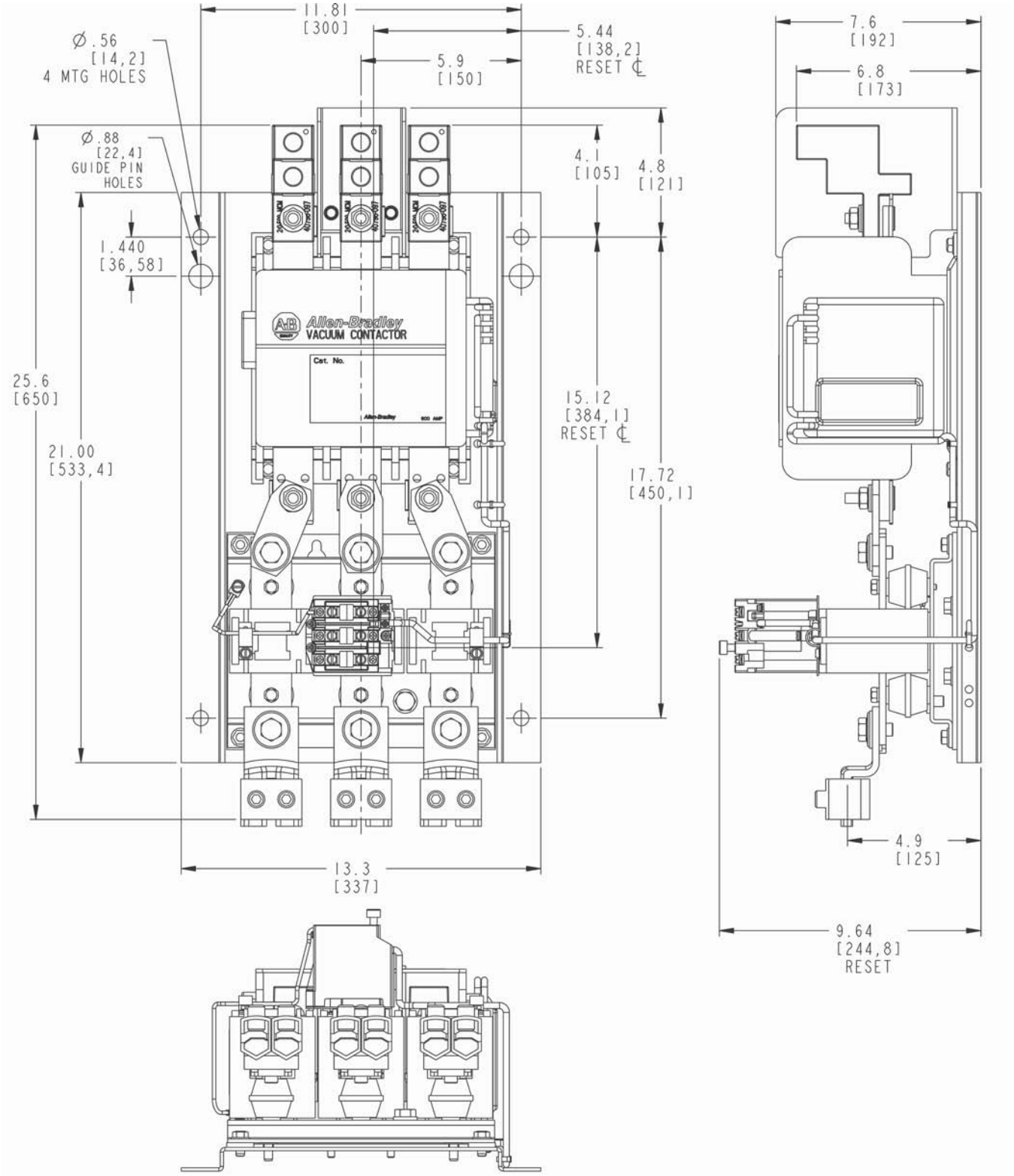


1

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

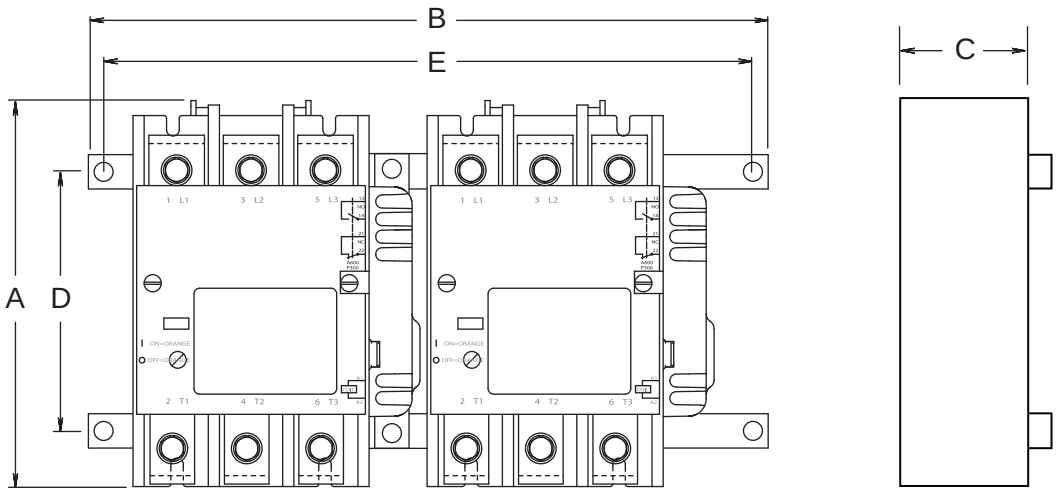
Bulletin 1109 (600 A), Continued

With Eutectic Overload



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

Bulletin 1104C (200, 400, 600 A)



Contactor Size [A]	A Height	B Width	C Depth	D Mounting Height	E Mounting Width
200	8.375 (213)	14 (358)	6.5 (202)	7 (210)	13 (322)
400	9.25 (235)	19 (480)	7.10 (232)	7.85 (272)	18 (452)
600	12 (305)	19 (480)	7.10 (232)	10.82 (280)	18 (452)

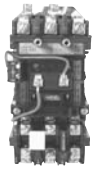
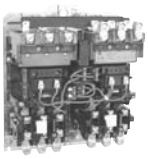
NEMA AC Contactors

		
Bulletin	**500**	**500F**
Features	Top Wiring for motor loads	Feed-through wiring for motor loads
NEMA Size	00…9	0…5
Continuous Ampere Rating [A]	9…2250	18…270
1-Phase 2 Power Poles	115…230V (1/3…15 Hp)	115…230V (1…15 Hp)
3-Phase 3 Power Poles	200…600V (1-1/2…1600 Hp)	200…600V (3…200 Hp)
3-Phase 4 Power Poles	200…600V (1-1/2…900 Hp)	—
3-Phase 5 Power Poles	200…600V (3…100 Hp)	—
Enclosures (NEMA Type)	1, 3R/12, 4/4X, 7, and 9	—
Standards	• NEMA/EEMAC ICS2 (Industrial Controls and Systems) • UL 508 • CSA C22.2, No. 14 • ABS 4/5.115 • USCG 46 CFR 111.70 • IEEE 45	• NEMA/EEMAC ICS2 (Industrial Controls and Systems) • UL 508 • CSA C22.2, No. 14 • ABS 4/5.115 • USCG 46 CFR 111.70 • IEEE 45
Certifications	• UL Listed (File No. E3125; Guide No. NLDX) • (File No. E10314; Guide No. NPKR) • CSA Certified (LR1234) • CE Marked (Per EN 60947) • American Bureau of Shipping (ABS)	• UL Listed (File No. E3125; Guide No. NLDX) • (File No. E10314; Guide No. NPKR) • CSA Certified (LR1234) • CE Marked (Per EN 60947) • American Bureau of Shipping (ABS)
Product Selection	**Page 1-31**	**Page 1-35**

	
Bulletin	**500DC — Electronic DC Coil Controller**
Features	• Compact size – NEMA Size 0…3 • Versatility – Fully assembled unit or as a retro-fit kit • LED status indication – LED diagnostics determine if the controller is functioning correctly • Low power consumption – Draws 3.5 watts steady state • Built-in thermal protection – The controller is protected from over temperature • Reverse polarity protection – Should the wiring be reversed during installation or coil change, no damage will occur
NEMA Size	• 0…1 • 2 • 3
DC Voltage	• 24V • 125…250V
Min. DC Inrush Switching Requirement for Logic Control Device	• 6.7 A • 4.9 A • 8.2 A • 7.0 A • 16.5 A • 14.3 A
Certifications	• cULus Listed (File No. E14840) • CE mark (per EN 60947)
Example Cat. No.	An example of a factory-assembled contactor catalog number is **Cat. No. 500DC-BOVL930**. For further details visit the on-line catalog.
For Use With	**Bulletin 500 (Page 1-30)**

1

NEMA Starters

			
Bulletin	**505**	**509**	**520**
Features	Reversing starters are most commonly used for full-voltage starting and reversing of polyphase squirrel-cage motors	These starters may be operated by remote control with push buttons, float switches, thermostats, pressure switches, snap switches, limit switches, or any other suitable 2- or 3-wire pilot device	• Multi-speed starters are designed for the control of two-speed squirrel-cage motors of either consequent pole or separate winding types • Open Type Bul. 520E, F, G
	3-Phase 600V, 3-Pole Overload Protection		
NEMA Size	00…9	00…9	0…7
Continuous Ampere Rating	9…2250 A	9…2250 A	18…810 A
Motor Voltage	200…575V (1.5…1600 Hp)	200…575V (1.5…1600 Hp)	200…575V (3…600 Hp)
	1-Phase 277V Max. 2-Pole Overload Protection		
NEMA Size	00…1	00…3	—
Continuous Ampere Rating	9…27 A	9…90 A	—
Motor Voltage	115…230V (1/3…3 Hp)	115…230V (1/3…15 Hp)	—
Enclosure Type	1, 3R/12, 4/4X, 7, and 9	1, 3R/12, 4/4X, 7, and 9	1, 3R/12, 4/4X, 7, and 9
Standards	• NEMA/EEMAC ICS 2 (Industrial Controls and Systems) • UL 508 • CSA C22.2, No. 14 • ABS 4/5.115 • USCG 46 CFR 111.70 • IEEE 45	• NEMA/EEMAC ICS 2 (Industrial Controls and Systems) • UL 508 • CSA C22.2, No. 14 • ABS 4/5.115 • USCG 46 CFR 111.70	• NEMA/EEMAC ICS (Industrial Controls and Systems) • UL 508 • CSA C22.2, No. 14 • ABS 4/5.115
Certifications	• UL Listed (File No. E3125; Guide No. NLDX) • CSA Certified (File LR 1234) • CE Marked (per EN 60947-4-1) • American Bureau of Shipping (ABS) • Hazardous Location: UL Listed (File No. E10314), CSA Certified (File No. LR 11924)		• UL Listed (File No. E3125; Guide No. NLDX) • CSA Certified (File LR 1234) • Hazardous Location: UL Listed (File No. E10314), CSA Certified (File No. LR 11924)
Product Selection	**Page 1-36**	**Page 1-42**	**Page 1-47**

	
Bulletin	**300**
Features	• Modular line of NEMA contactors • Space saving design • Electronic & conventional coils • DIN Rail mountable • Common accessories • Guarded terminals
NEMA Size	0…5
DIN Rail Mountable	✓
Certifications	cULus Listed (File No. E41850, Guide No. NLDX, NLDX7) CE Marked (per EN60947-4-1)
Product Selection	**Page 1-57**

	
Bulletin	**500DC — Electronic DC Coil Controller**
Features	• Compact size – NEMA sizes 0…3 • Versatility – Fully assembled unit or as a retro-fit kit • LED status indication – LED diagnostics determine if the controller is functioning correctly • Low power consumption – Draws 3.5 watts steady state • Built-in thermal protection – The controller is protected from over temperature • Reverse polarity protection – Should the wiring be reversed during installation or coil change, no damage will occur
NEMA Size	0…1, 2, and 3
DC Voltage	• 24V • 125…250V
Min. DC Inrush Switching Requirement for Logic Control Device	• 6.7 A • 4.9 A • 8.2 A • 7.0 A • 16.5 A • 14.3 A
Certifications	• cULus Listed (File No. E14840, Guide No. NKCR, NKCR7) • CE mark (per EN 60947-5-1)
Example Cat. No.	An example of a factory-assembled contactor catalog number is **Cat. No. 500DC-BOVL930**. For further details visit the on-line catalog.
For Use With	**Bulletin 509 (Page 1-42).** **For Bulletins 505 and 520, consult your local Rockwell Automation sales office or Allen-Bradley distributor.**

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 (stainless steel), 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.

Table of Contents

1

Standards Compliance

- 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

Certifications

- 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	Contactor — Feed-through wiring contactor for motor loads
500FL	Contactor — Feed-through lighting contactor, 3 pole maximum
500L	Contactor — Top wired lighting contactor
505	Starter — Reversing
509	Starter — Non-reversing
520	Starter — Multispeed

b

NEMA Size	
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 (stainless steel)
E	Type 7 & 9 bolted
H	Type 3R, 7 & 9 bolted
J	Type 12
O	No enclosure
S	Type 4X (non-metallic)

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*	
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

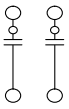
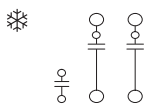
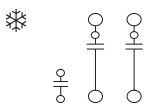
Options
See catalog for detailed information on options.

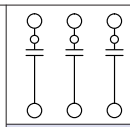
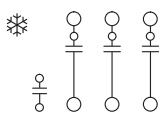
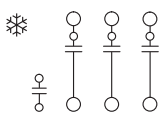
Note: All enclosed non-combination contactors and starters are supplied with external reset as standard.

*Applies to contactors only

1

Top Wiring For Motor Loads

NEMA Size	Continuous Ampere Rating [A]	Max. 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						
		115V	230V	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.
1-Phase • 2 Power Poles • 600V AC Maximum • 60 Hz								
00	9	1/3	1	500-TO⊗92	**500-TO⊗920**	**500-TA⊗920**	—	—
0	18	1	2	**500-AO⊗92**	**500-AO⊗920**	500-AA⊗920	**500-AJ⊗920**	**500-AC⊗920**
1	27	2	3	500-BO⊗92	**500-BO⊗920**	500-BA⊗920	**500-BJ⊗920**	**500-BC⊗920**
2	45	3	7-1/2	—	500-CO⊗920	500-CA⊗920	**500-CJ⊗920**	**500-CC⊗920**
3	90	7-1/2	15	—	500-DO⊗920	**500-DA⊗920**	**500-DJ⊗920**	**500-DC⊗920**
4	135	—	—	—	500-EO⊗920	**500-EA⊗920**	**500-EJ⊗920**	**500-EC⊗920**
5	270	—	—	—	500-FO⊗920	**500-FA⊗920**	**500-FJ⊗920**	**500-FC⊗920**
6	540	—	—	—	—	—	—	—
7‡	810	—	—	—	500-HO⊗920	500-HA⊗920	500-HJ⊗920	500-HC⊗920
8‡	1215	—	—	—	500-JO⊗920	500-JA⊗920	—	—
9‡	2250	—	—	—	500-KO⊗920	500-KA⊗920	—	—

NEMA Size	Continuous Ampere Rating [A]	200V	230V	50 Hz 380…415V	460…575V												
						Cat. No.	Cat. No.	Cat. No.		Cat. No.		Cat. No.		Cat. No.		Cat. No.	
3-Phase • 3 Power Poles • 600V AC Maximum • 60 Hz																	
00	9	1-1/2	1-1/2	2	2	500-TO⊗93	**500-TO⊗930**	11	500-TA⊗930		—		—				
0	18	3	3	5	5	**500-AO⊗93**	**500-AO⊗930**	11	500-AA⊗930	11	**500-AJ⊗930**	11	**500-AC⊗930**				
1	27	7-1/2	7-1/2	10	10	**500-BO⊗93**	**500-BO⊗930**	11	500-BA⊗930	11	500-BJ⊗930	11	**500-BC⊗930**				
2	45	10	15	25	25	—	500-CO⊗930		**500-CA⊗930**		500-CJ⊗930		**500-CC⊗930**				
3	90	25	30	50	50	—	500-DO⊗930		500-DA⊗930		**500-DJ⊗930**		**500-DC⊗930**				
4	135	40	50	75	100	—	**500-EO⊗930**		500-EA⊗930		**500-EJ⊗930**		**500-EC⊗930**				
5	270	75	100	150	200	—	500-FO⊗930		**500-FA⊗930**		**500-FJ⊗930**		**500-FC⊗930**				
6‡§	540	150	200	300	400	—	500-GO⊗930	♣	500-GA⊗930	♣	500-GJ⊗930	♣	500-GC⊗930				
7‡	810	—	300	600	600	—	500-HO⊗930		500-HA⊗930		500-HJ⊗930		500-HC⊗930				
8‡	1215	—	450	900	900	—	**500-JO⊗930**		500-JA⊗930		—		—				
9‡	2250	—	800	1600	1600	—	500-KO⊗930		500-KA⊗930		—		—				

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 500-AO⊗92** becomes **Cat. No. 500-AOD92**. For other voltages, consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]	24➢	110-115	115-120	200-208	220-230	230-240	240	277	380	380-400	415	440-460	460-480	500	550	575-600
AC, 50 Hz	K	S⌘	—	—	P❖	—	T	—	N	KN	I	Q	—	M	R	—
AC, 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 1-122 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 vaules on page 1-139.
⌘ 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.
11 These devices may be ordered without an auxiliary.

Top Wiring For Motor Loads, Continued

NEMA Size	Continuous Ampere Rating [A]	Max. Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating" — Motor Voltage 200V	230V	50 Hz 380…415V	50 Hz 460…575V	Open Type Without Enclosure — Without Auxiliary Contact	Open Type Without Enclosure — With One N.O. 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∗
						Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.
3-Phase • 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**
3-Phase • 5 Power Poles • 600V AC Maximum • 60 Hz										
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**

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage 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 your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]	24§	110-115	115-120	200-208	220-230	230-240	240	277	380	380-400	415	440-460	460-480	500	550	575-600
AC, 50 Hz	K	S♣	—	—	P⌘	—	T	—	N	KN	I	Q	—	M	R	—
AC, 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 vaules on page 1-139.
♣ 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 1-121
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Approximate Dimensions — page 1-143

Top Wiring for Motor Loads, Continued

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

* For cat. no. information, please consult your local Rockwell Automation sales office or Allen-Bradley distributor..

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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

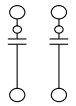
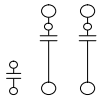
- NEMA/EEMAC ICS 2
- UL 508
- CSA C22.2 No.14
- ABS 4/5.115 — American Bureau of Shipping
- UCSG 46 CFR 111.70
- IEEE 45
- EN/IEC 60947-4-1

Certifications

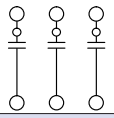
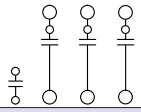
- CE Marked
- CSA Certified (LR1234)
- UL Listed (File No. E3125, Guide No. NLDX)

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-Phase		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-Phase				Cat. No.	Cat. No.
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

⊗ Coil Voltage Code

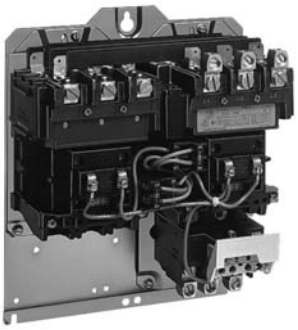
The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no.
Example: **Cat. No. 500F-AO⊗92** becomes **Cat. No. 500F-AOD92**. For other voltages, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]	24∗	110-115	115-120	200-208	220-230	230-240	240	277	380	380-400	415	440-460	460-480	500	550	575-600
AC, 50 Hz	K	S❄	—	—	P§	—	T	—	N	KN	I	Q	—	M	R	—
AC, 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 1-139.
❄ 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

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 available — Bulletin 505V sizes 0…5
- Enclosure ratings — NEMA Type 1, 3R/12, 4/4X stainless steel, 4/4X fiberglass reinforced, and 7 & 9 hazardous location
- 3-phase and single-phase available
- Reversing contactors also available

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Standards Compliance

- 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

Certifications

- 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…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.

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements. See page 1-177 for heater element selection tables.

3-Phase • 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" — Motor Voltage 200V	230V	50 Hz 380…415V	460…575V	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.∗‡
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⊗-✪	—	—	

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 505-AA⊗-✪** becomes **Cat. No. 505-AAD-✪**. For other voltages, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		24➢	110V-115	115-120	200-208	220-230	230-240	240	277	380	380-400	415	440-460	460-480	500	550	575-600
Common Control⌘	AC, 50 Hz	—	—	—	—	P♠	—	T	—	N	KN	I	Q	—	M	R	—
	AC, 60 Hz	—	—	—	**H**	—	**A**[11]	—	—	—	—	U	—	**B**	—	—	**C**
Transformer Control	AC, 60 Hz	—	—	—	**H**	—	**A**	—	—	—	—	—	—	**B**	—	—	**C**
Separate Control (without transformer)	AC, 50 Hz	K	S✦	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AC, 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 1-169 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…8 are painted enclosures.
§ Does not include line and load lugs. See page 1-122 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 1-139.
⌘ When selecting a factory installed control circuit transformer (see Modifications page 1-117), use the common control coil voltage 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 coil voltage 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.
[11] 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 relay require 3 heater elements. See page 1-177 for heater element selection tables.

3-Phase • 600V AC Maximum • 60 Hz • With 3-Pole Overload Protection								
		Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Hazardous Locations		
		Motor Voltage				Unilock Enclosures	Bolted Enclosures	
NEMA Size	Continuous Ampere Rating [A]	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⊗-✪

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

[V]		24§	110-115	115-120	200-208	220-230	230-240	240	277	380	380-400	415	440-460	460-480	500	550	575-600
Common Control♣	AC, 50 Hz	—	—	—	—	P✦	—	T	—	N	KN	I	Q	—	M	R	—
	AC, 60 Hz	—	—	—	H	—	A♠	—	—	—	—	U	—	B	—	—	C
Transformer Control	AC, 60 Hz	—	—	—	H	—	A	—	—	—	—	—	—	B	—	—	C
Separate Control (without transformer)	AC, 50 Hz	K	S➢	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AC, 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 1-169 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 1-139.
♣ When selecting a factory-installed control circuit transformer (see Modifications page 1-116), use the common control coil voltage 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 coil voltage 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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Visit our website: www.ab.com/catalogs
Preferred availability cat. nos. are printed in **bold**

Heater Elements — Starters with eutectic alloy overload relays require one heater element. See page page 1-177 for heater element selection tables.

1-Phase • 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" — Motor Voltage 115V	Motor Voltage 230V	Open Type Without Enclosure Cat. No.∗❄	Type 1 General Purpose Enclosure Cat. No.∗❄	Type 3R/12 Rainproof, Dusttight Industrial Use Enclosure Cat. No.∗❄	Type 4/4X Watertight, Corrosion-Resistant Enclosure Stainless Steel Cat. No.∗❄	Hazardous Location Enclosures: Type 7 & 9 Class I, Groups C & D Class II, Groups E, F & G Division 1 & 2 Cat. No.∗❄	Hazardous Location Enclosures: Type 3R, 7 & 9 Class I, Groups C & D Class II, Groups E, F & G Division 1 & 2 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**	—	—

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage 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, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		24‡	110…115	115…120	200…208	220…230	230…240	240	277
Common Control§	AC, 50 Hz	—	XS♣	—	—	XP⌘	—	XT	—
	AC, 60 Hz	—	—	**XD➢**	**XH**	—	**XA✦**	—	XF
Separate Control (without transformer)	AC, 50 Hz	—	XWS♣	—	—	XWP⌘	—	XWT	—
	AC, 60 Hz	XWJ	—	**XWD➢**	**XWH**	—	**XWA✦**	—	XWF

∗ **Ordering Information —** All 1-phase 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 1-139.

§ When selecting a factory-installed control circuit transformer (see Modifications page 1-116), use the common control coil voltage 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 coil voltage 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.

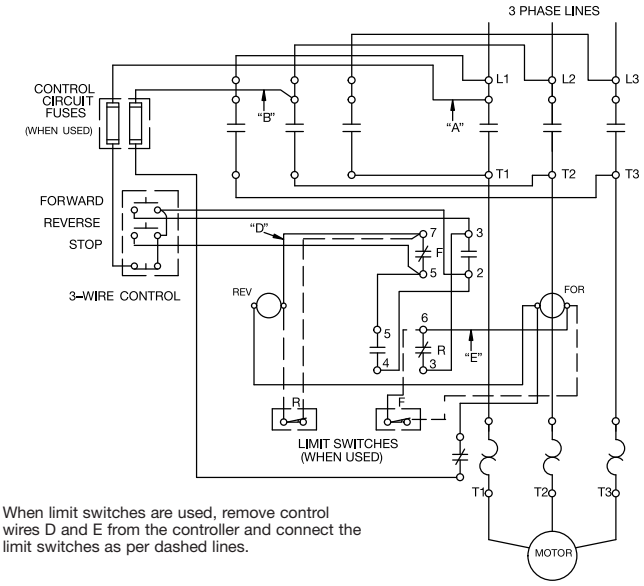
⌘ This coil is optimized for 220…230V, 50 Hz applications, but can be used at 240V, 60 Hz nominal.

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

NEMA Full Voltage Reversing Starters

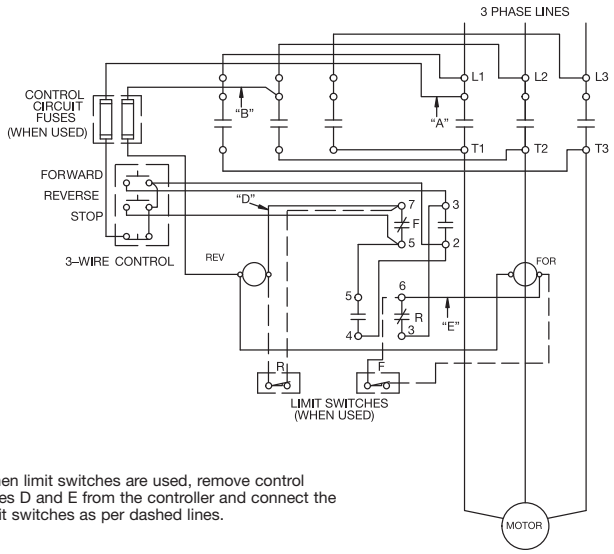
Typical Wiring Diagrams (See Applicable Codes and Laws)

Typical Wiring Diagrams



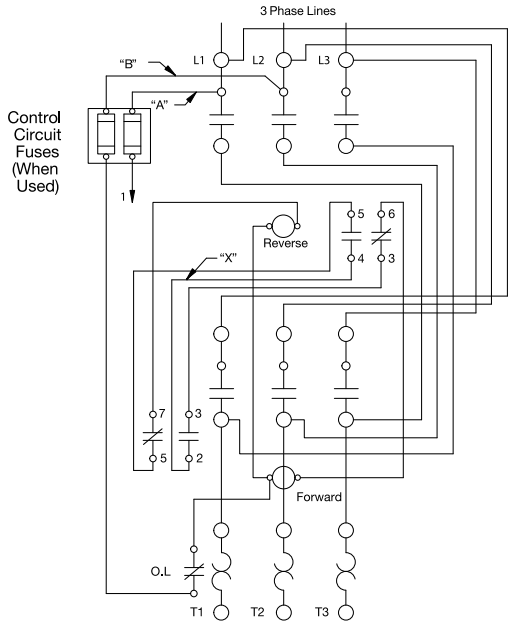
When limit switches are used, remove control wires D and E from the controller and connect the limit switches as per dashed lines.

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



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
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.

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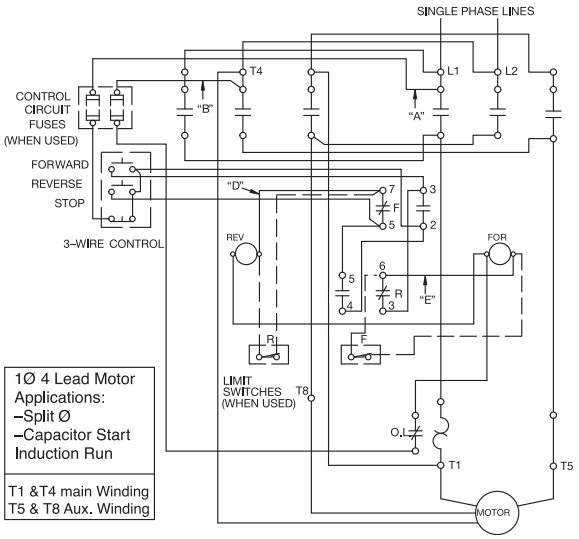
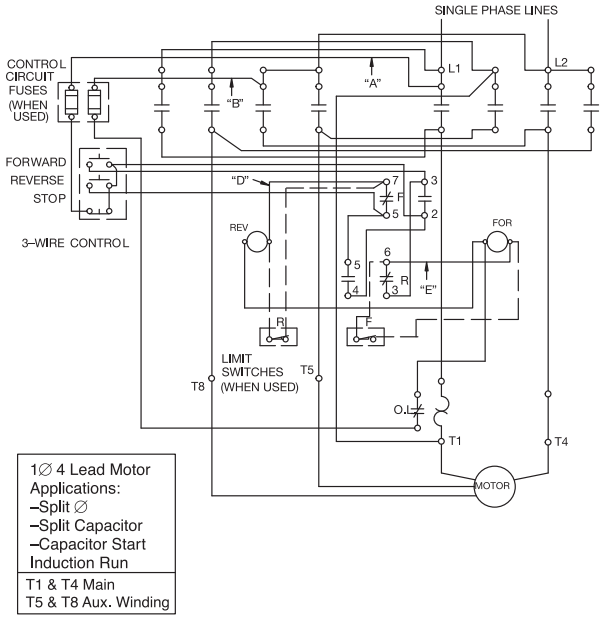
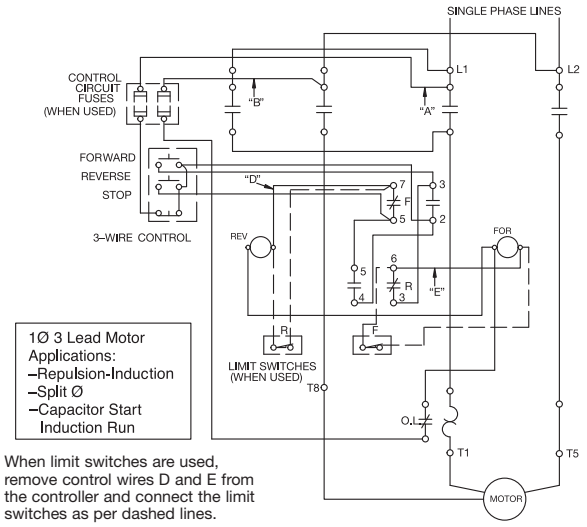


Bulletin 505
1Ø — 3-Pole (Suffix 104)
Reversing Starter with
Eutectic Alloy Overload Relay

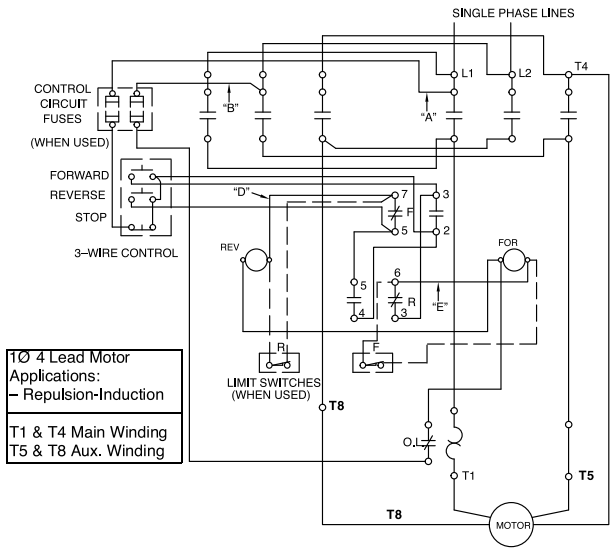
When limit switches are used, remove control wires D and E from the controller and connect the limit switches as per dashed lines.



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



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



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.

Product Selection — page 1-37

1

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…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 sizes 00…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.

Table of Contents

Standards Compliance

- 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

Certifications

- 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 1-177 for heater element selection tables.

3-Phase • 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" Motor Voltage 200V	230V	50 Hz 380…415V	460…575V	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.❄
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⊗-✪	—	
8‡	1215	—	450	900	900	509-JO⊗-✪	509-JA⊗-✪	509-JJ⊗-✪	—	
9	2250	—	800	1600	1600	509-KO⊗-✪	509-KA⊗-✪	509-KJ⊗-✪	—	

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 509-BA⊗-✪** becomes **Cat. No. 509-BAD-✪**. For other voltages, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		24♣	110-115	115-120	200-208	220-230	230-240	240	277	380	380-400	415	440-460	460-480	500	550	575-600
Common Control➢	AC, 50 Hz	—	—	—	–	P❖	—	T	—	N	KN	I	Q	—	M	R	—
	AC, 60 Hz	—	—	—	**H**	—	**A♠**	—	—	—	—	U	—	**B**	—	—	**C**
Transformer Control	AC, 60 Hz	—	—	—	**H**	—	**A**	—	—	—	—	—	—	**B**	—	—	**C**
Separate Control (without transformer)	AC, 50 Hz	K	S⌘	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AC, 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 1-169 to complete the cat. no. Example: **Cat. No. 509-BAD-✪** becomes **Cat. No. 509-BAD-A2D**.

✶ Sizes 6…8 are painted enclosures.
❄ Fiberglass reinforced polyester hubs are included with each starter.
‡ Does not include line and load lugs, see page 1-122 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 1-139.
➢ When selecting a factory-installed control circuit transformer (see Modifications page 1-116), use the common control coil voltage 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 coil voltage 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.

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Modifications — page 1-116
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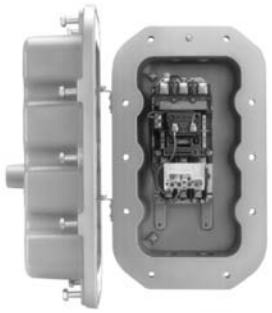
NEMA Full Voltage Starters

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 1-177 for heater element selection tables.

3-Phase • 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" — Motor Voltage 200V	230V	50 Hz 380…415V	460…575V	Hazardous Locations — Unilock Enclosures: Type 3R, 7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 – Cat. No.✶❄	Bolted Enclosures: Type 7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 – Cat. No.	Bolted Enclosures: 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	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⊗-✪

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 509-BA⊗-✪** becomes **Cat. No. 509-BAD-✪**. For other voltages, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		24♣	110-115	115-120	200-208	220-230	230-240	240	277	380	380-400	415	440-460	460-480	500	550	575-600
Common Control➢	AC, 50 Hz	—	—	—	—	P❖	—	T	—	N	KN	I	Q	—	M	R	—
	AC, 60 Hz	—	—	—	**H**	—	**A♠**	—	—	—	—	U	—	**B**	—	—	**C**
Transformer Control	AC, 60 Hz	—	—	—	**H**	—	**A**	—	—	—	—	—	—	**B**	—	—	**C**
Separate Control (without transformer)	AC, 50 Hz	K	S⌘	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AC, 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 1-169 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 1-139.
➢ When selecting a factory-installed control circuit transformer (see Modifications page 1-116), use the common control coil voltage 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 coil voltage 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.

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Visit our website: www.ab.com/catalogs

Preferred availability cat. nos. are printed in **bold**

Heater Elements — Starters with eutectic alloy overload relays require 1 heater element. See page 1-177 for heater element selection tables.

1-Phase • 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" Motor Voltage 115V	230V	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.∗
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⊗-✪	—

1-Phase • 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" Motor Voltage 115V	230V	Hazardous Location Enclosures: Type 7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 – Cat. No.	Hazardous Location Enclosures: Type 3R, 7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 – 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⊗-✪**

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 509-BAX⊗-✪** becomes **Cat. No. 509-BAXD-✪**. For other voltages, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		24	110…115	115…120	200…208	220…230	230…240	240	277
Common Control‡	AC, 50 Hz	—	XS§	—	—	XP➢	—	XT	—
	AC, 60 Hz	—	—	**XD♣**	**XH**	—	**XA⌘**	—	XF
Separate Control (without transformer)	AC, 50 Hz	—	XWS§	—	—	XWP➢	—	XWT	—
	AC, 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 1-169 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 1-116), use the common control coil voltage 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 coil voltage 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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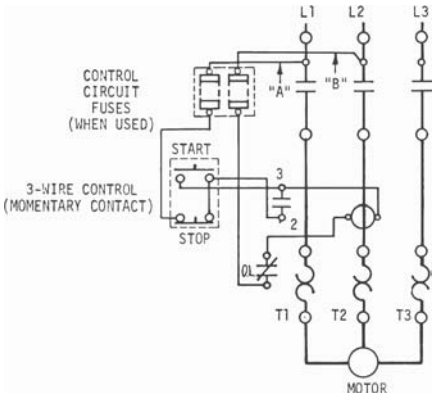
Typical Wiring Diagram

If the controller coil is to operate on a voltage other than line voltage, check coil rating for compatibility and change coil if necessary. Disconnect wires "A" and "B" from Lines L1 and L2. Connect wires "A" and "B" to the separate control source. Refer to the National Electrical Code for control circuit disconnection requirements.

Note: Additional control circuit overcurrent protection may be required. Refer to the National Electrical Code. The current rating of the control circuit conductors furnished with this device is 15 A (Sizes 0…3) or 20 A (Size 4).



3-Phase 3-Wire System

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 available — 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

- NEMA/EEMAC ICS 2
- UL 508
- CSA C22.2 No.14
- CSA Certified (LR1234)
- UL Listed (File No. E3125, Guide No. NLDX)

Certifications

- Hazardous Location:
  UL Listed (File No. E10314)
  CSA Certified (LR 11924)

1

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 1-177 for heater element selection tables.

3-Phase • 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" — Motor Voltage 200V	230V	50 Hz 380…415V	460…575V	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.∗
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⊗-✪-✪	—	—

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 520E-AA⊗-✪-✪** becomes **Cat. No. 520E-AAD-✪-✪**. For other voltages, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		24§	110-115	115-120	200-208	220-230	230-240	240	277	380	380-400	415	440-460	460-480	500	550	575-600
Common Control♣	AC, 50 Hz	—	—	—	—	P✦	—	T	—	N	KN	I	Q	—	M	R	—
	AC, 60 Hz	—	—	—	**H**	—	**A❖**	—	—	—	—	U	—	**B**	—	—	**C**
Transformer Control	AC, 60 Hz	—	—	—	**H**	—	**A**	—	—	—	—	—	—	**B**	—	—	**C**
Separate Control (without transformer)	AC, 50 Hz	K	S➢	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AC, 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 1-169 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 1-52.

❄ **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 1-122 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 1-139.

♣ When selecting a factory-installed control circuit transformer (see Modifications page 1-116), use the common control coil voltage 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 coil voltage 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.

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 1-177 for heater element selection tables.

3-Phase • 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" — Motor Voltage — 200V	230V	50 Hz 380…415V	50 Hz 460…575V	Type 4/4X Watertight Corrosion-Resistant Enclosures Stainless Steel Cat. No.✶	Type 4X Watertight Corrosion-Resistant Enclosure Fiberglass-Reinforced Polyester Cat. No.✶❄	Hazardous Locations — Bolted Enclosures — 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	**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⊗-✪-✪**		—	—

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 520E-AC⊗-✪-✪** becomes **Cat. No. 520E-ACD-✪-✪**. For other voltages, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		24§	110-115	115-120	200-208	220-230	230-240	240	277	380	380-400	415	440-460	460-480	500	550	575-600
Common Control♣	AC, 50 Hz	—	—	—	—	P✦	—	T	—	N	KN	I	Q	—	M	R	—
	AC, 60 Hz	—	—	—	**H**	—	**A**❖	—	—	—	—	U	—	**B**	—	—	**C**
Transformer Control	AC, 60 Hz	—	—	—	**H**	—	**A**	—	—	—	—	—	—	**B**	—	—	**C**
Separate Control (without transformer)	AC, 50 Hz	K	S➢	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AC, 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 1-169 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 1-52.
❄ 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 1-116), use the common control coil voltage 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 coil voltage 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.

1

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 1-177 for heater element selection tables.

3-Phase • 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" — Motor Voltage 200V	230V	50 Hz 380…415V	460…575V	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 Stee Cat. No.∗	Type 4X Watertight Corrosion-Resistant Enclosure Fiberglass-Reinforced Polyester Cat. No.∗‡
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⊗-✪-✪		

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage 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, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		24♣	110-115	115-120	200-208	220-230	230-240	240	277	380	380-400	415	440-460	460-480	500	550	575-600
Common Control ➢	AC, 50 Hz	—	—	—	—	P❖	—	T	—	N	KN	I	Q	—	M	R	—
	AC, 60 Hz	—	—	—	**H**	—	**A♠**	—	—	—	—	U	—	**B**	—	—	**C**
Transformer Control	AC, 60 Hz	—	—	—	**H**	—	**A**	—	—	—	—	—	—	**B**	—	—	**C**
Separate Control (without transformer)	AC, 50 Hz	K	S⌘	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AC, 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 1-169 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 1-52.
❄ **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 1-122 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 1-116), use the common control coil voltage 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 coil voltage 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.

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 1-177 for heater element selection tables.

3-Phase • 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" — Motor Voltage				Hazardous Locations — 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 – Cat. No.	Type 3R, 7 & 9∗❄ Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 – Cat. No.
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⊗-✪-✪

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 520E-AE⊗-✪-✪** becomes **Cat. No. 520E-AED-✪-✪**. For other voltages, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

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

✪-✪ Overload Relay Code

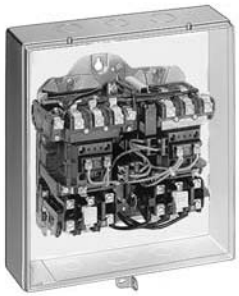
Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The cat. no. as listed is incomplete. Select two overload relay codes from page 1-169 to complete the cat. no. The first code will denote the high-speed overload relay and the second code will denote the 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 1-52.
❄ 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 1-116), use the common control coil voltage 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 coil voltage 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.

NEMA Multi-Speed Starters

Product Selection, Continued

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 1-177 for heater element selection tables.

3-Phase • 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" — Motor Voltage 200V	230V	50 Hz 380…415V	460…575V	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.‡
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⊗-✪-✪**	

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 520F-AA⊗-✪-✪** becomes **Cat. No. 520F-AAD-✪-✪**. For other voltages, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		24♣	110-115	115-120	200-208	220-230	230-240	240	277	380	380-400	415	440-460	460-480	500	550	575-600
Common Control ➢	AC, 50 Hz	—	—	—	—	P❖	—	T	—	N	KN	I	Q	—	M	R	—
	AC, 60 Hz	—	—	—	**H**	—	**A♠**	—	—	—	—	U	—	**B**	—	—	**C**
Transformer Control	AC, 60 Hz	—	—	—	**H**	—	**A**	—	—	—	—	—	—	**B**	—	—	**C**
Separate Control (without transformer)	AC, 50 Hz	K	S⌘	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AC, 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 1-169 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 Rockwell Automation sales office or 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 1-139.

➢ When selecting a factory-installed control circuit transformer (see Modifications page 1-116), use the common control coil voltage 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 coil voltage 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.

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Preferred availability cat. nos. are printed in **bold**

2-Speed Consequent Pole, 5-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 1-177 for heater element selection tables.

3-Phase • 600V AC Maximum • 60 Hz • With 3-Pole Overload Protection							
		Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Hazardous Locations	
						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 –
NEMA Size	Continuous Ampere Rating [A]	200V	230V	50Hz 380…415V	460…575V	Cat. No.	Cat. No.
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⊗-✪-✪

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 520F-AE⊗-✪-✪** becomes **Cat. No. 520F-AED-✪-✪**. For other voltages, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

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

✪-✪ Overload Relay Code

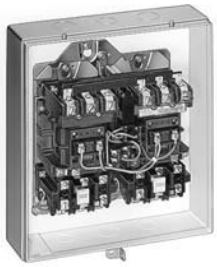
Use to order solid-state overload relays. Do not use when ordering eutectic alloy overload relays. The cat. no. as listed is incomplete. Select two overload relay codes from page 1-169 to complete the cat. no. The first code will denote the high-speed overload relay and the second code will denote the 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 1-116), use the common control coil voltage 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 coil voltage 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.

NEMA Multi-Speed Starters

Product Selection, Continued

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 1-177 for heater element selection tables.

3-Phase • 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" — Motor Voltage 200V	230V	50 Hz 380…415V	460…575V	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.‡
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⊗-✪-✪**	

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 520G-AA⊗-✪-✪** becomes **Cat. No. 520G-AAD-✪-✪**. For other voltages, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		24§	110-115	115-120	200-208	220-230	230-240	240	277	380	380-400	415	440-460	460-480	500	550	575-600
Common Control♣	AC, 50 Hz	—	—	—	—	P✦	—	T	—	N	KN	I	Q	—	M	R	—
	AC, 60 Hz	—	—	—	**H**	—	**A❖**	—	—	—	—	U	—	**B**	—	—	**C**
Transformer Control	AC, 60 Hz	—	—	—	**H**	—	**A**	—	—	—	—	—	—	**B**	—	—	**C**
Separate Control (without transformer)	AC, 50 Hz	K	S➢	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AC, 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 1-169 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 1-139.
♣ When selecting a factory-installed control circuit transformer (see Modifications page 1-116), use the common control coil voltage 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 coil voltage 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.

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Preferred availability cat. nos. are printed in **bold**

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 1-177 for heater element selection tables.

3-Phase • 600V AC Maximum • 60 Hz • With 3-Pole Overload Protection							
		Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating"				Hazardous Locations	
						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 –
NEMA Size	Continuous Ampere Rating [A]	200V	230V	380...415V	460...575V	Cat. No.	Cat. No.
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⊗-✪-✪

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 520G-AE⊗-✪-✪** becomes **Cat. No. 520G-AED-✪-✪**. For other voltages, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

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

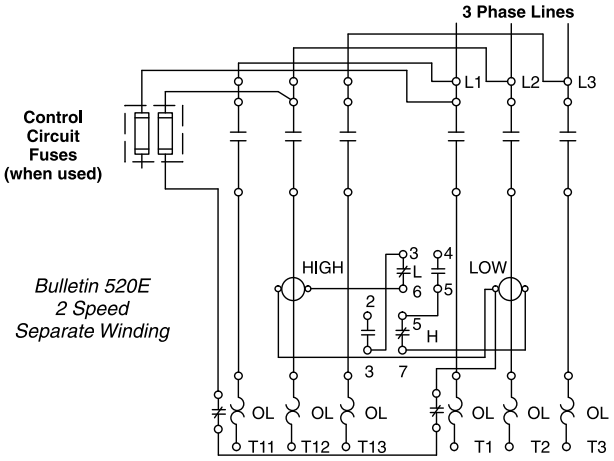
✪-✪ Overload Relay Code

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 1-169 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**.

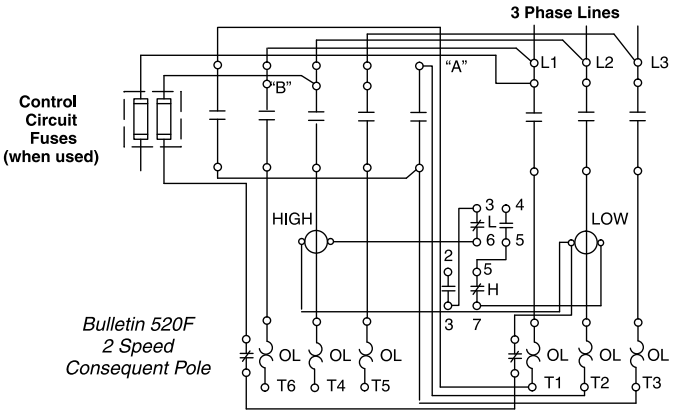
✶ Includes drain and cover gasket.
❄ When selecting a factory-installed control circuit transformer (see Modifications page 1-116), use the common control coil voltage code to denote the transformer primary voltage. The starter coil and transformer secondary voltage will both be 120V by default. Example: **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 coil voltage 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 1-56
Accessories — page 1-121
Modifications — page 1-116
Specifications — page 1-136
Heater Element Selection — page 1-177

1

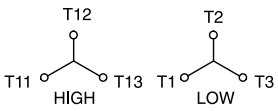


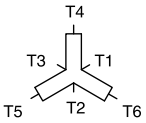
Bulletin 520E
2 Speed
Separate Winding



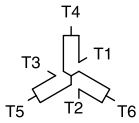
Bulletin 520F
2 Speed
Consequent Pole

Motor Terminal Markings





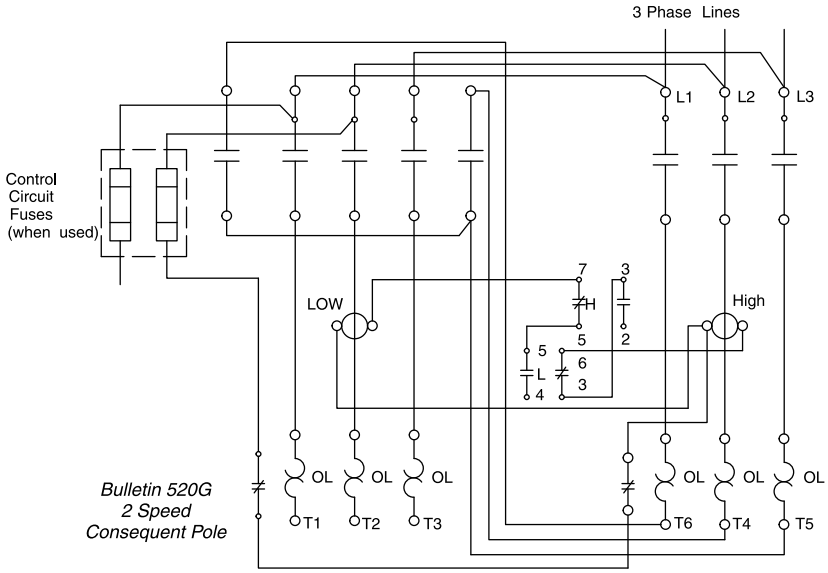
Constant Torque



Variable Torque

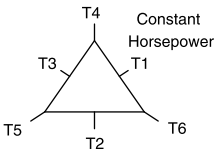
Size 0...4
2-Speed Separate Winding, Constant or Variable Torque and Constant Horsepower with Eutectic Alloy Overload Relay or Solid-State Overload Relay

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

Motor Terminal Markings



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

Product Selection — page 1-48

Bulletin 300

- NEMA sizes 0…5
- Compact size (space saving design)
- Guarded terminals
- Complete range of accessories
- Solid-state overload relays
- Electronic and conventional coils
- 35 mm DIN Rail mountable

Bulletin 300 modular line of NEMA contactors, when combined with Bulletin 193 solid-state overload relays, auxiliary contacts, interlocks, suppressors, and DIN mounting rail provides the most compact and flexible starter component system available.

Table of Contents

Standards Compliance

UL 508
CSA C22.2, No. 14

Certifications

cULus Listed (File E41850 Guide No. NLDX, NLDX7)
CE Marked (EN 60947-4-1)

1

Product Selection

Feed-Through Wiring for Motor Loads

NEMA Size∗	Continuous Ampere Rating [A]	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating" Motor Voltage 200V	230V	380…415V	460…575V	Open Type Without Enclosure Cat. No.
0	18	3	3	5	5	300-AO⊗930
1	27	7.5	7.5	10	10	300-BO⊗930
2	45	10	15	25	25	300-CO⊗930
3	90	25	30	50	50	300-DO⊗930
4	135	40	50	75	100	300-EO⊗930
5	270	75	100	150	200	300-FO⊗930

∗ Contactor sizes 0…3 come standard with 1 N.O. auxiliary contact.
Contactor sizes 4…5 come standard with 1 N.O. and 1 N.C. auxiliary contact.

⊗ Coil Voltage Code and Terminal Position (NEMA Sizes 0…2)

The cat. no. as listed is incomplete. To complete the cat. no., select a Coil Voltage Code from the table below and insert into the cat. no. Example: 120V, 60 Hz: **Cat. No. 300-AO⊗930** becomes **Cat. No. 300-AOD930**.

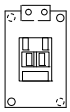
[V]	24	48	100	100… 110	110	120	200	200… 220	208	208… 240
AC, 50 Hz	K	Y	KP	—	D	P	KG	L	—	—
AC, 60 Hz	J	X	—	KP	—	D	—	KG	H	L
AC, 50/60 Hz	KJ	KY	KP	—	KD	—	KG	—	—	—
DC	EJ	—	—	—	—	—	—	—	—	—

[V]	220… 230	230… 240	240	277	347	380	380… 400	400… 415	440	480	500	550	600
AC, 50 Hz	F	VA	T	—	—	—	N	G	B	—	M	C	—
AC, 60 Hz	—	—	A	T	I	E	—	—	N	B	—	—	C
AC, 50/60 Hz	—	—	KA	—	—	—	—	—	KB	—	—	—	—

1

Coil Terminal Position

All contactors are delivered with the coil terminals located on the line side.



Cat. No. 300-AO8930 Line Side

⊗ Coil Voltage Code (NEMA Sizes 3…5)

Conventional Coil	[V]	24	48	110	120	208	200…230	240	277	380…400	415	440	480	500	550	600
NEMA Size 3…4	AC, 50 Hz	K	Y	D	—	—	A	T	—	N	B	G	—	M	C	—
	AC, 60 Hz	J	X	—	D	H	—	A	T	—	—	N	B	—	—	C

Electronic Coil with EI Interface‡	[V]	24	42…64	100	110…130	200	208…277	380…415	440…480	500	600
NEMA Size 3…5	AC, 50/60 Hz	EJ	EY	EP	ED	EG	EA	EN	EN	EN	—

‡ Signal voltage of the Bulletin 300 line electronic interface: Nominal U_e: 24V DC/I_e: 15 mA
Pick-up voltage: 13.0…30.2V DC
Drop-out voltage: -3.0…+5.0V DC

⊗ Coil Voltage Code

Electronic Coil with EI Interface❄	[V]	24	48…72	110…130	200…255
NEMA Size 3…5	DC	EZJ	EZY	EZD	EZA

❄ Signal voltage of the 300 Line electronic interface: Nominal U_e: 24V DC/I_e: 15 mA
Pickup voltage: 13.0…30.2V DC, Dropout Voltage: -3.0…+5.0V DC.

Bulletin 193-EE – Three-Phase Devices

- Selectable trip class (10, 15, 20, 30)
- Selectable manual/auto-manual reset
- Screw-type control terminals

Mounts to NEMA Contactor Size	Adjustment Range [A]	Cat. No.
0…1	1.0…5.0	**193-EECB**
	3.2…16	**193-EEDB**
	5.4…27	**193-EEEB**
2	5.4…27	**193-EEED**
	9…45	**193-EEFD**
3…4	30…150	**193-EEHF**
	40…200	**193-EEJF**
5	40…200	193-EEJG
	60…300	**193-EEKG**

E3 Overload Relay

- 0.4…5000 A current range
- Adjustable trip class 5…30
- Integrated I/O

NEMA Size	Adjustment Range [A]	Cat. No.
0…1	1…5	193-EC2AD
	3…15	**193-EC2BD**
	5…25	**193-EC2CD**
	9…45	**193-EC2DD**
2	9…45	193-EC2DE
	18…90	**193-EC2EE**
3…4	28…140	✶ **193-EC2FF**
4	42…210	✶ **193-EC2GF**
5	42…210	✶ 193-EC2GG
	60…302	✶ 193-EC2HG

✶ Does not include terminal lugs.

E3 and E3 Plus Solid-State Overload Relays

Panel Mount Devices for use with External Current Transformers❄‡

Description	Adjustment Range [A]§	Cat. No.
• 2 Inputs • 1 Output	9…5000	**193-EC1ZZ**
• 4 Inputs • 2 Outputs • Ground Fault Sensor Input • PTC Thermistor Input • DeviceLogix	9…5000	**193-EC2ZZ**

❄ Current transformers supplied by customer. Refer to Specifications, page 2-189 for proper current transformer selection.
‡ Order panel adapter, Cat. No. 193-ECPM2, separately.
§ CT Ratio to FLA setting range correlation.

CT Ratio	FLA Setting Range [A]	CT Ratio	FLA Setting Range [A]	CT Ratio	FLA Setting Range [A]
50:5	9…45	300:5	60…302	1200:5	240…1215
100:5	18…90	500:5	84…420	2500:5	450…2250
150:5	28…140	600:5	125…630	5000:5	1000…5000
200:5	42…210	800:5	172…860	—	—

Accessories

Auxiliary Contacts

	Description	N.O.	N.C.	For Use With	Cat. No.	Bifurcated Auxiliary Contact Cat. No.
 	**Auxiliary Contact Blocks for Front Mounting**∗ - 2- and 4-pole - Quick and easy mounting without tools - Electronic-compatible contacts down to 17V, 5 mA - Mechanically linked performance between N.O. and N.C. poles and to the main contactor poles (except for L types) - Models with equal function with several terminal numbering choices L = Late break N.C./early make N.O.	0	2	0…2	**100-FA02**	**100-FAB02**
		1	1		**100-FA11**	**100-FAB11**
		2	0		**100-FA20**	**100-FAB20**
		1L	1L		**100-FBL11**	—
		0	4		**100-FA04**	**100-FAB04**
		1	3		**100-FA13**	**100-FAB13**
		2	2		**100-FA22**	**100-FAB22**
		3	1		**100-FA31**	**100-FAB31**
		4	0		**100-FA40**	**100-FAB40**
		1+1L	1+1L		**100-FAL22**	—
 	**Auxiliary Contact Blocks for Side Mounting with Sequence Terminal Designations**∗ - 1- and 2-pole - Two-way numbering for right or left mounting on the contactor - Quick and easy mounting without tools - Electronic-compatible contacts down to 17V, 10 mA - Mirror contact performance to the main contactor poles L = Late break N.C./early make N.O.	0	1	0…2	**100-SB01**	—
		1	0		**100-SB10**	—
		0	2		**100-SB02**	—
		1	1		**100-SB11**	—
		2	0		**100-SB20**	—
		1L	1L		**100-SBL11**	—

∗ Max. number of auxiliary contacts that may be mounted:
AC coil contactors — max. 4 N.O. contacts on the front of the contactor, 2 N.O. contacts on the side, 4 N.C. front or side, 6 total.
DC coil contactors — max. 4 N.O. contacts on the front of the contactor or max 2 N.O. contacts on the side, 4 N.C. front or side, 4 total.

1

Control Modules

	Description		For Use With	Cat. No.
	**Pneumatic Timing Modules** Pneumatic timing element contacts switch after the delay time. The contacts on the main control relay continue to operate without delay.	**On-Delay** 0.3…30 s range 1.8…180 s range	0…2 with AC coils	**100-FPTA30** **100-FPTA180**
		Off-Delay 0.3…30 s range 1.8…180 s range	0…2	**100-FPTB30** **100-FPTB180**
	**Electronic Timing Modules — On-Delay** Delay of the contactor or control relay solenoid. The contactor or control relay is energized at the end of the delay time.	**On-Delay** 0.1…3 s range 1…30 s range 10…180 s range 110…240V, 50/60 Hz 110…250V DC	0…2	**100-ETA3** **100-ETA30** **100-ETA180**
	**Electronic Timing Modules — Off-Delay** Delay of the contactor or control relay solenoid. After interruption of the control signal, the contactor or control relay is de-energized at the end of the delay time.	**Off-Delay** 0.3…3 s range 1…30 s range 10…180 s range 110…240V, 50/60 Hz	0…2 with AC coils	**100-ETB3** **100-ETB30** **100-ETB180**
	**Electronic Timing Modules** Delay of the contactor solenoid. Contactor K 3 (Y) is de-energized (off) and K 2 (D) is energized (on) after the end of the set Y end time. (Switching delay at 50 ms.) Continuous adjustment range High repeat accuracy	**Transition Time Y Contactor** 1…30 s range 110…240V, 50/60 Hz	0…2 with AC coils	**100-ETY30**
	**Mechanical Interlocks** For interlocking of two contactors. Common interlock for all Bul. 100-C contactor sizes Interlocking of different sizes possible Mechanical and electrical interlocking possible in one module by means of integrated auxiliary contacts 9 mm dovetail connector included	Mechanical only without auxiliary contacts	0…2	**100-MCA00**
		Mechanical/ electrical with 2 N.C. auxiliary contacts	0…2	**100-MCA02**

	Description	For Use With	Voltage Range	Cat. No.
	**Mechanical Latch** Following contactor latching, the contactor coil is immediately de-energized (off) by the N.C. auxiliary contact (65-66). Electrical or manual release 1 N.O. + 1 N.C. auxiliary contacts Suitable for all Bul. 100-C contactor sizes, 9…85 A	0…2 with AC coils	—	**100-FL11⊗**
	**DC Interface** (electronic) Interface between the DC control signal (PLC) and the AC operating mechanism of the contactor/control relay. Control (input) voltage 12V DC 18…30V DC (24V nominal) 48V DC Requires no additional surge suppression on the relay coils	0…2 with AC coils	—	**100-JE**
	**Surge Suppressors** For limitation of coil switching transients. Plug-in, coil mounted Suitable for all Bul. 100-C contactor sizes, 9…85 A RC, varistor and diode versions	**RC Module** AC operating mechanism	0…2 with AC coils	24…48V AC, 50/60 Hz	**100-FSC48**
				110…280V AC, 50/60 Hz	**100-FSC280**
				380…480V AC, 50/60 Hz	**100-FSC480**
		Varistor Module AC/DC operating mechanism	0…2	12…55V AC/ 12…77V DC	**100-FSV55**
				56…136V AC/ 78…180V DC	**100-FSV136**
				137…277V AC/ 181…350V DC	**100-FSV277**
				278…575V AC	100-FSV575

Visit our website: www.ab.com/catalogs
Preferred availability cat. nos. are printed in **bold**

⊗ 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**.

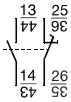
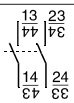
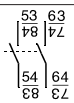
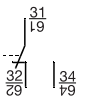
Voltage∗	24V	48V	100V	110V	120V	230-240V	240V	277V	380-400V	400-415V	440V	480V
50 Hz	K	Y	KP	D	—	VA	T	—	N	G	B	—
60 Hz	J	—	—	—	D	—	A	T	—	—	N	B

∗ For special voltages, consult your local Rockwell Automation sales office or Allen-Bradley distributor.

Assembly Components

	Description	For Use With	Pkg. Quantity	Cat. No.
 *Cat. No. 100-S0*	**Dovetail Connectors** For use in contactor and starter assemblies. Single Connector — 0 mm Spacing	0…2	10	**100-S0**
	Dovetail Connectors For use in contactor and starter assemblies. Dual Connector — 9 mm Spacing			**100-S9**
 *Cat. No. 100-SCCA*	**Protective Covers** Provides protection against unintended manual operation For contactors and front mounted auxiliary contacts, pneumatic timers and latches	0…2	1	**100-SCCA**
 *Cat. No. 100-SCFA*		100-FA, -FB, -FC, -FP, -FL	10	**100-SCFA**
 *Cat. No. 105-PW23*	**Reversing Power Wiring Kits** For reversing connection with a solid-state or thermal overload relay	0…1	1	**105-PW37**
		2		**105-PW85**
	**DIN (#3) symmetrical rail** 35 mm x 7.5 mm x 1 m long	0…2	10	**199-DR1**

Auxiliary Contacts

	Description	No. of N.O. Contacts	No. of N.C. Contacts	Connection Diagram	For Use With	Cat. No.
	**Auxiliary Contacts** Side mounted With IEC sequence terminal designations	1	1		3…5 Left/Right inside mounting	**100-DS1-11**
		1	1		3…5 Left/Right outside mounting	**100-DS2-11**
		1	1L		3…5 Left/Right inside mounting	**100-DS1-L11**
		2	0			**100-DS1-20**
		2	0		3…5 Left/Right outside mounting	**100-DS2-20**
	Auxiliary Contacts Electronically compatible auxiliary contacts Ideal for use when switching low-power control circuits With IEC sequence terminal designations Contact ratings: AC-12, 250V, 0.1 A AC-15, DC-13, 3...125V, 1...100 mA	1	1		3…5 Left/Right inside mounting	**100-DS1-B11**

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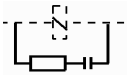
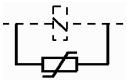
Marking Systems

	Description	Pkg. Qty.*	Cat. No.
	**Label Sheet** 105 self-adhesive paper labels each, 6x17 mm	10	**100-FMS**
	**Marking Tag Sheet** 160 perforated paper labels each, 6x17 mm To be used with a transparent cover	10	**100-FMP**
	Transparent Cover To be used with marking tag sheets	100	**100-FMC**
	**Marking Tag Adapters** To be used with marking tag:	100	100-FMA1
	Marking Tag Adapters To be used with marking tag:	100	100-FMA2

* Must be ordered in multiples of package quantities.

Suppressor Modules

	Description	Circuit Diagram	Suppressor Rating	For Use With NEMA Sizes	Cat. No.
	**Suppressor Module for Bul. 100-D Contactors** • For limiting surge voltage when coil circuits are interrupted • Can be plugged into all Bul. 100-D contactors • Supplied as standard on all conventional DC coil contactors and all electronic coil contactors (as part of the supply module or delivered with separate suppressor module)		**RC Module (AC control) for contactors with conventional coil** 21...48V, 50 Hz; 24...55V, 60 Hz	3...4	**100-DFSC48**
			95...110V, 50 Hz; 110...127V, 60 Hz		**100-DFSC110**
			180...277V, 50 Hz; 208...277V, 60 Hz		**100-DFSC240**
			380...550V, 50 Hz; 440...600V, 60 Hz		100-DFSC550
			**Varistor Module for contactors with conventional coil** 55V AC	3...4	100-DFSV55
			56...136V AC		**100-DFSV136**
			137...277V AC		**100-DFSV277**
			278...600V AC		100-DFSV575
			208...277V AC*	5	**100-DFSV550**

* For overvoltage category IV (IEC 947 for 100-D...-EI) e.g., lightning protection requirements.

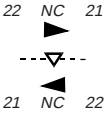
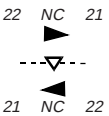
Connecting Components

	Description	Output Connection	For Use With NEMA Sizes 3...4	For Use With NEMA Sizes 5	Terminal Connection	Cat. No.
	Reversing: Input Connection Wye-Delta: Main-Delta connection	50 mm²	X		Lugs, 100-DL...	**100-D180-VL**
		120 mm²		X		**100-D420-VL**
		50 mm²	X		Terminal Blocks, 100-DTB...	**100-D180-VLTB**
		120 mm²		X		**100-D420-VLTB**
	Reversing: Output Connection Wye-Delta: Delta-Wye connection	50 mm²	X		Lugs, 100-DL...	**100-D180-VT**
		120 mm²		X		**100-D420-VT**
		50 mm²	X		Terminal Blocks, 100-DTB...	**100-D180-VTTB**
		120 mm²		X		100-D420-VTTB
	Delta-Wye connection if 100-D95...180 is used as a Wye contactor	80 mm²	—	X	Terminal Blocks, 100-DTB...	**100-D420-VYTB**
	Wye-Delta: Neutral bridge	—	X		—	**100-D180-VYU**
		—		X	—	**100-D420-VYU**
	Power Wiring Kits (for contactors using 100-DL lug kits)	NEMA Size 3...4 • Reversing • Two-speed, or changeover • Wye-Delta/Star-Delta				100-DPW180 100-D180-VL 100-DPY180
		NEMA Size 5 • Reversing • Two-speed, or changeover • Wye-Delta/Star-Delta				100-DPW420 100-D420-VL 100-DPY420

Connecting Components, Continued

	Description	For Use With NEMA Sizes		Cat. No.
	**Terminal Lugs** Set of 2 Protection class IP2X per IEC 60529 and DIN 40 050	3		**100-DTB110**
		4, 193-EC_F, 193-EE_F		**100-DTB180**
		5, 193-EC_G, 193-EF2C, 193-EE_G		**100-DTB420**
	**Terminal Lugs (UL/CSA), Copper Frame** Set of 3	3, 193-EC_F, 193-EF_A		100-DL110
		3 (Elec. Coil)		**100-DLE110**
		4, 193-EC_F, 193-EE_F		**100-DL180**
		5, 193-EC_G, 193-EE_G		**100-DL420**
	Terminal Lugs (UL/CSA), Aluminum Frame Set of 3	3		100-DLA110
		3 (Elec. Coil) and 4		100-DLA180
		5		100-DLA420
	**Control Circuit Terminal** 2 x 2.5 mm²	3…4		**100-DAT1**
		5		**100-DAT2**
	**Terminal Shields** Set of 2 Protection class IP10 per IEC 60529 and DIN 40 050 For direct-on-line, reversing, two-speed, and wye-delta/star-delta assemblies	3		**100-DTS110**
		3 (Elec. Coil) and 4		**100-DTS180**
		5		**100-DTS420**
	**Terminal Covers** Protection class IP20 per IEC 60529 and DIN 40 050 For direct-on-line, reversing, two-speed, and wye-delta/star-delta assemblies	3…4, 193-EC_F, 193-EE_F		**100-DTC180**
		5, 193-EC_G, 193-EE_G		**100-DTC420**
	**Mounting Plate** Galvanized steel plate for starter combinations For direct-on-line, reversing, two-speed, wye-delta/star-delta, and Dahlander assemblies	3…4	Direct-on-line	100-DMS180
			Reversing, two-speed or changeover	100-DMU180
			Y-Δ or Dahlander	**100-DMY180**
		5	Direct-on-line	100-DMS420
			Reversing, two-speed or changeover	100-DMU420
			Y-Δ or Dahlander	100-DMY420
	Mounting Plate For two-speed or changeover switches	For interlocking between size 2 and sizes 3…4 contactors		100-DMU85

Interlocks

	Description	Circuit Diagram	For Use With NEMA Sizes	Cat. No.
	**Interlock — Mechanical Only** No additional space required		3…5	**100-DMA00**
	**Interlock — Dual Electrical/Mechanical** No additional space required 2 N.C. auxiliary contacts		3…5	**100-DMD02**
	Interlock — Mechanical Only No additional space required		3…5	**100-DMD00**
	Interlock — Mechanical Only Provides interlocking between Bul. 100-C and Bul. 100-D contactors		2…4	**100-DMC00**
	Interlock — Dual Electrical/Mechanical Provides interlocking between Bul. 100-C and Bul. 100-D contactors 2 N.C. auxiliary contacts		2…4	**100-DMC02**

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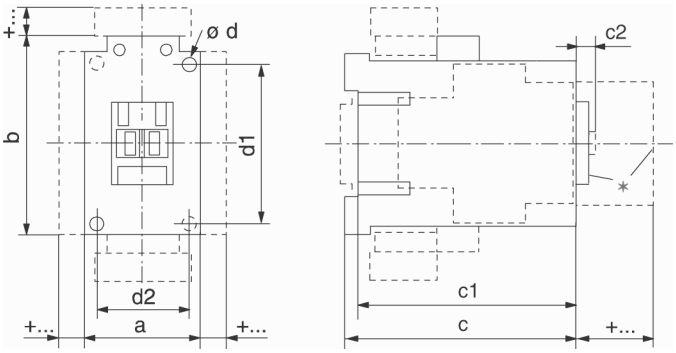
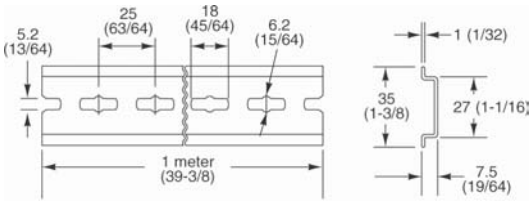
Approximate dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.

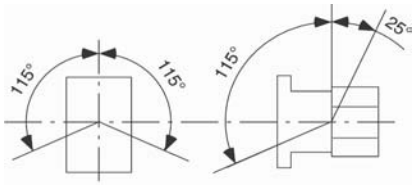
Contactors and Accessories





DIN Mounting Rail
Cat. No. 199-DR1

Mounting Position



AC Contactors

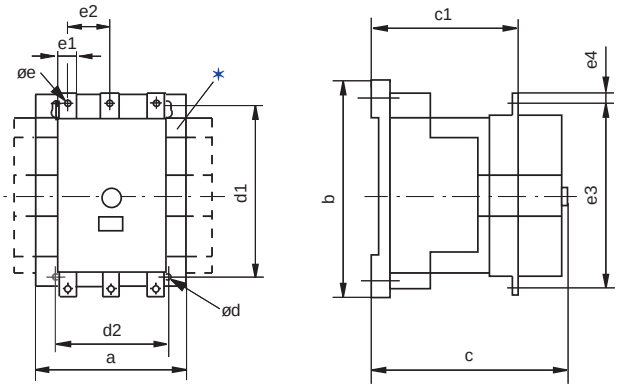
NEMA Size	a	b	c	c1	c2	Ød	d1	d2	Approx. Shipping Wt. kg (lbs)
0, 1	45 (1-25/32)	81 (3-3/16)	97.5 (4)	92.6 (3-49/64)	6.5 (17/64)	2 - 4.5 (2 - 3/16)	60 (2-23/64)	35 (1-25/64)	0.49 (1.08)
2	72 (2-53/64)	122 (4-51/64)	117 (4-49/64)	111.5 (4-35/64)	8.5 (21/64)	4 - 5.4 (4 - 7/32)	100 (3-15/16)	55 (2-11/64)	1.45 (3.20)

Accessories

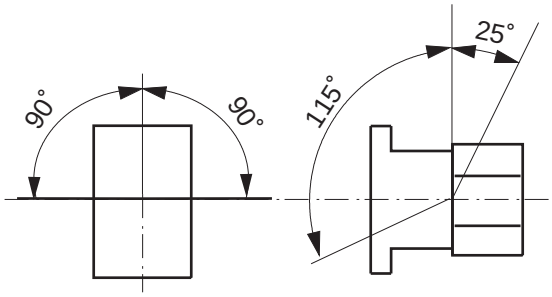
Contactors with		mm	(inches)
Auxiliary contact block for front mounting	2- or 4-pole	c/c1 + 39	(c/c1 + 1-37/64)
Auxiliary contact block for side mounting	1- or 2-pole	a + 9	(a + 23/64)
Pneumatic Timing Module		c/c1 + 58	(c/c1 + 2-23/64)
Electronic Timing Module	on coil terminal side	b + 24	(b + 15/16)
Mechanical Interlock	on side of contactor	a + 9	(a + 23/64)
Mechanical Latch		c/c1 + 61	(c/c1 + 2-31/64)
Interface Module	on coil terminal side	b + 9	(b + 23/64)
Surge Suppressor	on coil terminal side	b + 3	(b + 1/8)
✶ Labeling with	label sheet marking tag sheet with clear cover marking tag adapter for System V4/V5 marking tag adapter for System Bul. 1492W	+ 0 + 0 + 5.5 + 5.5	(+ 0) (+ 0) (+ 7/32) (+ 7/32)

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

Contactors and Accessories, Continued



Mounting Position



NEMA Size	a	b	c	c1	Ød	d1	d2	Øe	e1	e2	e3	e4
3	120 (4-23/32)	170 (6-11/16)	156 (6-9/64)	110.5 (4-11/32)	5.2 (13/64)	145 (5-23/32)	100 (3-15/16)	M6	16 (5/8)	38.5 (1-33/64)	147 (5-25/32)	8 (5/46)
3 (elect. coil) and 4	120 (4-23/32)	170 (6-11/16)	156 (6-9/64)	110.5 (4-11/32)	5.2 (13/64)	145 (5-23/32)	100 (3-15/16)	M8	20 (51/64)	39 (1-33/64)	160 (6-19/64)	10 (25/64)
5	155 (6-3/32)	205 (8-5/64)	180 (7-3/32)	110.5 (4-11/32)	6.5 (17/64)	180 (7-3/32)	130 (5-1/8)	M10	25 (63/64)	48 (1-57/64)	193 (7-39/64)	12.5 (1/2)

Contactors with		mm
Auxiliary contact block ✶	100-DS1… 100-DS2…	a a + 13.5 each
Mechanical Interlock	100-DM…	a + a
Frame terminal block	100-DTB110 100-DTB180 100-DTB420	b + 7 each b + 7 each b + 8.5 each
Label holder		c…+ 5

✶ Conventional DC coil contactors will accept only Cat. No. 100-DS2… auxiliary contacts.

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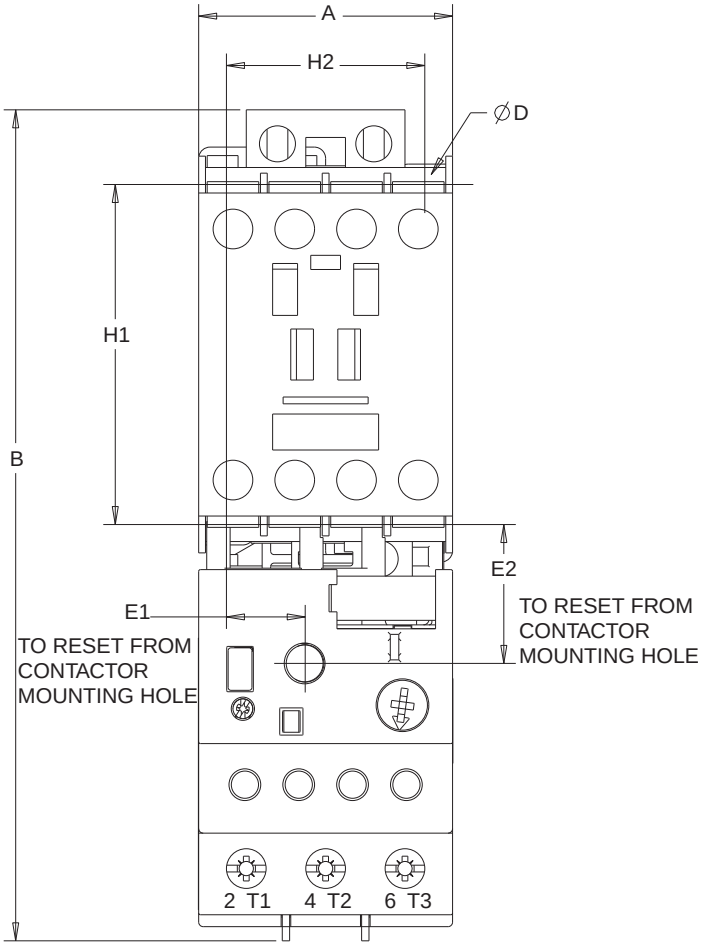
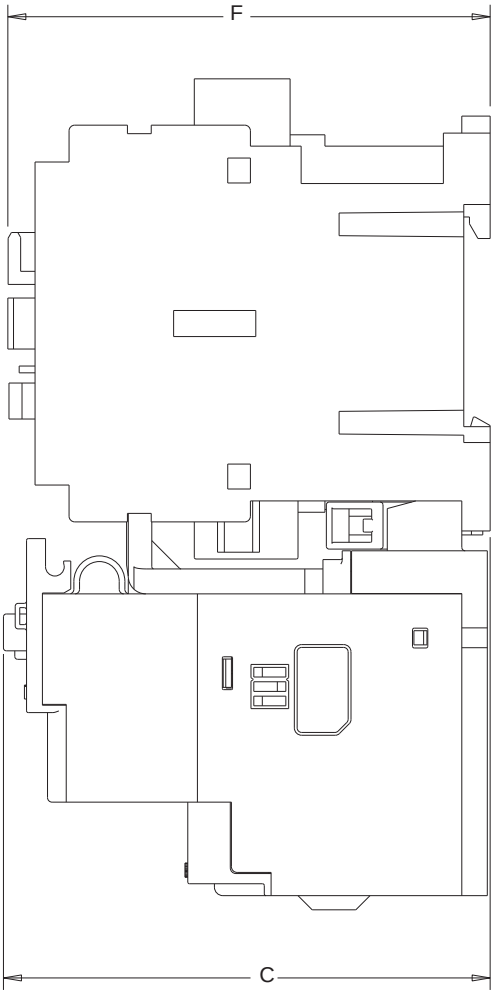
Approximate dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.

E1 Plus Solid-State Overload Relays

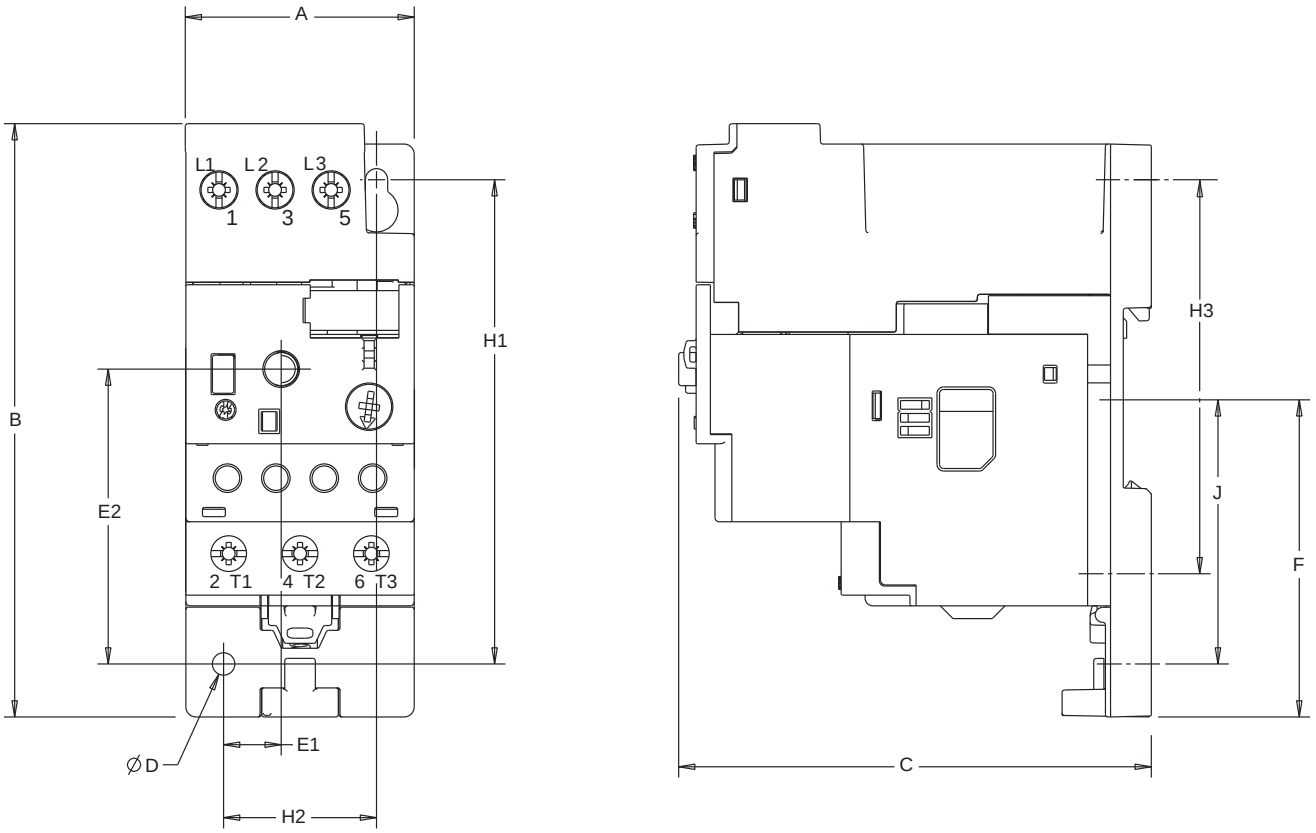




NEMA Size	Overload Cat. No.	A Width	B Height	C Depth	D	E1	E2	F	H1	H2
0…1	193-EE__D 193R-EE__D 193S-EE__D	45 (1-25/32)	146.6 (5-25/32)	101.2 (3-63/64)	4.5 (3/16)	13.9 (35/64)	24.5 (31/32)	104 (4-3/32)	60 (2-23/64)	35 (1-3/8)
2	193-EE__E 193R-EE__E 193S-EE__E	72 (2-53/64)	192.3 (7-37/64)	120.4 (4-3/4)	5.4 (7/32)	23.8 (15/16)	29 (1-9/64)	125.5 (4-15/16)	100 (3-15/16)	55 (2-11/64)

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

Panel Adapter Mounted



Panel Adaptor Cat. No.	Overload Cat. No.	A Width	B Height	C Depth	D	E1	E2	F	H1	H2	H3	J
193-EPD	193-EE__D 193R-EE__D 193S-EE__D	45 (1-25/32)	112.4 (4-7/16)	108.7 (4-9/32)	4.4 (11/64)	11.4 (29/64)	57.9 (2-9/32)	62.5 (2-15/32)	95 (3-3/4)	30 (1-3/16)	75 (2-31/32)	52.1 (2-3/64)
193-EPE	193-EE__E 193R-EE__E 193S-EE__E	72 (2-53/64)	107.4 (4-15/64)	127 (5/32)	5.5 (5/32)	26.4 (1-1/32)	54.5 (2-9/64)	48.3 (1-29/32)	90 (3-23/64)	60 (2-23/64)	—	43.3 (1-45/64)

DIN Rail / Panel Adapter — Terminal Cross Sections

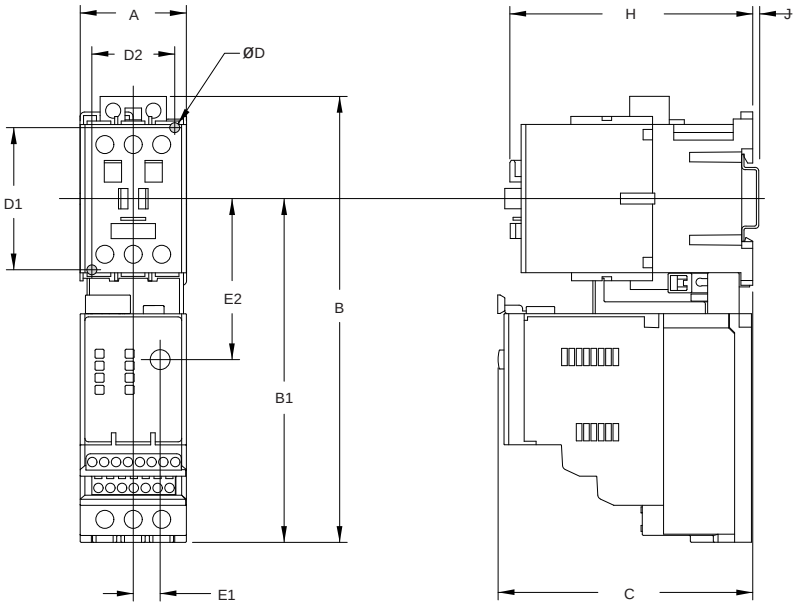
		Cat. No. 193-EPB ∗	Cat. No. 193-EPD ∗	Cat. No. 193-EPE
Flexible-Stranded with Ferrule	Single Conductor	1.0…4.0 mm²	2.5…16 mm²	4.0…35 mm²
	Torque	1.8 N·m	2.3 N·m	4.0 N·m
	Two Conductor	1.0…4.0 mm²	2.5…10 mm²	4.0…25 mm²
	Torque	1.8 N·m	2.3 N·m	4.0 N·m
Coarse-Stranded/Solid	Single Conductor	1.5…6.0 mm²	2.5…25 mm²	4.0…50 mm²
	Torque	1.8 N·m	2.3 N·m	4.0 N·m
	Two Conductor	1.5…6.0 mm²	2.5…16 mm²	4.0…35 mm²
	Torque	1.8 N·m	2.3 N·m	4.0 N·m
Stranded/Solid	Single Conductor	14…8 AWG	16…6 AWG	12…1 AWG
	Torque	16 lb·in	20 lb·in	35 lb·in
	Two Conductor	14…10 AWG	16…6 AWG	12…2 AWG
	Torque	16 lb·in	20 lb·in	35 lb·in

∗ For multiple conductor applications, the same size and style wire must be used.

1

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

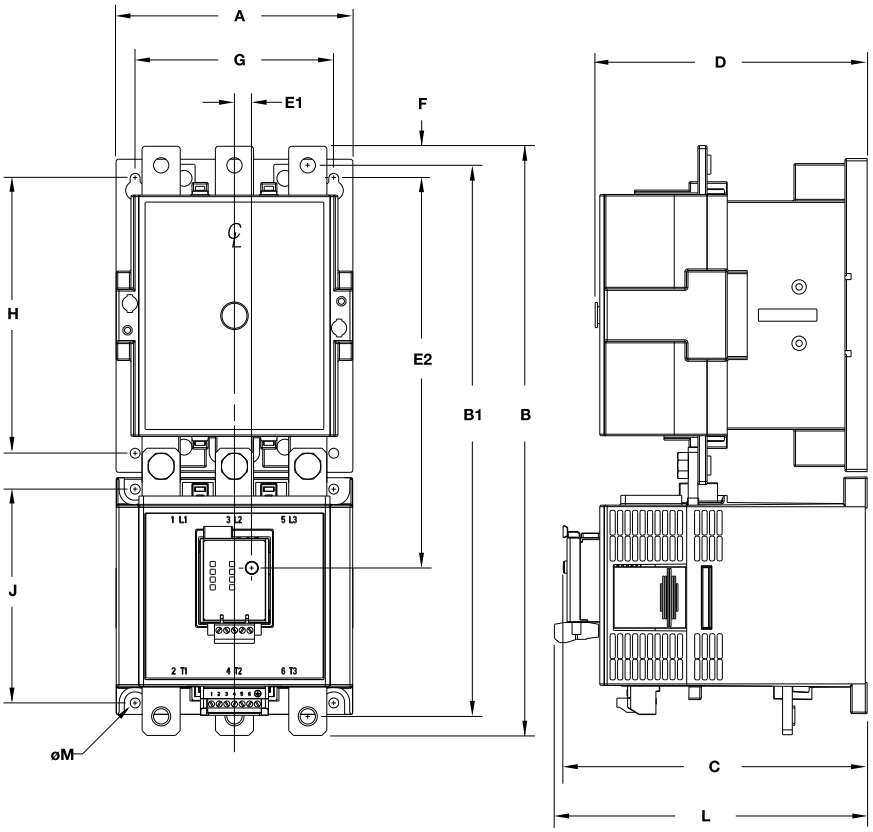
Bulletin 300 Contactor with Overload Relay



Overload Cat. No.	NEMA Size	A Width	B Height without 193-EIMD	B Height with 193-EIMD	B1	C Depth	E1	E2
193-EC__D	0…2	45 (1-25/32)	188.3 (7-13/32)	207.7 (8-11/64)	145.1 (5-23/32)	107 (4-7/32)	11.4 (29/64)	67.9 (2-43/64)
193-EC__E	2	72 (2-53/64)	236.1 (9-19/64)	255.5 (10-1/16)	173.2 (6-13/16)	124.6 (4-29/32)	11.4 (29/64)	89.8 (3-17/32)

Overload Cat. No.	NEMA Size	D1	D2	H	J	ØD
193-EC__D	0…2	60 (2-23/64)	35 (1-3/8)	104 (4-3/32)	2 (5/64)	ø4.2 (11/64ø)
193-EC__E	2	100 (3-15/16)	55 (2-11/64)	125.5 (4-15/16)	2 (5/64)	ø5.5 (7/32ø)

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



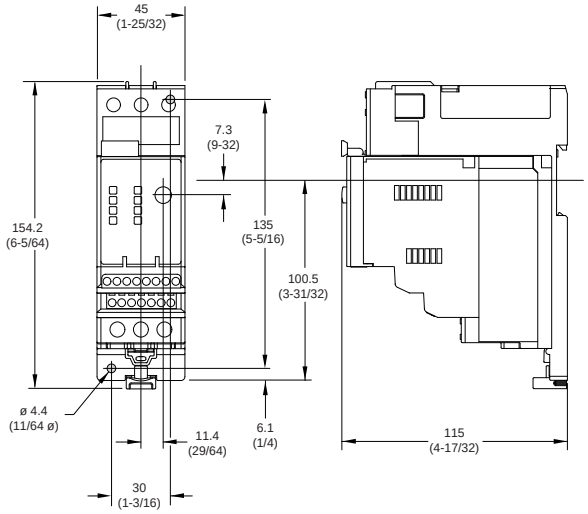
Overload Cat. No.	NEMA Size	A Width	B Height without Terminal Covers	B Height with Terminal Covers	B1	C Depth	D	E1	E2
193-EC__F	3	120 (4-23/32)	336.3 (13-1/4)	418 (16-29/64)	311.8 (12-17/64)	175.1 (6-57/64)	156 (5-9/64)	11.4 (3/64)	216.1 (8-1/2)
	4	120 (4-23/32)	339.8 (13-3/8)	418 (16-29/64)	317.8 (12-1/2)	175.1 (6-57/64)	156 (5-9/64)	11.4 (29/64)	216.1 (8-1/2)
193-EC__G	5	155 (6-1/10)	385.8 (15-3/16)	487.4 (19-29/64)	360.8 (14-1/5)	198.9 (7-53/64)	180 (7-3/32)	11.4 (29/64)	255 (10-3/64)

Overload Cat. No.	NEMA Size	F	G	H	J	K	L	M
193-EC__F	3	12.5 (1/2)	100 (3-15/16)	145 (5-23/32)	135 (5-5/46)	22.3 (7/8)	180.9 (7-1/8)	8 - 5.6 (8 - 7/32)
	4	16 (5/8)	100 (3-15/16)	145 (5-23/32)	135 (5-5/46)	22.3 (7/8)	180.9 (7-1/8)	8 - 5.6 (8 - 7/32)
193-EC__G	5	21 (53/64)	130 (5-1/8)	180 (7-3/32)	140 (5-1/2)	23.5 (15/16)	204.7 (8-1/16)	8 - 6.5 (8 - 17/64)

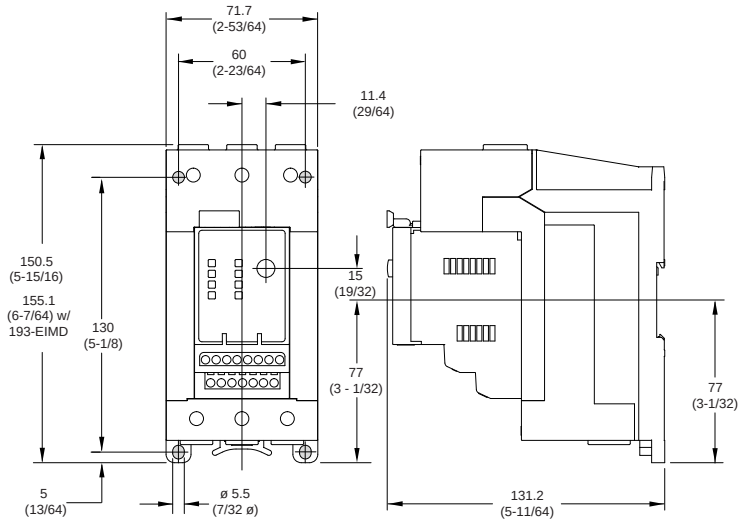
Approximate dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.

Panel Mount Adapters

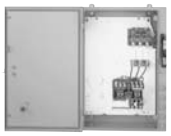
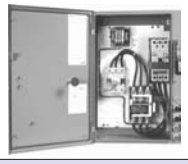
(For Use With Cat. No. 193-EC__D, 193- EC_ZZ)

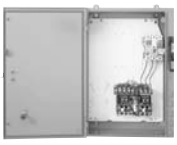


(For Use With Cat. No. 193-EC__E)



NEMA Combination Starters and Pump Panels

					
Bulletin	**502/503**	**506/507**	**512/513, 512M/513M**	**512H/513H**	**512V/513V**
Features	Non-reversing combination contactor	Reversing combination starter	Non-reversing combination starter and non-reversing starter with extra panel space	Non-reversing combination starter mounted in a horizontal enclosure	Non-reversing vacuum combination starter
Disconnecting Means	• 502 disconnect switch • 503 circuit breaker	• 506 disconnect switch • 507 circuit breaker	• 512/512M disconnect switch • 513/513M circuit breaker	• 512H disconnect switch • 513H circuit breaker	• 512V disconnect switch • 513V circuit breaker
Type 1 — Painted Metal Enclosure Latch Fastener	NEMA Size 0…5	NEMA Size 0…5	NEMA Size: 0…5 (512/513), — (512M/513M)	—	NEMA Size 4…5
Type 3R/4/12 — Painted Metal Enclosure Screw Fasteners	NEMA Size 0…5	NEMA Size 0…5	NEMA Size: 0…7 (512/513), 1…2 (512M/513M)	—	NEMA Size 4…6
Type 3R/4/12 — Painted Metal Enclosure Door Safety Hardware	NEMA Size 0…5	NEMA Size 0…5	NEMA Size: 0…5 (512/513), 1…2 (512M/513M)	NEMA Size 1…2	NEMA Size 4…5
Type 4/4X — Stainless Steel Enclosure Screw Fasteners	NEMA Size 0…5	NEMA Size 0…5	NEMA Size: 0…6 (512/513), 1…2 (512M/513M)	—	NEMA Size 4…5
Type 4/4X — Fiberglass Reinforced Polyester Enclosure Screw Fasteners	NEMA Size 0…5	NEMA Size 0…5	NEMA Size: 0…5 (512/513), — (512M/513M)	—	—
Product Selection	**Page 1-73 (Bul. 502) or page 1-74 (Bul. 503)**	**Page 1-75 (Bul. 506) or page 1-76 (Bul. 507)**	**Page 1-78 (Bul. 512), page 1-82 (Bul. 512M), page 1-84 (Bul. 513), page 1-88 (Bul. 513M)**	**Page 1-80 (Bul. 512H) or page 1-87 (Bul. 513H)**	**Page 1-83 (Bul. 512V) or page 1-84 (Bul. 513V)**

				
Bulletin	**522/523**	**1232X/1233X**	**1232V/1233V**	**1223**
Features	• Combination multi-speed starter constant horsepower • Combination multi-speed starter constant or variable torque • Combination multi-speed starter consequent pole	Non-reversing starter with extra panel space	Non-reversing vacuum pump control panel	Combination oil well pump control panel
Disconnecting Means	• 522E,F,G disconnect switch • 523E,F,G circuit breaker	• 1232X disconnect switch • 1233X circuit breaker	• 1232V disconnect switch • 1233V circuit breaker	1223 circuit breaker
Type 1 — Painted Metal Enclosure Latch Fastener	NEMA Size 1…5	—	—	—
Type 3R/4/12 — Painted Metal Enclosure Screw Fasteners	NEMA Size 1…5	NEMA Size 1…7 (Type 3R only)	NEMA Size 4…6 (Type 3R only)	NEMA Size 1…4
Type 3R/4/12 — Painted Metal Enclosure Door Safety Hardware	NEMA Size 1…5	—	—	—
Type 4/4X — Stainless Steel Enclosure Screw Fasteners	NEMA Size 1…5	—	—	—
Type 4/4X — Fiberglass Reinforced Polyester Enclosure Screw Fasteners	NEMA Size 1…3	—	—	—
Product Selection	**Page 1-90 (Bul. 522) or page 1-94 (Bul. 523)**	**Page 1-98 (Bul. 1232X) or page 1-100 (Bul. 1233X)**	**Page 1-99 (Bul. 1232V) or page 1-102 (Bul. 1233V)**	**Page 1-103**

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*		

a

Bulletin No.	
Bulletin No.	Description
502	Combination contactor with disconnect switch
503	Combination 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
512H	Horizontal mounting combination starter with disconnect switch
512M	Non-reversing combination starter with disconnect switch — extra panel space
512V	Non-reversing vacuum combination starter with disconnect switch
513	Non-reversing combination starter with circuit breaker
513H	Horizontal mounting combination starter with circuit breaker
513M	Non-reversing combination starter with circuit breaker — extra panel space
513V	Non-reversing vacuum combination starter with circuit breaker
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
1232V	Pump panel with vacuum contactor and disconnect switch
1233X	Pump panel with circuit breaker
1233V	Pump panel with vacuum contactor and circuit breaker

b

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

c

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.

d

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		600	600
H	Transformer Control∗	208	120
A		240	120
B		480	120
C		600	120
HD	Separate Control (without transformer)	208	120
AD		240	120
BD		480	120
CD		600	120

e

Overload Relay	
Code	Description
None	Eutectic Alloy
See page 1-169	Solid-State

f

Options
See page 1-118

∗ **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.

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.

Table of Contents

Standards Compliance

UL 508
CSA C22.2, No. 14

Certifications

cULus Listed (File No. E3125, Guide No. NLDX, NLDX7)

1

NEMA Size	Continuous Ampere Rating [A]	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage: 60 Hz 200V	60 Hz 230V	50 Hz 380…415V	60 Hz 460…575V	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.∗❄
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
		—	—	25	25	480…600	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
		—	—	50	50	480…600	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
		40	50	—	—	208…240	400	**502-EA⊗-28J**	**502-EF⊗-28J**	**502-EJ⊗-28J**	**502-EC⊗-28J**	502-ES⊗-28J
		—	—	75	100	480…600	400	**502-EA⊗-28J**	**502-EF⊗-28J**	**502-EJ⊗-28J**	**502-EC⊗-28J**	502-ES⊗-28J
5	270	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

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
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 **Cat. No. 502-AA⊗-24**. Class J fuse clips can be supplied. Example: **Cat. No. 502-AA⊗-24R** becomes **Cat. No. 502-AA⊗-24J**. Class HRC form II fuse clips can be supplied. Example: **Cat. No. 502-AA⊗-24R** becomes **Cat. No. 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

UL 508
CSA C22.2, No. 14

Certifications

cULus Listed (File No. E3125, Guide No. NLDX, NLDX7)

NEMA Size	Continuous Ampere Rating [A]❄	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 200V	230V	460V	575V	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.∗
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
		—	—	10	10	**503-BA⊗-41T**	**503-BF⊗-41T**	**503-BJ⊗-41T**	**503-BC⊗-41T**	503-BS⊗-41T
2	45	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
		—	—	20…25	20…25	**503-CA⊗-44T**	**503-CF⊗-44T**	**503-CJ⊗-44T**	**503-CC⊗-44T**	503-CS⊗-44T
3	90	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
		—	—	100	75…100	**503-EA⊗-50T**	**503-EF⊗-50T**	**503-EJ⊗-50T**	**503-EC⊗-50T**	503-ES⊗-50T
5	270	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

❄ When controlling high efficiency motors – consult your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker selection.

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

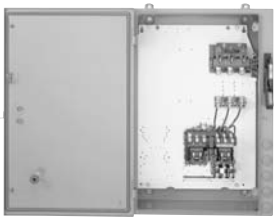
	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
120V Separate Control (without transformer)		**HD**	**AD**	**BD**	**CD**

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

Visit our website: www.ab.com/catalogs
Preferred availability cat. nos. are printed in **bold**

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

UL 508
CSA C22.2, No. 14

Certifications

cULus Listed (File No. E3125, Guide No. NLDX, NLDX7)

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements. Located on page 1-177.

NEMA Size	Cont. Ampere Rating [A]	Max. Hp Rating FLC Must Not Exceed Continuous Amp Rating — Motor Voltage 60 Hz 200V	60 Hz 230V	50 Hz 380…415V	60 Hz 460…575V	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. ∗❄
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
		—	—	25	25	480...600	100	**506-CA⊗-✪-26J**	**506-CF⊗-✪-26J**	**506-CJ⊗-✪-26J**	**506-CC⊗-✪-26J**	506-CS⊗-✪-26J
3	90	—	—	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
		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
4	135	—	—	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
		—	—	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
5	270	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

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208V	230…240V	460…480V	575…600V
Common Control	60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-50 Note)					
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 1-169 to complete the cat. no.
Example: **Cat. No. 506-AAB-✪-24R** becomes **Cat. No. 506-AAB-A2D-24R**.

∗Non-Fusible Disconnect Type

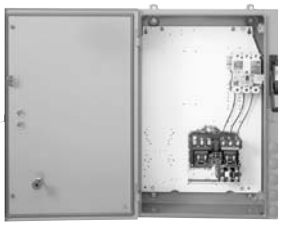
Cat. nos. listed above include a fusible disconnect switch with Class R or J fuse clips. To order a non-fusible disconnect switch, eliminate the fuse clip code from the cat. no. Example: **Cat. No. 506-BFB-24R** becomes **Cat. No. 506-BFB**.

❄ Class H fuse clips can be supplied. Example: **Cat. No. 506-AA⊗-24R** becomes **Cat. No. 506-AA⊗-24**. Class J fuse clips can be supplied. Example: **Cat. No. 506-AA⊗-24R** becomes **Cat. No. 506-AA⊗-24J**. Class HRC form II fuse clips can be supplied. Example: **Cat. No. 506-AA⊗-24R** becomes **Cat. No. 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). Only available in Type 1 or 12.

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.

Table of Contents

Standards Compliance

UL 508
CSA C22.2, No. 14

Certifications

Ordinary Locations
cULus Listed (File No. E125316, Guide No. NKJH, NKJH7)
Hazardous Locations
cULus Listed (File No. E138817, Guide No. NOTH, NOTH7)

Heater Elements — Starters with eutectic alloy overload relay require 3 heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]‡	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 200V	230V	460V	575V	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-mettalic Cat. No.∗❄
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
		—	—	5	5	**507-AA⊗-✪-39**	**507-AF⊗-✪-39**	**507-AJ⊗-✪-39**	**507-AC⊗-✪-39**	507-AS⊗-✪-39
1	27	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
		—	—	10	10	**507-BA⊗-✪-41**	**507-BF⊗-✪-41**	**507-BJ⊗-✪-41**	**507-BC⊗-✪-41**	507-BS⊗-✪-41
2	45	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
		—	—	20…25	20…25	**507-CA⊗-✪-44**	**507-CF⊗-✪-44**	**507-CJ⊗-✪-44**	**507-CC⊗-✪-44**	507-CS⊗-✪-44
3	90	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
		—	—	30…50	40…50	**507-DA⊗-✪-47**	**507-DF⊗-✪-47**	507-DJ⊗-✪-47	**507-DC⊗-✪-47**	507-DS⊗-✪-47
4	135	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
		—	—	100	75…100	**507-EA⊗-✪-50**	**507-EF⊗-✪-50**	**507-EJ⊗-✪-50**	**507-EC⊗-✪-50**	507-ES⊗-✪-50
5	270	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

‡ When controlling high efficiency motors – consult your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker selection.

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
120V — Separate Control		**HD**	**AD**	**BD**	**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 1-169 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**.

Heater Elements — Starters with eutectic alloy overload relay require 3 heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]‡	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 200V	230V	460V	575V	Type 7 & 9 Bolted Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 – Cat. No.❄	Type 3R, 7 & 9 Bolted Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 – Cat. No.✶❄	Type 3R, 7 & 9 Unilock Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 – Cat. No.✶❄
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
		—	—	10	10	507-BE⊗-✪-41	507-BH⊗-✪-41	507-BU⊗-✪-41
2	45	10	10	—	—	507-CE⊗-✪-41	507-CH⊗-✪-41	507-CU⊗-✪-41
		—	15	15	15	507-CE⊗-✪-42	507-CH⊗-✪-42	507-CU⊗-✪-42
		—	—	20…25	20…25	507-CE⊗-✪-44	507-CH⊗-✪-44	507-CU⊗-✪-44
3	90	15…25	20…25	—	—	507-DE⊗-✪-44	507-DH⊗-✪-44	507-DU⊗-✪-44
		—	30	—	30	507-DE⊗-✪-45	507-DH⊗-✪-45	507-DU⊗-✪-45
		—	—	30…50	40…50	507-DE⊗-✪-47	507-DH⊗-✪-47	507-DU⊗-✪-47
4	135	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

‡ When controlling high efficiency motors – consult your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker selection.

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	H	A	B	C
Transformer Control (See page 1-72 Note)					
120V — Separate Control		HD	AD	BD	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 1-169 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.

Table of Contents

Standards Compliance

UL 508
CSA 22.2, No. 14

Certifications

Fusible Versions
cULus Listed (File No. E125316, Guide No. NKJH, NKJH7)
Non-Fusible Versions
cULus Listed (File No. E3125, Guide No. NLDX, NLDX7)
American Bureau of Shipping

Heater Elements — Starters with eutectic alloy overload relay require 3 heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]	Max. Hp Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 60 Hz 200V	60 Hz 230V	50 Hz 380 … 415V	60 Hz 460 … 575V	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.∗❄
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

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
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 1-169 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 **Cat. No. 512-AA⊗-24**. Class J fuse clips can be supplied. Example: **Cat. No. 512-AA⊗-24R** becomes **Cat. No. 512-AA⊗-24J**. Class HRC form II fuse clips can be supplied.
Example: **Cat. No. 512-AA⊗-24R** becomes **Cat. No. 512-AA⊗-24E**.

‡ Type 3R/4/12 starters do not include an external reset button for the overload relay. To order an external reset, replace the second letter **J** in the listed cat. no. with the letter **D**. Example: **Cat. No. 512-AJ⊗-✪-24R** becomes **Cat. No. 512-AD⊗-✪-24R**.

Visit our website: www.ab.com/catalogs
Preferred availability cat. nos. are printed in **bold**

Heater Elements — Starters with eutectic alloy overload relay require 3 heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]	Max. Hp Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 60 Hz 200V	60 Hz 230V	50 Hz 380 … 415V	60 Hz 460 … 575V	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.∗❄
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⊗-✪-29J	—
7	810	—	300	500	600	240…600	1200	—	512-HF⊗-✪-25L	—	—	—

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
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 1-169 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 **Cat. No. 512-AA⊗-24**. Class J fuse clips can be supplied. Example: **Cat. No. 512-AA⊗-24R** becomes **Cat. No. 512-AA⊗-24J**. Class HRC form II fuse clips can be supplied.
Example: **Cat. No. 512-AA⊗-24R** becomes **Cat. No. 512-AA⊗-24E**.
‡ For 230V and 460V Hp ratings, limit the maximum fuse sizing to 125% of motor full load current.

Horizontal Mounting Disconnect Type

Overview/Catalog Number Explanation

Bulletin 512H Horizontal Mounting Combination Starter

- NEMA starter sizes 1…2
- Fusible or non-fusible disconnect switch
- Overload relays: Eutectic supplied as standard, solid-state available as an option
- Painted metal enclosures: Type 3R/4/12
- Modifications — factory installed
- Accessories — field installed
- Service entrance rated

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

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Standards Compliance

UL 508
CSA 22.2, No. 14

Certifications

Fusible Versions
UL Listed (File No. E125316, Guide No. NKJH)
CSA (File No. LR1234)
Non-Fusible Versions
UL Listed (File No. E3125, Guide No. NLDX)
CSA (File No. LR1234)
American Bureau of Shipping

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.

512H	–	B	D	CD	–	A2D	–	1E
a		*b*	*c*	*d*		*e*		*f*

a

Bulletin No.	
Bulletin No.	Description
512H	Horizontal mounting combination starter with disconnect switch
513H	Horizontal mounting combination starter with circuit breaker

b

Starter Size	
NEMA Size Code	NEMA Size
B	1
C	2

c

Enclosure Type	
Code	Type
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

d

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		600	600
H	Transformer Control∗	208	120
A		240	120
B		480	120
C		600	120
HD	Separate control (without transformer)	208	120
AD		240	120
BD		480	120
CD		600	120

e

Overload Relay	
Code	Description
None	Eutectic alloy
See Industrial Controls catalog	Solid-state

f

Options
See page 1-118

∗ **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.

Visit our website: www.ab.com/catalogs
Preferred availability cat. nos. are printed in **bold**

Heater Elements — Starters with eutectic alloy overload relay require 3 heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]	Max. Hp Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage, 60 Hz 200V	230V	460V	575V	Coil Voltage [V]∗	Fuse Clip Rating Amperes [A] Fuses not included. Select per NEC	Type 3R/4/12 Rainproof, Waterproof, Dusttight with Door Safety Hardware	Type 3R/4/12 Rainproof, Waterproof, Dusttight with Door Safety Hardware & External Overload Relay Reset
Fusible Disconnect Type with Class H, J, and K Fuse Clips‡								Cat. No.§	Cat. No.§
1	27	7.5	—	—	—	208	30	512H-BJH-24	512H-BDH-24
							60	512H-BJH-25	512H-BDH-25
		—	7.5	—	—	240	30	512H-BJA-24	512H-BDA-24
							60	512H-BJA-25	512H-BDA-25
		—	—	10	—	480	30	512H-BJB-24	512H-BDB-24
							60	512H-BJB-25	512H-BDB-25
		—	—	—	10	600	30	512H-BJC-24	512H-BDC-24
							60	512H-BJC-25	512H-BDC-25
2	45	10	—	—	—	208	60	512H-CJH-25	512H-CDH-25
							100	512H-CJH-26	512H-CDH-26
		—	15	—	—	240	60	512H-CJA-25	512H-CDA-25
							100	512H-CJA-26	512H-CDA-26
		—	—	25	—	480	60	512H-CJB-25	512H-CDB-25
							100	512H-CJB-26	—
		—	—	—	25	600	60	512H-CJC-25	512H-CDC-25
							100	512H-CJC-26	—

Note: Class R fuse clips can be supplied as a factory option in place of standard clips by adding and **R** after the digit which indicated the fuse clip size.

∗ **120V Separate Control (Control Circuit Transformer not supplied) —** To order a 208V or 240V starter with 120V separate control, change the third letter following the first dash in the listed catalog number to **AD**. The **AD** represents 240V and corresponds to the fuse clip spacing. To order a 480V or 600V starter, change the third letter following the first dash in the listed catalog number to **CD**. The **CD** represents 600V and corresponds to the fuse clip spacing. List prices apply. When ordering a separate control circuit transformer select the primary voltage on the basis of the actual system line voltage.
120V Separate Control (Control Circuit Transformer not supplied) — To order a non-fusible type starter with 120V coil for separate control, change the third letter following the first dash in the listed catalog number to **D**. List prices apply.

‡ Class H and K fuse clips will also accept Class R fuses. Class R fuse clips are the rejection type and will accept Class R fuses only.

§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**.

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

UL 508
CSA 22.2, No. 14

Certifications

Fusible Versions
cULus Listed (File No. E125316, Guide No. NKJH, NKJH7)
Non-Fusible Versions
cULus Listed (File No. E3125, Guide No. NLDX, NLDX7)
American Bureau of Shipping

Heater Elements — Starters with eutectic alloy overload relay require 3 heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 60 Hz 200V	60 Hz 230V	50 Hz 380…415V	60 Hz 460…575V	Line Voltage [V]	Fuse Clip Rating Amperes [A] Fuses not included. Select per NEC	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.∗❄
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**

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
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 1-169 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**.

Bulletin 512V

- NEMA starter sizes 4…6
- Fusible or non-fusible disconnect switch
- Painted metal enclosures: Type 1, Type 3R/4/12
- Stainless steel enclosures: Type 4/4X
- Modifications — factory installed
- Accessories — field installed
- Service entrance rated

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Standards Compliance

UL 508A
CSA C22.2, No. 14

Certifications

cULus Listed (File No. E54866, Guide No. NITW)

Heater Elements — Starters with eutectic alloy overload relay require 3 heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]	Max. Hp Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 60 Hz 200V	60 Hz 230V	50 Hz 380 … 415V	60 Hz 460 … 575V	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.∗❄
4	135	—	—	75	100	480…600	100	512V-EA⊗-✪-26R	512V-EF⊗-✪-26R	512V-EJ⊗-✪-26R	512V-EC⊗-✪-26R
		40	50	—	—	208…240	200	512V-EA⊗-✪-27R	512V-EF⊗-✪-27R	512V-EJ⊗-✪-27R	512V-EC⊗-✪-27R
		—	—	75	100	480…600	200	512V-EA⊗-✪-27R	512V-EF⊗-✪-27R	512V-EJ⊗-✪-27R	512V-EC⊗-✪-27R
		40	50	—	—	208…240	400	512V-EA⊗-✪-28J	512V-EF⊗-✪-28J	512V-EJ⊗-✪-28J	512V-EC⊗-✪-28J
		—	—	75	100	480…600	400	512V-EA⊗-✪-28J	512V-EF⊗-✪-28J	512V-EJ⊗-✪-28J	512V-EC⊗-✪-28J
5	270	40	50	—	—	208…240	200	512V-FA⊗-✪-27R	512V-FF⊗-✪-27R	512V-FJ⊗-✪-27R	512V-FC⊗-✪-27R
		—	—	75	100	480…600	200	512V-FA⊗-✪-27R	512V-FF⊗-✪-27R	512V-FJ⊗-✪-27R	512V-FC⊗-✪-27R
		75	100	150	200	208…600	400	512V-FA⊗-✪-28R	512V-FF⊗-✪-28R	512V-FJ⊗-✪-28R	512V-FC⊗-✪-28R
6	540	150	200	300	400	208…600	600	—	512V-GF⊗-✪-29R	—	—

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage Code from the table below to complete the cat. no.
Example: **Cat. No. 512V-EA⊗-✪-26R** becomes **Cat. No. 512V-EAB-✪-26R**. For other voltages, consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		208	230…240	460…480	575…600
Common Control	AC, 60 Hz	—	**A**	**B**	—
Transformer Control (See page 1-72 Note)		**H**	**A**	**B**	**C**
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 1-169 to complete the cat. no.
Example: **Cat. No. 512V-EAB-✪-26R** becomes **Cat. No. 512V-EAB-B1M-26R**.

∗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. 512V-EFB-26R** becomes **Cat. No. 512V-EFB**.

❄ Class H fuse clips can be supplied. Example: **Cat. No. 512V-EA⊗-26R** becomes **Cat. No. 512V-EA⊗-26**.
Class J fuse clips can be supplied. Example: **Cat. No. 512V-EA⊗-26R** becomes **Cat. No. 512V-EA⊗-26J**.
Class HRC form II fuse clips can be supplied. Example: **Cat. No. 512V-EA⊗-26R** becomes **Cat. No. 512V-EA⊗-26E**.

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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Standards Compliance

UL 508
CSA C22.2, No. 14

Certifications

Circuit Breaker Versions
cULus Listed (File No. E125316, Guide No. NKJH, NKJH7)
Hazardous Locations
cULus Listed (File No. E138817, Guide No. NOTH, NOTH7)
American Bureau of Shipping

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]‡	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltages 200V	230V	460V	575V	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.∗❄
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
		—	—	10	10	**513-BA⊗-✪-41**	513-BF⊗-✪-41	513-BJ⊗-✪-41	**513-BC⊗-✪-41**	**513-BS⊗-✪-41**
2	45	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

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
120V Separate Control (without transformer)		**HD**	**AD**	**BD**	**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 1-169 to complete the cat. no.
Example: **Cat. No. 513-BAB-32** becomes **Cat. No. 513-BAB-A2F-32**.

∗ To order starters (size 0…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**.
‡ When controlling high efficiency motors – consult your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker selection.

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]‡	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 200V	230V	460V	575V	Hazardous Locations — Type 1 General Purpose	Type 3R/4/12 Rainproof, Waterproof, Dustlight	Type 3R/4/12 Rainproof, Waterproof, Dustlight (Door Safety Hardware)	Type 4/4X Watertight Corrosion-Resistant Stainless Steel	Type 4/4X Watertight Corrosion-Resistant Non-metallic
						Cat. No.✶❄	Cat. No.✶❄	Cat. No.✶❄	Cat. No.✶❄	Cat. No.✶❄
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	—	—	—

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
120V Separate Control (without transformer)		**HD**	**AD**	**BD**	**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 1-169 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**.
‡ When controlling high efficiency motors – consult your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker selection.

NEMA Combination Non-Reversing Starters

Circuit Breaker Type, Continued

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]➢	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 200V	230V	460V	575V	Hazardous Locations — Unilock Enclosure Type 3R/7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 – Cat. No.✶❄	Bolted Enclosure Type 7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 – Cat. No.❄	Bolted Enclosure Type 3R/7 & 9 Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 – 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
		—	—	10	10	513-BU⊗-✪-41	**513-BE⊗-✪-41**	513-BH⊗-✪-41
2	45	10	10	—	—	513-CU⊗-✪-41	513-CE⊗-✪-41	513-CH⊗-✪-41
		—	15	15	15	513-CU⊗-✪-42	513-CE⊗-✪-42	**513-CH⊗-✪-42**
		—	—	20…25	20…25	**513-CU⊗-✪-44**	**513-CE⊗-✪-44**	513-CH⊗-✪-44
3	90	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

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
120V Separate Control (without transformer)		**HD**	**AD**	**BD**	**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 1-169 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.
➢ When controlling high efficiency motors – consult your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker selection.

Bulletin 513H Horizontal Mounting Combination Starter

- NEMA starter sizes 1…2
- Overload relays: Eutectic supplied as standard, solid-state available as an option
- Circuit breaker magnetic only (instantaneous)
- Painted metal enclosures: Type 3R/4/12
- Modifications — factory installed
- Accessories — field installed
- Service entrance rated

A Bulletin 513H combination non-reversing starter consists of a Bulletin 509 starter and a circuit breaker magnetic only (instantaneous trip) mounted in a horizontal enclosure.

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Standards Compliance

UL 508
CSA C22.2, No. 14

Certifications

Circuit Breaker Versions
UL Listed (File No. E125316, Guide No. NKJH)
CSA (File No. LR1234)
Hazardous Locations
UL Listed (File No. E138817, Guide No. NOTH)
CSA (File No. LR1234)
American Bureau of Shipping

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]∗	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating∗ Motor Voltages 200V	230V	460V	575V	Coil Voltage [V]‡	Type 3R/4/12 Rainproof, Waterproof, Dusttight with Door Safety Hardware Cat. No.	Type 3R/4/12 Rainproof, Waterproof, Dusttight with Door Safety Hardware & External Overload Relay Reset Cat. No.
1	27	0…1/3	—	—	—	208	513H-BJH-32	513H-BDH-32
		1/2…1	—	—	—		513H-BJH-35	513H-BDH-35
		1-1/2…3	—	—	—		513H-BJH-38	513H-BDH-38
		5	—	—	—		513H-BJH-39	513H-BDH-39
		7-1/2	—	—	—		513H-BJH-40	513H-BDH-40
		—	0…1/3	—	—	240	513H-BJA-32	513H-BDA-32
		—	1/2…1	—	—		513H-BJA-35	513H-BDA-35
		—	1-1/2…3	—	—		513H-BJA-38	513H-BDA-38
		—	5	—	—		513H-BJA-40	513H-BDA-40
		—	—	0…1	—	480	513H-BJB-35	513H-BDB-35
		—	—	1-1/2…3	—		513H-BJB-38	513H-BDB-38
		—	—	5…7-1/2	—		513H-BJB-40	513H-BDB-40
		—	—	10	—		513H-BJB-41	513H-BDB-41
		—	—	—	0…1	600	513H-BJC-35	513H-BDC-35
		—	—	—	1-1/2…3		513H-BJC-38	513H-BDC-38
		—	—	—	5…7-1/2		513H-BJC-40	513H-BDC-40
		—	—	—	10		513H-BJC-41	513H-BDC-41
2	45	10	—	—	—	208	513H-CJH-41	513H-CDH-41
		—	10	—	—	240	513H-CJA-41	513H-CDA-41
		—	15	—	—		513H-CJA-42	513H-CDA-42
		—	—	15	—	480	513H-CJB-42	513H-CDB-42
		—	—	20…125	—		513H-CJB-44	513H-CDB-44
		—	—	—	15	600	513H-CJC-42	513H-CDC-42
		—	—	—	20…25		513H-CJC-44	513H-CDC-44

∗ When controlling high efficiency motors – consult your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker selection.

‡ **120V Separate Control** — Starters with 120V separate control are available at listed prices. To order, add letter **D** after the third letter following the first dash in the listed cat. no.

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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Standards Compliance

UL 508
CSA 22.2, No. 14

Certifications

cULus Listed (File No. E125316, Guide No. NKJH)

Heater Elements — Starters with eutectic alloy overload relay require 3 overload heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 200V	230V	460V	575V	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.∗❄
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**
		—	—	10	10	**513M-BF⊗-✪-41**	**513M-BJ⊗-✪-41**	**513M-BC⊗-✪-41**
2	45	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**

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
120V Separate Control (without transformer)		**HD**	**AD**	**BD**	**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 1-169 to complete the cat. no.
Example: **Cat. No. 513M-BAB-✪-35** becomes **Cat. No. 513M-BAB-A2D-35.**

∗ To order starters (size 0…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 Non-Reversing Starters with Extra Panel Space

Vacuum Circuit Breaker Type

Bulletin 513V

- NEMA starter sizes 4…6
- Circuit breaker magnetic inly (instantaneous)
- Painted metal enclosures: Type 1, Type 3R/4/12
- Stainless steel enclosures: Type 4/4X
- Modifications — factory installed
- Accessories — field installed
- Service entrance rated

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Standards Compliance

UL 508A
CSA C22.2, No. 14

Certifications

cULus Listed (File No. E54866, Guide No. NITW)

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]	Max. Hp Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltages 200V	230V	460V	575V	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.
4	135	30	—	—	—	513V-EA⊗-✪-45T	513V-EF⊗-✪-45T	513V-EJ⊗-✪-45T	513V-EC⊗-✪-45T
		40	40	—	—	513V-EA⊗-✪-46T	513V-EF⊗-✪-46T	513V-EJ⊗-✪-46T	513V-EC⊗-✪-46T
		—	50	—	—	513V-EA⊗-✪-47T	513V-EF⊗-✪-47T	513V-EJ⊗-✪-47T	513V-EC⊗-✪-47T
		—	—	—	60	513V-EA⊗-✪-48T	513V-EF⊗-✪-48T	513V-EJ⊗-✪-48T	513V-EC⊗-✪-48T
		—	—	60…75	—	513V-EA⊗-✪-49T	513V-EF⊗-✪-49T	513V-EJ⊗-✪-49T	513V-EC⊗-✪-49T
		—	—	100	75…100	513V-EA⊗-✪-50T	513V-EF⊗-✪-50T	513V-EJ⊗-✪-50T	513V-EC⊗-✪-50T
5	270	50…60	—	—	—	513V-FA⊗-✪-48T	513V-FF⊗-✪-48T	513V-FJ⊗-✪-48T	513V-FC⊗-✪-48T
		75	60…75	—	—	513V-FA⊗-✪-49T	513V-FF⊗-✪-49T	513V-FJ⊗-✪-49T	513V-FC⊗-✪-49T
		—	100	—	—	513V-FA⊗-✪-50T	513V-FF⊗-✪-50T	513V-FJ⊗-✪-50T	513V-FC⊗-✪-50T
		—	—	—	125	513V-FA⊗-✪-51T	513V-FF⊗-✪-51T	513V-FJ⊗-✪-51T	513V-FC⊗-✪-51T
		—	—	125…150	—	513V-FA⊗-✪-52T	513V-FF⊗-✪-52T	513V-FJ⊗-✪-52T	513V-FC⊗-✪-52T
		—	—	200	150…200	513V-FA⊗-✪-54T	513V-FF⊗-✪-54T	513V-FJ⊗-✪-54T	513V-FC⊗-✪-54T
6	540	100	—	—	—	—	513V-GF⊗-✪-50T	—	—
		125	125	—	—	—	513V-GF⊗-✪-51T	—	—
		150	150	—	—	—	513V-GF⊗-✪-52T	—	—
		—	200	—	—	—	513V-GF⊗-✪-54T	—	—
		—	—	250	250	—	513V-GF⊗-✪-56T	—	—
		—	—	300	300	—	513V-GF⊗-✪-57T	—	—
		—	—	—	350	—	513V-GF⊗-✪-58T	—	—
		—	—	—	—	—	513V-GF⊗-✪-59T	—	—

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage Code from the table below to complete the cat. no.
Example: **Cat. No. 513V-EA⊗-✪-45T** becomes **Cat. No. 513V-EAB-✪-45T**. For other voltages, consult your local Rockwell Automation sales office or Allen-Bradley distributor.

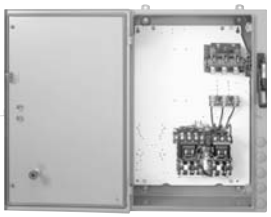
	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	—	**A**	**B**	—
Transformer Control (See page 1-72 Note)		**H**	**A**	**B**	**C**
120V Separate Control (without transformer)		**HD**	**AD**	**BD**	**CD**

✪ 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 1-169 to complete the cat. no.
Example: **Cat. No. 513V-EAB-45T** becomes **Cat. No. 513V-EAB-B1M-45T**.

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.

Table of Contents

Standards Compliance

UL 508
CSA C22.2, No. 14

Certifications

Fusible Versions
cULus Listed (File No. E125316, Guide No. NKJH, NKJH7)
Non-Fusible Versions
cULus Listed (File No. E3125, Guide No. NLDX, NLDX7)

2-Speed Separate Winding, 3-Pole – 3-Pole, Constant or Variable Torque (Constant Horsepower — page 1-91)

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements for each speed located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]	Maximum Hp Rating FLC Must Not Exceed Continuous Ampere Rating — Motor Voltage 60 Hz 200V	60 Hz 230V	50 Hz 380…415V	60 Hz 460…575V	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.∗❄‡
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	—

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
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 1-169 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⊗-✪✪24**. 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 1-92.

Visit our website: www.ab.com/catalogs

Preferred availability cat. nos. are printed in **bold**

2-Speed Separate Winding, 3-Pole – 3-Pole, Constant Horsepower (Constant or Variable Torque — page 1-90)

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements for each overload. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]	Maximum Hp Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 60 Hz 200V	60 Hz 230V	50 Hz 380…415V	60 Hz 460…575V	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.∗❄‡
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
		—	—	7-1/2	7-1/2	480…600	60	**522E-BA⊗-✪-✪-25R**	**522E-BF⊗-✪-✪-25R**	**522E-BJ⊗-✪-✪-25R**	**522E-BC⊗-✪-✪-25R**	522E-BS⊗-✪-✪-25R
2	45	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
		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
3	90	20	25	—	—	208…240	100	**522E-DA⊗-✪-✪-26R**	**522E-DF⊗-✪-✪-26R**	**522E-DJ⊗-✪-✪-26R**	**522E-DC⊗-✪-✪-26R**	522E-DS⊗-✪-✪-26R
		—	—	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
4	135	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**	—
		—	—	60	75	480…600	400	522E-EA⊗-✪-✪-28J	**522E-EF⊗-✪-✪-28J**	**522E-EJ⊗-✪-✪-28J**	**522E-EC⊗-✪-✪-28J**	—
5	270	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	—
		60	75	100	150	208…600	400	522E-FA⊗-✪-✪-28R	522E-FF⊗-✪-✪-28R	522E-FJ⊗-✪-✪-28R	522E-FC⊗-✪-✪-28R	—

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
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 1-169 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⊗-✪✪24**. 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 1-92.

Fusible Disconnect Type With Class R Fuse Clips and Non-Fusible Disconnect Type

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements for each speed. Located on page 1-177.

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 or Variable Torque (Constant Horsepower — page 1-93)

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements for each speed. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]	Maximum Hp Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 60 Hz 200V	60 Hz 230V 230V	50 Hz 380…415V	60 Hz 460…575V	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.∗❄
1	27	7-1/2	7-1/2	—	—	208…240	30	**522F-BA⊗-✪-✪-24R**	**522F-BF⊗-✪-✪-24R**	**522F-BJ⊗-✪-✪-24R**	**522F-BC⊗-✪-✪-24R**	522F-BS⊗-✪-✪-24R
		—	—	10	10	480…600	30	**522F-BA⊗-✪-✪-24R**	**522F-BF⊗-✪-✪-24R**	**522F-BJ⊗-✪-✪-24R**	**522F-BC⊗-✪-✪-24R**	522F-BS⊗-✪-✪-24R
		7-1/2	7-1/2	—	—	208…240	60	**522F-BA⊗-✪-✪-25R**	**522F-BF⊗-✪-✪-25R**	**522F-BJ⊗-✪-✪-25R**	**522F-BC⊗-✪-✪-25R**	522F-BS⊗-✪-✪-25R
		—	—	10	10	480…600	60	**522F-BA⊗-✪-✪-25R**	**522F-BF⊗-✪-✪-25R**	**522F-BJ⊗-✪-✪-25R**	**522F-BC⊗-✪-✪-25R**	522F-BS⊗-✪-✪-25R
2	45	10	15	—	—	208…240	60	**522F-CA⊗-✪-✪-25R**	**522F-CF⊗-✪-✪-25R**	**522F-CJ⊗-✪-✪-25R**	**522F-CC⊗-✪-✪-25R**	522F-CS⊗-✪-✪-25R
		—	—	25	25	480…600	60	**522F-CA⊗-✪-✪-25R**	**522F-CF⊗-✪-✪-25R**	**522F-CJ⊗-✪-✪-25R**	**522F-CC⊗-✪-✪-25R**	522F-CS⊗-✪-✪-25R
		10	15	—	—	208…240	100	**522F-CA⊗-✪-✪-26J**	**522F-CF⊗-✪-✪-26J**	**522F-CJ⊗-✪-✪-26J**	**522F-CC⊗-✪-✪-26J**	522F-CS⊗-✪-✪-26J
		—	—	25	25	480…600	100	**522F-CA⊗-✪-✪-26J**	**522F-CF⊗-✪-✪-26J**	**522F-CJ⊗-✪-✪-26J**	**522F-CC⊗-✪-✪-26J**	522F-CS⊗-✪-✪-26J
3	90	25	30	—	—	208…240	100	**522F-DA⊗-✪-✪-26R**	**522F-DF⊗-✪-✪-26R**	**522F-DJ⊗-✪-✪-26R**	**522F-DC⊗-✪-✪-26R**	522F-DS⊗-✪-✪-26R
		—	—	50	50	480…600	100	**522F-DA⊗-✪-✪-26R**	**522F-DF⊗-✪-✪-26R**	**522F-DJ⊗-✪-✪-26R**	**522F-DC⊗-✪-✪-26R**	522F-DS⊗-✪-✪-26R
		25	30	—	—	208…240	200	**522F-DA⊗-✪-✪-27J**	**522F-DF⊗-✪-✪-27J**	**522F-DJ⊗-✪-✪-27J**	**522F-DC⊗-✪-✪-27J**	522F-DS⊗-✪-✪-27J
		—	—	50	50	480…600	200	**522F-DA⊗-✪-✪-27J**	**522F-DF⊗-✪-✪-27J**	**522F-DJ⊗-✪-✪-27J**	**522F-DC⊗-✪-✪-27J**	522F-DS⊗-✪-✪-27J
4	135	40	50	—	—	208…240	200	**522F-EA⊗-✪-✪-27R**	**522F-EF⊗-✪-✪-27R**	**522F-EJ⊗-✪-✪-27R**	**522F-EC⊗-✪-✪-27R**	—
		—	—	75	100	480…600	200	**522F-EA⊗-✪-✪-27R**	**522F-EF⊗-✪-✪-27R**	**522F-EJ⊗-✪-✪-27R**	**522F-EC⊗-✪-✪-27R**	—
		40	50	—	—	208…240	400	**522F-EA⊗-✪-✪-28J**	**522F-EF⊗-✪-✪-28J**	**522F-EJ⊗-✪-✪-28J**	**522F-EC⊗-✪-✪-28J**	—
		—	—	75	100	480…600	400	**522F-EA⊗-✪-✪-28J**	**522F-EF⊗-✪-✪-28J**	**522F-EJ⊗-✪-✪-28J**	**522F-EC⊗-✪-✪-28J**	—
5	270	40	50	—	—	208…240	200	522F-FA⊗-✪-✪-27R	522F-FF⊗-✪-✪-27R	522F-FJ⊗-✪-✪-27R	—	—
		—	—	75	100	480…600	200	522F-FA⊗-✪-✪-27R	522F-FF⊗-✪-✪-27R	522F-FJ⊗-✪-✪-27R	—	—
		75	100	150	200	208…600	400	522F-FA⊗-✪-✪-28R	522F-FF⊗-✪-✪-28R	522F-FJ⊗-✪-✪-28R	—	—

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage Code from the table below to complete the cat. no.
Example: **Cat. No. 522F-BA⊗-✪-✪-24R** becomes **Cat. No. 522F-BAB-✪-✪-24R**. For other voltages, consult your local Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
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 1-169 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-✪-✪-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⊗-✪✪24R** becomes **Cat. No. 522F-BA⊗-✪✪24**. Class J fuse clips can be supplied. Example: **Cat. No. 522F-BA⊗-✪✪24R** becomes **Cat. No. 522F-BA⊗-✪✪24J**. Class HRC form II fuse clips can be supplied. Example: **Cat. No. 522F-BA⊗-✪✪24R** becomes **Cat. No. 522F-BA⊗-✪✪24E**.

2-Speed Consequent Pole, 5-Pole – 3-Pole, Single Winding, Constant Horsepower (Constant or Variable Torque — page 1-92)

Heater Elements — Starters with eutectic alloy overhead relays require 3 heater elements for each speed. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]	Maximum Hp Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage: 60 Hz 200 V	60 Hz 230 V	50 Hz 380…415V	60 Hz 460…575V 460…575V	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.∗❄
1	27	5	5	—	—	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	100	150	208…600	400	522G-FA⊗-✪-✪-28R	522G-FF⊗-✪-✪-28R	522G-FJ⊗-✪-✪-28R	—	—

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
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 1-169 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**.

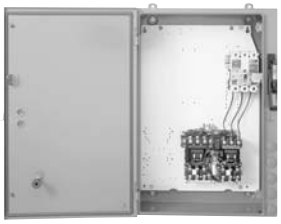
∗ Non-Fusible Disconnect Type

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⊗-✪✪24**. 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.

Table of Contents

Standards Compliance

UL 508
CSA 22.2, No. 14

Certifications

cULus Listed (File No. E3125, Guide No. NLDX, NLDX7)

2-Speed Separate Winding, 3-Pole – 3-Pole, Constant or Variable Torque (Constant Horsepower — page 1-95)

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements for each overload. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]§	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 200V	230V	460V	575V	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.∗❄
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
		—	—	10	10	**523E-BA⊗-✪-✪-41**	**523E-BF⊗-✪-✪-41**	**523E-BJ⊗-✪-✪-41**	**523E-BC⊗-✪-✪-41**	523E-BS⊗-✪-✪-41
2	45	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
		—	—	20…25	20…25	**523E-CA⊗-✪-✪-44**	**523E-CF⊗-✪-✪-44**	**523E-CJ⊗-✪-✪-44**	**523E-CC⊗-✪-✪-44**	523E-CS⊗-✪-✪-44
3	90	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
		—	—	30…50	40…50	**523E-DA⊗-✪-✪-47**	**523E-DF⊗-✪-✪-47**	**523E-DJ⊗-✪-✪-47**	**523E-DC⊗-✪-✪-47**	523E-DS⊗-✪-✪-47
4	135	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**	—
		—	—	100	75…100	**523E-EA⊗-✪-✪-50**	**523E-EF⊗-✪-✪-50**	**523E-EJ⊗-✪-✪-50**	**523E-EC⊗-✪-✪-50**	—
5	270	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**	—

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
120V Separate Control (without transformer)		**HD**	**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 1-169 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 [T-2323547].
❄ 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.
§ When controlling high efficiency motors – consult your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker selection.

Visit our website: www.ab.com/catalogs
Preferred availability cat. nos. are printed in **bold**

2-Speed Separate Winding, 3-Pole – 3-Pole, Constant Horsepower (Constant or Variable Torque — page 1-94)

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements for each overload. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]§	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 200V	230V	460V	575V	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-mettalic Cat. No.∗❄
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
		—	—	5…7-1/2‡	5…7-1/2‡	**523E-BA⊗-✪-✪-40**	**523E-CF⊗-✪-✪-40**	**523E-BJ⊗-✪-✪-40**	**523E-BC⊗-✪-✪-40**	523E-BS⊗-✪-✪-40
2	45	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
		—	—	20	20	**523E-CA⊗-✪-✪-43**	**523E-DF⊗-✪-✪-43**	**523E-CJ⊗-✪-✪-43**	**523E-CC⊗-✪-✪-43**	523E-CS⊗-✪-✪-43
3	90	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
		—	—	—	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-DJ⊗-✪-✪-46**	**523E-DC⊗-✪-✪-46**	523E-DS⊗-✪-✪-46
4	135	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**	—
		—	—	—	50…60	**523E-EA⊗-✪-✪-48**	**523E-EF⊗-✪-✪-48**	**523E-EJ⊗-✪-✪-48**	**523E-EC⊗-✪-✪-48**	—
		—	—	60…75	75	**523E-EA⊗-✪-✪-49**	**523E-FF⊗-✪-✪-49**	**523E-EJ⊗-✪-✪-49**	**523E-EC⊗-✪-✪-49**	—
5	270	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**	—

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no.
Example: **Cat. No. 523E-AC⊗-✪-✪-40** becomes **Cat. No. 523E-ACB-✪-✪-40**. For other voltages, consult your local Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
120V Separate Control (without transformer)		**HD**	**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 1-169 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 **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 1-96.
❄ 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.
§ When controlling high efficiency motors – consult your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker selection.

NEMA Combination Multi-Speed Starters

Circuit Breaker Type, Continued

2-Speed Consequent Pole, Single Winding, 5-Pole – 3-Pole, Constant or Variable Torque (Constant Horsepower — Page 1-97)

Heater Elements —Starters with eutectic alloy overload relays require 3 heater elements for each overload. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]‡	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 200V	230V	460V	575V	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.∗
1	27	0…1/3	0…1/3	—	—	**523F-BA⊗-✪-✪-32**	**523F-BF⊗-✪-✪-32**	**523F-BJ⊗-✪-✪-32**	**523F-BC⊗-✪-✪-32**	523F-BS⊗-✪-✪-32
		1/2…1	1/2…1	0…1	0…1	**523F-BA⊗-✪-✪-35**	**523F-BF⊗-✪-✪-35**	**523F-BJ⊗-✪-✪-35**	**523F-BC⊗-✪-✪-35**	523F-BS⊗-✪-✪-35
		1-1/2…3	1-1/2…3	1-1/2…3	1-1/2…3	**523F-BA⊗-✪-✪-38**	**523F-BF⊗-✪-✪-38**	**523F-BJ⊗-✪-✪-38**	**523F-BC⊗-✪-✪-38**	523F-BS⊗-✪-✪-38
		—	—	5	5	**523F-BA⊗-✪-✪-39**	**523F-BF⊗-✪-✪-39**	**523F-BJ⊗-✪-✪-39**	**523F-BC⊗-✪-✪-39**	523F-BS⊗-✪-✪-39
		—❄	—	5	5	**523F-BA⊗-✪-✪-39**	**523F-BF⊗-✪-✪-39**	**523F-BJ⊗-✪-✪-39**	**523F-BC⊗-✪-✪-39**	523F-BS⊗-✪-✪-39
		7-1/2	5…7-1/2❄	5…7-1/2❄	5…7-1/2❄	**523F-BA⊗-✪-✪-40**	**523F-BF⊗-✪-✪-40**	**523F-BJ⊗-✪-✪-40**	**523F-BC⊗-✪-✪-40**	523F-BS⊗-✪-✪-40
		—	—	10	10	**523F-BA⊗-✪-✪-41**	**523F-BF⊗-✪-✪-41**	**523F-BJ⊗-✪-✪-41**	**523F-CC⊗-✪-✪-41**	523F-CS⊗-✪-✪-41
2	45	10	10	—	—	**523F-CA⊗-✪-✪-41**	**523F-CF⊗-✪-✪-41**	**523F-CJ⊗-✪-✪-41**	**523F-CC⊗-✪-✪-41**	523F-CS⊗-✪-✪-41
		—	15	15	15	**523F-CA⊗-✪-✪-42**	**523F-CF⊗-✪-✪-42**	**523F-CJ⊗-✪-✪-42**	**523F-CC⊗-✪-✪-42**	523F-CS⊗-✪-✪-42
		—	—	20…25	20…25	523F-CA⊗-✪-✪-44	**523F-CF⊗-✪-✪-44**	**523F-CJ⊗-✪-✪-44**	**523F-DC⊗-✪-✪-44**	523F-DS⊗-✪-✪-44
3	90	15…25	20…25	—	—	**523F-DA⊗-✪-✪-44**	**523F-DF⊗-✪-✪-44**	**523F-DJ⊗-✪-✪-44**	**523F-DC⊗-✪-✪-44**	523F-DS⊗-✪-✪-44
		—	30	—	30	**523F-DA⊗-✪-✪-45**	**523F-DF⊗-✪-✪-45**	**523F-DJ⊗-✪-✪-45**	**523F-DC⊗-✪-✪-45**	523F-DS⊗-✪-✪-45
		—	—	30…50	40…50	**523F-DA⊗-✪-✪-47**	**523F-DF⊗-✪-✪-47**	**523F-DJ⊗-✪-✪-47**	**523F-EC⊗-✪-✪-47**	—
4	135	30	—	—	—	**523F-EA⊗-✪-✪-45**	**523F-EF⊗-✪-✪-45**	**523F-EJ⊗-✪-✪-45**	**523F-EC⊗-✪-✪-45**	—
		40	40	—	—	**523F-EA⊗-✪-✪-46**	**523F-EF⊗-✪-✪-46**	**523F-EJ⊗-✪-✪-46**	**523F-EC⊗-✪-✪-46**	—
		—	50	—	—	**523F-EA⊗-✪-✪-47**	**523F-EF⊗-✪-✪-47**	**523F-EJ⊗-✪-✪-47**	**523F-EC⊗-✪-✪-47**	—
		—	—	—	60	**523F-EA⊗-✪-✪-48**	**523F-EF⊗-✪-✪-48**	**523F-EJ⊗-✪-✪-48**	**523F-EC⊗-✪-✪-48**	—
		—	—	60…75	—	**523F-EA⊗-✪-✪-49**	**523F-EF⊗-✪-✪-49**	**523F-EJ⊗-✪-✪-49**	**523F-EC⊗-✪-✪-49**	—
		—	—	100	75…100	**523F-EA⊗-✪-✪-50**	**523F-EF⊗-✪-✪-50**	**523F-EJ⊗-✪-✪-50**	**523F-FC⊗-✪-✪-50**	—
5	270	50…60	—	—	—	**523F-FA⊗-✪-✪-48**	**523F-FF⊗-✪-✪-48**	**523F-FJ⊗-✪-✪-48**	**523F-FC⊗-✪-✪-48**	—
		75	60…75	—	—	**523F-FA⊗-✪-✪-49**	**523F-FF⊗-✪-✪-49**	**523F-FJ⊗-✪-✪-49**	**523F-FC⊗-✪-✪-49**	—
		—	100	—	—	**523F-FA⊗-✪-✪-50**	**523F-FF⊗-✪-✪-50**	**523F-FJ⊗-✪-✪-50**	**523F-FC⊗-✪-✪-50**	—
		—	—	—	125	**523F-FA⊗-✪-✪-51**	**523F-FF⊗-✪-✪-51**	**523F-FJ⊗-✪-✪-51**	**523F-FC⊗-✪-✪-51**	—
		—	—	125…150	—	**523F-FA⊗-✪-✪-52**	**523F-FF⊗-✪-✪-52**	**523F-FJ⊗-✪-✪-52**	**523F-FC⊗-✪-✪-52**	—
		—	—	200	150…200	**523F-FA⊗-✪-✪-54**	**523F-FF⊗-✪-✪-54**	**523F-FJ⊗-✪-✪-54**	**523F-FC⊗-✪-✪-54**	—

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no.
Example: **Cat. No. 523F-BA⊗-✪-✪-40** becomes **Cat. No. 523F-BAB-✪-✪-40**. For other voltages, consult your local Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
120V Separate Control (without transformer)		**HD**	**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 1-169 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-✪-✪-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⊗-✪-✪-40V**.
❄ State horsepower if less than listed.
‡ When controlling high efficiency motors – consult your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker selection.

2-Speed Consequent Pole, Single Winding, 5-Pole – 3-Pole, Constant Horsepower (Constant or Variable Torque — page 1-96)

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements for each overload. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]‡	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating∗ Motor Voltage 200V	230V	460V	575V	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.∗
1	27	0…1/3	0…1/3	—	—	**523G-BA⊗-✪-✪-32**	**523G-BF⊗-✪-✪-32**	**523G-BJ⊗-✪-✪-32**	**523G-BC⊗-✪-✪-32**	523G-BS⊗-✪-✪-32
		1/2…1	1/2…1	0…1	0…1	**523G-BA⊗-✪-✪-35**	**523G-BF⊗-✪-✪-35**	**523G-BJ⊗-✪-✪-35**	**523G-BC⊗-✪-✪-35**	523G-BS⊗-✪-✪-35
		1-1/2…2	1-1/2…2	—	—	**523G-BA⊗-✪-✪-37**	**523G-BF⊗-✪-✪-37**	**523G-BJ⊗-✪-✪-37**	**523G-BC⊗-✪-✪-37**	523G-BS⊗-✪-✪-37
		—	—	1-1/2…3	1-1/2…3	**523G-BA⊗-✪-✪-38**	**523G-BF⊗-✪-✪-38**	**523G-BJ⊗-✪-✪-38**	**523G-BC⊗-✪-✪-38**	523G-BS⊗-✪-✪-38
		3❄	3❄	—	—	**523G-BA⊗-✪-✪-38**	**523G-BF⊗-✪-✪-38**	**523G-BJ⊗-✪-✪-38**	—	—
		5	5	—	—	**523G-BA⊗-✪-✪-39**	**523G-BF⊗-✪-✪-39**	**523G-BJ⊗-✪-✪-39**	**523G-BC⊗-✪-✪-39**	523G-BS⊗-✪-✪-39
		—	—	5…7-1/2❄	5…7-1/2❄	**523G-BA⊗-✪-✪-40**	**523G-BF⊗-✪-✪-40**	**523G-BJ⊗-✪-✪-40**	**523G-BC⊗-✪-✪-40**	523G-BS⊗-✪-✪-40
2	45	7-1/2	7-1/2	—	—	**523G-CA⊗-✪-✪-40**	**523G-CF⊗-✪-✪-40**	**523G-CJ⊗-✪-✪-40**	**523G-CC⊗-✪-✪-40**	523G-CS⊗-✪-✪-40
		—	10	—	—	**523G-CA⊗-✪-✪-41**	**523G-CF⊗-✪-✪-41**	**523G-CJ⊗-✪-✪-41**	**523G-CC⊗-✪-✪-41**	523G-CS⊗-✪-✪-41
		—	—	10…15	10…15	**523G-CA⊗-✪-✪-42**	**523G-CF⊗-✪-✪-42**	**523G-CJ⊗-✪-✪-42**	**523G-CC⊗-✪-✪-42**	523G-CS⊗-✪-✪-42
		—	—	20	20	**523G-CA⊗-✪-✪-43**	**523G-CF⊗-✪-✪-43**	**523G-CJ⊗-✪-✪-43**	**523G-CC⊗-✪-✪-43**	523G-CS⊗-✪-✪-43
3	90	10	—	—	—	**523G-DA⊗-✪-✪-41**	**523G-DF⊗-✪-✪-41**	**523G-DJ⊗-✪-✪-41**	**523G-DC⊗-✪-✪-41**	523G-DS⊗-✪-✪-41
		15…20	—	—	—	**523G-DA⊗-✪-✪-43**	**523G-DF⊗-✪-✪-43**	**523G-DJ⊗-✪-✪-43**	**523G-DC⊗-✪-✪-43**	523G-DS⊗-✪-✪-43
		—	15…25	25	—	**523G-DA⊗-✪-✪-44**	**523G-DF⊗-✪-✪-44**	**523G-DJ⊗-✪-✪-44**	**523G-DC⊗-✪-✪-44**	523G-DS⊗-✪-✪-44
		—	—	—	25…30	**523G-DA⊗-✪-✪-45**	**523G-DF⊗-✪-✪-45**	**523G-DJ⊗-✪-✪-45**	**523G-DC⊗-✪-✪-45**	523G-DS⊗-✪-✪-45
		—	—	30…40	40	**523G-DA⊗-✪-✪-46**	**523G-DF⊗-✪-✪-46**	**523G-DJ⊗-✪-✪-46**	**523G-DC⊗-✪-✪-46**	523G-DS⊗-✪-✪-46
4	135	25	—	—	—	**523G-EA⊗-✪-✪-44**	**523G-EF⊗-✪-✪-44**	**523G-EJ⊗-✪-✪-44**	**523G-EA⊗-✪-✪-44**	—
		30	—	—	—	**523G-EA⊗-✪-✪-45**	**523G-EF⊗-✪-✪-45**	**523G-EJ⊗-✪-✪-45**	**523G-EC⊗-✪-✪-45**	—
		—	30…40	—	—	**523G-EA⊗-✪-✪-46**	**523G-EF⊗-✪-✪-46**	**523G-EJ⊗-✪-✪-46**	**523G-EC⊗-✪-✪-46**	—
		—	—	50	—	**523G-EA⊗-✪-✪-47**	**523G-EF⊗-✪-✪-47**	**523G-EJ⊗-✪-✪-47**	**523G-EC⊗-✪-✪-47**	—
		—	—	—	50…60	**523G-EA⊗-✪-✪-48**	**523G-EF⊗-✪-✪-48**	**523G-EJ⊗-✪-✪-48**	**523G-EC⊗-✪-✪-48**	—
		—	—	60…75	—	**523G-EA⊗-✪-✪-49**	**523G-EF⊗-✪-✪-49**	**523G-EJ⊗-✪-✪-49**	**523G-EC⊗-✪-✪-49**	—
5	270	40	—	—	—	**523G-FA⊗-✪-✪-46**	**523G-FF⊗-✪-✪-46**	**523G-FJ⊗-✪-✪-46**	**523G-FC⊗-✪-✪-46**	—
		—	50	—	—	**523G-FA⊗-✪-✪-47**	**523G-FF⊗-✪-✪-47**	**523G-FJ⊗-✪-✪-47**	**523G-FC⊗-✪-✪-47**	—
		50…60	—	—	—	**523G-FA⊗-✪-✪-48**	**523G-FF⊗-✪-✪-48**	**523G-FJ⊗-✪-✪-48**	**523G-FC⊗-✪-✪-48**	—
		—	60…70	—	—	**523G-FA⊗-✪-✪-49**	**523G-FF⊗-✪-✪-49**	**523G-FJ⊗-✪-✪-49**	**523G-FC⊗-✪-✪-49**	—
		—	—	100	—	**523G-FA⊗-✪-✪-50**	**523G-FF⊗-✪-✪-50**	**523G-FJ⊗-✪-✪-50**	**523G-FC⊗-✪-✪-50**	—
		—	—	—	100…125	**523G-FA⊗-✪-✪-51**	**523G-FF⊗-✪-✪-51**	**523G-FJ⊗-✪-✪-51**	**523G-FC⊗-✪-✪-51**	—
		—	—	125…150	150	**523G-FA⊗-✪-✪-52**	**523G-FF⊗-✪-✪-52**	**523G-FJ⊗-✪-✪-52**	**523G-FC⊗-✪-✪-52**	—

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no.
Example: **Cat. No. 523G-BA⊗-✪-✪-40** becomes **Cat. No. 523G-BAB-✪-✪-40**. For other voltages, consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
120V Separate Control (without transformer)		**HD**	**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 1-169 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-✪-✪-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⊗-✪-✪-40V**.
❄ State horsepower if less than listed.
‡ When controlling high efficiency motors – consult your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker selection.

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

UL 508
CSA 22.2, No. 14

Certifications

cULus Listed (File No. E125316, Guide No. NKJH, NKJH7)

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements. Located on page 1-177.

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

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

[V]		208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
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 1-169 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.

Bulletin 1232V

- NEMA starter sizes 4…6
- Painted metal extra capacity enclosures: Type 3R
- Modifications — factory installed
- Accessories — field installed
- Service entrance rated

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Standards Compliance

UL 508A
CSA C22.2, No. 14

Certifications

cULus Listed (File No. E54866, Guide No. NITW)

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]	Max. Hp Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 60 Hz 200V	60 Hz 230V	50 Hz 380…415V	60 Hz 460…575V	Line Voltage [V]	Fuse Clip Rating Amperes [A] Fuses not included. Select per NEC	Type 3R Rainproof with Extra Panel Space∗ Cat. No.
4	135	40	50	—	—	208…240	200	1232V-EN⊗-✪-27R
		—	—	75	100	480…600	200	1232V-EN⊗-✪-27R
		40	50	—	—	208…240	400	1232V-EN⊗-✪-28J
		—	—	75	100	480…600	400	1232V-EN⊗-✪-28J
5	270	75	100	—	—	208…240	400	1232V-FN⊗-✪-28R
		—	—	150	200	480…600	400	1232V-FN⊗-✪-28R
6	540	150	200	300	400	208…600	600	1232V-GN⊗-✪-29R

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage Code from the table below to complete the cat. no.
Example: **Cat. No. 1232V-EN⊗-✪-27R** becomes **Cat. No. 1232V-ENA-✪-27R**. For other voltages, consult your local Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	—	**A**	**B**	—
Transformer Control (See page 1-72 Note)		**H**	**A**	**B**	**C**
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 1-169 to complete the cat. no.
Example: **Cat. No. 1232V-ENA-✪-27R** becomes **Cat. No. 1232V-ENA-B1M-27R**.

∗ 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 available 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

UL 508A
CSA C22.2, No. 14

Certifications

cULus Listed (File No. E54866, Guide No. NITW)

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]∗	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 200V	230V	460V	575V	Type 3R Rainproof with Extra Panel Space Cat. No.
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**
		—	—	10	10	**1233X-BN⊗-✪-41**
2	45	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**

∗ When controlling high efficiency motors – consult your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker selection.

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
120V Separate Control (without transformer)		**HD**	**AD**	**BD**	**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 1-169 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 1-177.

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

∗ When controlling high efficiency motors – consult your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker selection.

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-72 Note)					
120V Separate Control (without transformer)		**HD**	**AD**	**BD**	**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 1-169 to complete the cat. no.
Example: **Cat. No. 1233X-BNB-✪-35** becomes **Cat. No. 1233X-BNB-A2D-35**.

NEMA Vacuum Pump Control Panels

Vacuum Circuit Breaker Type

Bulletin 1233V

- NEMA starter size 4
- Circuit breaker magnetic only (instantaneous trip)
- Painted metal enclosures: Type 3R
- Modifications — factory installed
- Accessories — field installed
- Service entrance rated

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UL 508A
CSA C22.2, No. 14

Certifications

cULus Listed (File No. E54866, Guide No. NITW)

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating — Motor Voltage 200V	230V	460V	575V	Type 3R Rainproof with Extra Panel Space Cat. No.
4	135	30	—	—	—	1233V-EN⊗-✪-45T
		40	40	—	—	1233V-EN⊗-✪-46T
		—	50	—	—	1233V-EN⊗-✪-47T
		—	—	—	60	1233V-EN⊗-✪-48T
		—	—	60…75	—	1233V-EN⊗-✪-49T
		—	—	100	75…100	1233V-EN⊗-✪-50T
5	270	50…60	—	—	—	1233V-FN⊗-✪-48T
		75	60…75	—	—	1233V-FN⊗-✪-49T
		—	100	—	—	1233V-FN⊗-✪-50T
		—	—	—	125	1233V-FN⊗-✪-51T
		—	—	125…150	—	1233V-FN⊗-✪-52T
		—	—	200	150…200	1233V-FN⊗-✪-54T
6	540	100	—	—	—	1233V-GN⊗-✪-50T
		125	125	—	—	1233V-GN⊗-✪-51T
		150	150	—	—	1233V-GN⊗-✪-52T
		—	200	—	—	1233V-GN⊗-✪-54T
		—	—	250	250	1233V-GN⊗-✪-56T
		—	—	300	300	1233V-GN⊗-✪-57T
		—	—	—	350	1233V-GN⊗-✪-58T
		—	—	350…400	400	1233V-GN⊗-✪-59T

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no.
Example: **Cat. No. 1233V-EN⊗-✪-45T** becomes **Cat. No. 1233V-ENA-✪-45T**. For other voltages, consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		208	230…240	460…480	575…600
Common Control	AC, 60 Hz	—	**A**	**B**	—
Transformer Control (See page 1-72 Note)		**H**	**A**	**B**	**C**
120V Separate Control (without transformer)		**HD**	**AD**	**BD**	**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 1-169 to complete the cat. no.
Example: **Cat. No. 1233V-ENA-✪-45T** becomes **Cat. No. 1233V-ENA-B1M-45T**.

Bulletin 1223

- Bulletin 500 NEMA starter
- Hand-Off-Auto selector switch
- Aluminum enclosure with extra panel space: Type 3R
- 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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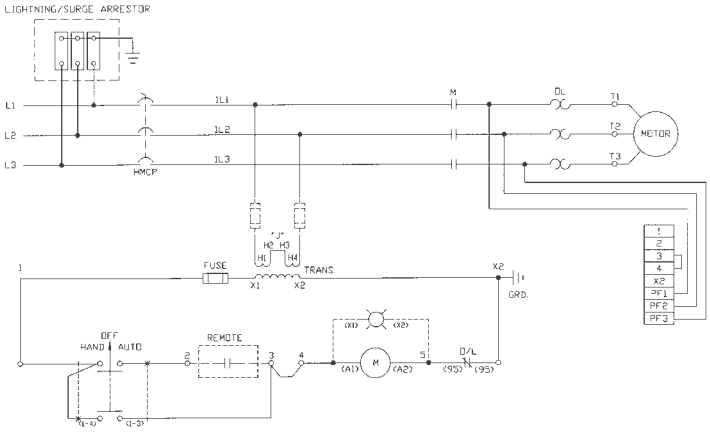
NEMA Size	Continuous Ampere Rating [A]	Maximum Horsepower Rating Full Load Current Must Not Exceed Continuous Ampere Rating	Type 3R∗	
			Motor Voltage 480V	Motor Voltage 600V
			Cat. No.	Cat. No.
1	27	0…10	1223-BNB-✪	1223-BNC-✪
2	45	15…25	1223-CNB-✪	1223-CNC-✪
3	90	30…50	1223-DNB-✪	1223-DNC-✪
4	135	60…100	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 1-169 to complete the cat. no. Example: **Cat. No. 1223-BNB-✪** becomes **Cat. No. 1223-BNB-A2E**.

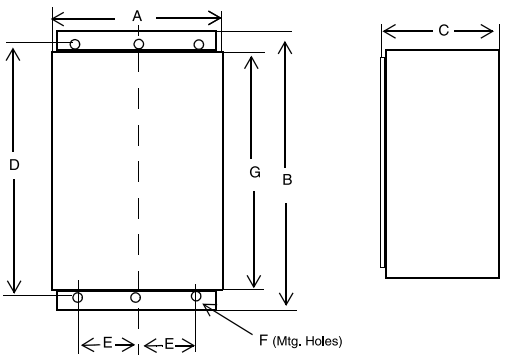
∗ If additional panel space is required, refer to publication 1223-BR001_-EN-P or consult your local Rockwell Automation sales office or Allen-Bradley distributor.

Typical Wiring Diagram



Approxmate Dimensions

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



Dimensions mm (inches)							
NEMA Size	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)

1

NEMA Starters and Panels

			
Bulletin	**530**	**532 & 1282**	**533 & 1283**
Type	Part winding reduced voltage starter	Part winding reduced voltage combination starter/pump panel	Part winding reduced voltage combination starter/pump panel
NEMA Size	• 1PW • 2PW • 3PW • 4PW • 5PW	• 1PW • 2PW • 3PW • 4PW • 5PW	• 1PW • 2PW • 3PW • 4PW • 5PW
Continuous Ampere Rating	54…540 A		
Motor Voltage	200…575V (10…350 Hp)		
Enclosure Type	Bulletin 530 — Type 1, Type 3R/4/12	• Bulletin 532 — Type 1, 3R/4/12 • Bulletin 1282 — Type 3R	• Bulletin 533 — Type 1, Type 3R/4/12 • Bulletin 1283 — Type 3R
Disconnecting Means	No disconnect	Fusible disconnect	Thermal magnetic circuit breaker
Overload Relays Options	Eutectic — solid-state		
Standards	UL 508A and CSA C22.2, No. 14		
Certifications	cULus Listed (File No. E54866, Guide No. NITW, NITW7)		
Product Selection	**Page 1-107**	**Page 1-108**	**Page 1-109**

NEMA Wye-Delta Starters and Panels

			
Bulletin	**540**	**542 & 1242**	**543 & 1243**
Type	Wye delta reduced voltage starter	Wye delta reduced voltage combination starter/pump panel	Wye delta reduced voltage combination starter/pump panel
NEMA Size	• 1YD • 2YD • 3YD • 4YD • 5YD	• 1YD • 2YD • 3YD • 4YD • 5YD	• 1YD • 2YD • 3YD • 4YD • 5YD
Continuous Ampere Rating	47…467 A		
Motor Voltage	200…575V (10…300 Hp)	200…575V (7.5…300 Hp)	200…575V (10…300 Hp)
Enclosure Type	Bulletin 540 — Type 1, Type 3R/4/12	• Bulletin 542 — Type 1, 3R/4/12 • Bulletin 1242 — Type 3R	• Bulletin 543 — Type 1, Type 3R/4/12 • Bulletin 1243 — Type 3R
Disconnecting Means	No disconnect	Fusible disconnect	Thermal magnetic circuit breaker
Overload Relays Options	Eutectic — solid-state		
Standards	UL 508A and CSA C22.2, No. 14		
Certifications	cULus Listed (File No. E54866, Guide No. NITW, NITW7)		
Product Selection	**Page 1-110**	**Page 1-111**	**Page 1-112**

NEMA Autotransformer Starters and Panels

			
Bulletin	**570**	**572 & 1272**	**573 & 1273**
Type	Autotransformer reduced voltage starter	Autotransformer reduced voltage combination starter/pump panel	Autotransformer reduced voltage combination starter/pump panel
NEMA Size	2…6		
Continuous Ampere Rating	45…540 A		
Motor Voltage	200…575V (10…400 Hp)	200…575V (5…400 Hp)	200…575V (10…400 Hp)
Enclosure Type	Bulletin 570 — Type 1, Type 3R/4/12	• Bulletin 572 — Type 1, 3R/4/12 • Bulletin 1272 — Type 3R	• Bulletin 573 — Type 1, Type 3R/4/12 • Bulletin 1273 — Type 3R
Disconnecting Means	No disconnect	Fusible disconnect	Thermal magnetic circuit breaker
Overload Relays Options	Eutectic — solid-state		
Standards	UL 508A and CSA C22.2, No. 14		
Certifications	cULus Listed (File No. E54866, Guide No. NITW, NITW7)		
Product Selection	**Page 1-113**	**Page 1-114**	**Page 1-115**

NEMA Reduced Voltage Starters

Catalog Number Explanation

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 Catalog Number

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 bBreaker
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			
Votlage 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	Separate Control (without a transformer)	208	120
AD		240	120
BD		480	120
CD		600	120

e

Overload Relay	
Code	Type
None	Eutectic Alloy
See page 1-169	Solid-State

f

Options
See page 1-119

∗ **Note:** When selecting a factory-installed control circuit transformer, use the transformer control coil voltage 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-LAB-6P-24R** will have a transformer with a 480V primary voltage, 120V secondary voltage, and a 120V starter coil voltage.

Bulletin 530 NEMA Part Winding Starters

- Starter sizes 1…5PW
- Overload relays: eutectic suppllied 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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Heater Elements — Starters with eutectic alloy overload relays require 6 overload heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating" Motor Voltage 200V	230V	460…575V	Type 1 General Purpose Cat. No.	Type 3R/4/12 Rainproof, watertight, dusttight Cat. No.
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⊗-✪-✪

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 530-LA⊗-✪-✪** becomes **Cat. No. 530-LAB-✪-✪**. For other voltages, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-106 Note)					
120V Separate Control (without transformer)		**HD**	**AD**	**BD**	**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 1-169 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 1…5PW
- Fusible disconnect switch
- Painted metal enclosure: Type 1 (Bul. 532), 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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Certifications

cULus Listed (File No. E54866, Guide No. NITW)

Heater Elements — Starters with eutectic alloy overload relays require 6 overload heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating" Motor Voltage 200V	230V	460V	575V	Fuse Rating [A]	Type 1 General Purpose⁎ Cat. No.	Type 3R/4/12 Rainproof, watertight, dusttight⁎ Cat. No.	Type 3R Rainproof with extra panel space⁎ Cat. No.
1PW	54	—	—	15	15	30	**532-LA⊗-✪-✪-24R**	**532-LF⊗-✪-✪-24R**	**1282-LN⊗-✪-✪-24R**
		10	10	—	—	60	**532-LA⊗-✪-✪-25R**	**532-LF⊗-✪-✪-25R**	**1282-LN⊗-✪-✪-25R**
2PW	90	—	—	—	20	30	**532-MA⊗-✪-✪-24R**	**532-MF⊗-✪-✪-24R**	**1282-MN⊗-✪-✪-24R**
		—	15	30	40	60	**532-MA⊗-✪-✪-25R**	**532-MF⊗-✪-✪-25R**	**1282-MN⊗-✪-✪-25R**
		20	25	40	—	100	**532-MA⊗-✪-✪-26J**	**532-MF⊗-✪-✪-26J**	**1282-MN⊗-✪-✪-26J**
3PW	180	—	—	50	60	100	**532-PA⊗-✪-✪-26R**	**532-PF⊗-✪-✪-26R**	**1282-PN⊗-✪-✪-26R**
		40	50	75	75	200	**532-PA⊗-✪-✪-27J**	**532-PF⊗-✪-✪-27J**	**1282-PN⊗-✪-✪-27J**
4PW	270	50	—	100	150	200	532-SA⊗-✪-✪-27R	532-SF⊗-✪-✪-27R	1282-SN⊗-✪-✪-27R
		75	75	150	—	400	532-SA⊗-✪-✪-28J	532-SF⊗-✪-✪-28J	1282-SN⊗-✪-✪-28J
5PW	540	100	100	200	300	400	532-UA⊗-✪-✪-28R	532-UF⊗-✪-✪-28R	1282-UN⊗-✪-✪-28R
		150	150	350	350	600	532-UA⊗-✪-✪-29J	532-UF⊗-✪-✪-29J	1282-UN⊗-✪-✪-29J

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage 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, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		208	230...240	460...480	575...600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-106 Note)					
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 1-169 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 1…5PW
- Circuit breaker thermal magnetic (inverse time)
- Painted metal enclosure: Type 1 (Bul. 533), 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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Certifications

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Heater Elements — Starters with eutectic alloy overload relays require 6 overload heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]∗	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating" Motor Voltage 200V	230V	460...575V	Type 1 General Purpose Enclosure Cat. No.	Type 3R/4/12 General Purpose Enclosure Cat. No.	Type 3R General Purpose Enclosure 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

∗ When controlling high-efficiency motors, please contact your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker and starter selection.

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		208	230...240	460...480	575...600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-106 Note)					
120V Separate Control (without transformer)		**HD**	**AD**	**BD**	**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 1-169 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 1…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 1-177.

NEMA Size	Continuous Ampere Rating [A]	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating" — Motor Voltage 200V	230V	460…575V	Type 1 General Purpose Open Circuit Transition Cat. No.	Type 3R/4/12 Rainproof, watertight, dusttight Open Circuit Transition 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⊗-✪

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 540-LA⊗-✪** becomes **Cat. No. 540-LAB-✪**. For other voltages, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-106 Note)					
120V Separate Control (without transformer)		**HD**	**AD**	**BD**	**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 1-169 to complete the cat. no. Example: **Cat. No. 540-LAB-✪** becomes **Cat. No. 540-LAB-A2D**.

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Preferred availability cat. nos. are printed in **bold**

Bulletin 542 & 1242

- Starter sizes 1…5PW
- Fusible disconnect switch
- Painted metal enclosure: Type 1 (Bul. 542), Type 3R/4/12 (Bul. 542), 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 1-177.

NEMA Size	Continuous Ampere Rating [A]	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating" Motor Voltage 200V	230V	460V	575V	Fuse Rating [A]	Type 1 General Purpose* Open Circuit Transition Cat. No.	Type 3R/4/12 Rainproof, watertight, dusttight* Open Circuit Transition Cat. No.	Type 3R Rainproof with extra panel space Open Circuit Transition Cat. No.
1YD	47	7.5	7.5	15	15	30	**542-LA⊗-✪-24R**	**542-LF⊗-✪-24R**	**1242-LN⊗-✪-24R**
		10	10	—	—	60	**542-LA⊗-✪-25R**	**542-LF⊗-✪-25R**	**1242-LN⊗-✪-25R**
2YD	78	—	—	—	20	30	**542-MA⊗-✪-24R**	**542-MF⊗-✪-24R**	**1242-MN⊗-✪-24R**
		15	15	—	40	60	**542-MA⊗-✪-25R**	**542-MF⊗-✪-25R**	**1242-MN⊗-✪-25R**
		20	25	40	—	100	**542-MA⊗-✪-26R**	**542-MF⊗-✪-26R**	**1242-MN⊗-✪-26R**
3YD	156	25	30	60	75	100	**542-PA⊗-✪-26R**	**542-PF⊗-✪-26R**	**1242-PN⊗-✪-26R**
		40	50	75	—	200	**542-PA⊗-✪-27J**	**542-PF⊗-✪-27J**	**1242-PN⊗-✪-27J**
4YD	233	50	60	125	150	200	542-SA⊗-✪-27R	542-SF⊗-✪-27R	1242-SN⊗-✪-27R
		60	75	150	—	400	542-SA⊗-✪-28J	542-SF⊗-✪-28J	1242-SN⊗-✪-28J
5YD	467	100	125	200	300	400	542-UA⊗-✪-28R	542-UF⊗-✪-28R	1242-UN⊗-✪-28R
		150	150	300	—	600	542-UA⊗-✪-29J	542-UF⊗-✪-29J	1242-UN⊗-✪-29J

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage 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, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		208	230...240	460...480	575...600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-106 Note)					
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 1-169 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 1…5YD
- Circuit breaker thermal magnetic (inverse time)
- Painted metal enclosure: Type 1 (Bul. 543), Type 3R/4/12 (Bul. 543), Type 3R (Bul. 1243)
- 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 1-177.

NEMA Size	Continuous Ampere Rating [A]∗	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating" Motor Voltage 200V	230V	460…575V	Type 1 General Purpose Open Circuit Transition Cat. No.	Type 3R/4/12 Rainproof, watertight, dusttight Open Circuit Transition Cat. No.	Type 3R Rainproof with extra panel space Open Circuit Transition 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**
		—	—	75	**543-PA⊗-✪-49T**	**543-PF⊗-✪-49T**	**1243-PN⊗-✪-49T**
4YD	233	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
		—	—	125	543-SA⊗-✪-51T	543-SF⊗-✪-51T	1243-SN⊗-✪-51T
		—	—	150	543-SA⊗-✪-52T	543-SF⊗-✪-52T	1243-SN⊗-✪-52T
5YD	467	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

∗ When controlling high efficiency motors – please contact your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker and starter selection.

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage 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, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-106 Note)					
120V Separate Control (without transformer)		**HD**	**AD**	**BD**	**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 1-169 to complete the cat. no. Example: **Cat. No. 543-LAB-✪-42T** becomes **Cat. No. 543-LAB-A2D-42T**.

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Preferred availability cat. nos. are printed in **bold**

Bulletin 570 NEMA Autotransformer Starters

- Starter sizes 2…6
- Overload relays: eutectic supplied as standard, solid-state available as an option
- Painted metal enclosure: 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 1-177.

NEMA Size	Continuous Ampere Rating [A]	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating" Motor Voltage 200V	230V	460...575V	Type 1 General Purpose Cat. No.	Type 3R/4/12 Rainproof, Watertight, Dusttight Cat. No.
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**
		—	—	50	**570-DA⊗-✪-47**	**570-DF⊗-✪-47**
4	135	30	—	—	**570-EA⊗-✪-45**	**570-EF⊗-✪-45**
		40	—	—	**570-EA⊗-✪-46**	**570-EF⊗-✪-46**
		—	50	—	**570-EA⊗-✪-47**	**570-EF⊗-✪-47**
		—	—	100	**570-EA⊗-✪-50**	**570-EF⊗-✪-50**
5	270	50	—	—	570-FA⊗-✪-47	570-FF⊗-✪-47
		75	75	—	570-FA⊗-✪-49	570-FF⊗-✪-49
		—	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

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage 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, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		208	230...240	460...480	575...600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-106 Note)					
120V Separate Control (without transformer)		**HD**	**AD**	**BD**	**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 1-169 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), Type 3R/4/12 (Bul. 572), 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 1-177.

NEMA Size	Continuous Ampere Rating [A]	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating" Motor Voltage 200V	230V	460...575V	Fuse Rating [A]	Type 1 General Purpose* Cat. No.	Type 3R/4/12 Rainproof, watertight, dusttight* Cat. No.	Type 3R Rainproof with extra panel space Cat. No.
2	45	5	10	7.5	30	**572-CA⊗-✪-24R**	**572-CF⊗-✪-24R**	**1272-CN⊗-✪-24R**
		10	15	25	60	**572-CA⊗-✪-25R**	**572-CF⊗-✪-25R**	**1272-CN⊗-✪-25R**
3	90	15	—	30	60	**572-DA⊗-✪-25R**	**572-DF⊗-✪-25R**	**1272-DN⊗-✪-25R**
		25	30	50	100	**572-DA⊗-✪-26R**	**572-DF⊗-✪-26R**	**1272-DN⊗-✪-26R**
4	135	—	—	—	60	**572-EA⊗-✪-25R**	**572-EF⊗-✪-25R**	**1272-EN⊗-✪-25R**
		—	30	60	100	**572-EA⊗-✪-26R**	**572-EF⊗-✪-26R**	**1272-EN⊗-✪-26R**
		40	50	100	200	**572-EA⊗-✪-27J**	**572-EF⊗-✪-27J**	**1272-EN⊗-✪-27J**
5	270	50	60	125	200	572-FA⊗-✪-27R	572-FF⊗-✪-27R	1272-FN⊗-✪-27R
		75	100	200	400	572-FA⊗-✪-28J	572-FF⊗-✪-28J	1272-FN⊗-✪-28J
6	540	125	125	—	200	572-GA⊗-✪-27R	572-GF⊗-✪-27R	1272-GN⊗-✪-27R
		100	125	—	400	572-GA⊗-✪-28R	572-GF⊗-✪-28R	1272-GN⊗-✪-28R
		150	200	400	600	572-GF⊗-✪-29J	572-GF⊗-✪-29J	1272-GN⊗-✪-29J

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a Coil Voltage 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, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		208	230...240	460...480	575...600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-106 Note)					
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 1-169 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**.

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Preferred availability cat. nos. are printed in **bold**

Bulletin 573 & 1273

- Starter sizes 2…6
- Circuit breaker thermal magnetic (inverse time)
- Painted metal enclosure: Type 1 (Bul. 573), Type 3R/4/12 (Bul. 573), 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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Heater Elements — Starters with eutectic alloy overload relays require 3 overload heater elements. Located on page 1-177.

NEMA Size	Continuous Ampere Rating [A]∗	Maximum Horsepower Rating Full Load Current Must Not Exceed "Continuous Ampere Rating" Motor Voltage 200V	230V	460...575V	Type 1 General Purpose Cat. No.	Type 3R/4/12 Rainproof, watertight, dusttight Cat. No.	Type 3R Rainproof with extra panel space Cat. No.
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

∗ When controlling high efficiency motors – please contact your local Rockwell Automation sales office or Allen-Bradley distributor for proper circuit breaker selection.

⊗ Coil Voltage Code

The cat. no. as listed is incomplete. Select a coil voltage 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, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]		208	230…240	460…480	575…600
Common Control	AC, 60 Hz	**H**	**A**	**B**	**C**
Transformer Control (See page 1-106 Note)					
120V Separate Control (without transformer)		**HD**	**AD**	**BD**	**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 1-169 to complete the cat. no. Example: **Cat. No. 573-CAB-✪-42T** becomes **Cat. No. 573-CAB-A2H-42T.**

Modifications — Factory Installed

NEMA Non-Combination Contactors/Starters

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 that are available for the low voltage (600V 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: **Cat. No. 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 (Buls. 500, 500F, 500L, 500LP, 509)													
START-STOP Push Button I/O (Canada only)	**1**	1✶	A	A	A	A	A	A	A	A	A	A	A
	1	3R/4/12, 4/4X	NA	A	A	A	A	A	A	A	A	A	NA
	1	Bolted❄	NA	A	A	A	A	A	A	A	A	A	NA
	1	Unilock‡	NA	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
	1E	3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	A	A	A	NA
	1E	Bolted❄	NA	A	A	A	A	A	A	A	A	A	NA
	1E	Unilock‡	NA	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
	3	3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	A	A	A	NA
	3	Bolted❄	NA	A	A	A	A	A	A	A	NA	NA	NA
	3	Unilock‡	NA	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
	3E	3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	A	NA	NA	NA
	3E	Bolted❄	NA	A	A	A	A	A	A	A	NA	NA	NA
	3E	Unilock‡	NA	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	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
PUSH-TO-TEST PILOT LIGHT (Red Lens)	**4R**	Bolted❄	NA	A	A	A	A	A	A	NA	NA	NA	NA
	4R	Unilock‡	NA	A	A	A	A	A	A	NA	NA	NA	NA
	5R	1, 3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	NA	NA	NA	NA
	5R	Bolted❄	NA	A	A	A	A	A	A	NA	NA	NA	NA
Full Voltage Reversing and Multi-Speed Starters (Buls. 505V, 505V, 520V, 520V)													
FOR-REV-STOP Push Button	**1**	1, 3R/12, 4/4X, 4X	A	A	A	A	A	A	A	A	A	A	A
	1	Bolted❄	NA	A	A	A	A	A	A	A	NA	NA	NA
	1	Unilock‡	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
	3	Bolted❄	NA	A	A	A	A	A	A	NA	NA	NA	NA
	3	Unilock‡	NA	A	A	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
	1	Bolted❄	NA	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
	3	Bolted❄	NA	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
PILOT LIGHTS (2)	**4R**	1, 3R/12, 4/4X, 4X♣	NA	A	A	A	A	A	A	A	A	A	A

A = Available
NA = Not Available

✶ Bulletin 500L and 500FL require a normally open auxiliary contact when used with a push button. See page 1-122. 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**.

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	NA	A	A	A	A	A	A	STD	STD	STD	STD
	6P❄	Bolted‡	NA	A	A	A	A	A	A	STD	NA	NA	NA
	6P❄	Unilock§	NA	A	A	A	A	A	A	STD	NA	NA	NA
With 100 W extra capacity 60 or 50 Hz	**6XP**	1, 3R/12, 4/4X, 4X	NA	A	A	A	A	A	A	STD	STD	STD	STD
	6XP	Bolted‡	NA	A	A	A	A	A	A	STD	NA	NA	NA
	6XP	Unilock§	NA	A	A	A	A	A	A	STD	NA	NA	NA
Control Circuit Auxiliary contact installed on contactor													
N.O.	**90**♣➢	All listed	NA	A	A	A	A	A	A	A	A	A	A
N.C.	**91**♣➢	All listed	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	NA	NA	NA	NA
(2 Fuses — Fuses Included)	**22**	1, 3R/12, 4/4X, 4X	NA	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	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	NA	NA	NA
DC operation of control circuit (power circuit remains AC)	⌘	Open	NA	A	A	A	A	A	NA	NA	NA	NA	NA
Add letters "**DC**" to Bulletin No. (add per solenoid)	⌘	1, 4/4X, 4X, 12	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	NA	NA	NA
N.C. alarm contact adder (Bulletin 592)	**9A**	All listed	NA	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	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	NA	NA	NA	NA
Control relay (4-pole maximum)⌘	❖	1, 3R/12	NA	NA	A	A	A	A	A	A	NA	NA	NA
	❖	4/4X, 4X	NA	NA	A	A	A	A	A	A	NA	NA	NA
	❖	Unilock§	NA	NA	A	A	A	A	NA	NA	NA	NA	NA
Addition of timing relay⌘	❖	1, 3R/12	NA	A	A	A	A	A	A	NA	NA	NA	NA
	❖	4/4X, 4X	NA	A	A	A	A	A	A	NA	NA	NA	NA
	❖	Unilock§	NA	NA	NA	NA	A	A	A	NA	NA	NA	NA
Add Bulletin 813S⌘ (Line voltage monitor)	❖	—	NA	NA	A	A	A	A	A	A	A	A	A
(Line current monitor)	❖	—	NA	NA	A	A	A	A	A	A	A	A	A
Bulletin 596 (used on Bulletin 500…509, 3-pole maximum) (Coil - 180 s timing range)													
ON Delay	**87A**	Open Type	NA	A	A	A	A	A	A	NA	NA	NA	NA
OFF Delay	**87B**	Open Type	NA	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	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	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	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	NA	NA	NA
Enclosure													
Breather	**136**	Bolted‡	NA	A	A	A	A	A	A	NA	NA	NA	NA
Breather and drain	**137**	Unilock§ and Bolted‡	NA	A	A	A	A	A	A	NA	NA	NA	NA
Drain	**138**	Unilock§ and Bolted‡	NA	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	NA	NA	NA	NA

A = Available
NA = Not Available
STD = Standard

✶ If the transformer secondary is to be grounded, add the suffix letter **G** at no aditional 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 auxuliary 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, please contact your local Rockwell Automation sales office or 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.

Modifications — Factory Installed

NEMA Combination Contactors/Starters

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

Description of Modification			Suffix No.	Enclosure Type	NEMA Size 0	1	2	3	4	5	6	7
Pilot Devices in Cover or Flange												
Full Voltage Non-Reversing Single Speed Starters	START-STOP push button		**1**	1	A	A	A	A	A	A	NA	NA
			1	3R/4/12, 4/4X	A	A	A	A	A	A	A	A
			1	Bolted	A	A	A	A	A	A	NA	NA
			1	Unilock	A	A	A	A	A	A	NA	NA
	ON-OFF push button		**1E**	1	A	A	A	A	A	A	NA	NA
			1E	3R/4/12, 4/4X	A	A	A	A	A	A	A	A
			1E	Bolted	A	A	A	A	A	A	NA	NA
			1E	Unilock	A	A	A	A	A	A	NA	NA
	START-STOP illuminated push button		**1L**	1	A	A	A	A	A	A	NA	NA
			1L	3R/4/12, 4/4X	A	A	A	A	A	A	NA	NA
	HAND-OFF-AUTO selector switch		**3**	1	A	A	A	A	A	A	NA	NA
			3	3R/4/12, 4/4X	A	A	A	A	A	A	A	A
			3	Bolted	A	A	A	A	A	A	NA	NA
			3	Unilock	A	A	A	A	A	A	NA	NA
	OFF-ON selector switch		**3E**	1	A	A	A	A	A	A	NA	NA
			3E	3R/4/12, 4/4X	A	A	A	A	A	A	A	A
			3E	Bolted	A	A	A	A	A	A	NA	NA
			3E	Unilock	A	A	A	A	A	A	NA	NA
	HAND-AUTO selector switch		**3H**	1	A	A	A	A	A	A	NA	NA
			3H	3R/4/12, 4/4X	A	A	A	A	A	A	A	A
			3H	Bolted	A	A	A	A	A	A	NA	NA
			3H	Unilock	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	A
	PUSH-TO-TEST PILOT LIGHT Transformer—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
Full Voltage Reversing and Multi-Speed Starters	FOR-REV-STOP push button	Bulletin 506…507	**1**	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	NA
		Bulletin 507	**1**	Bolted (7 & 9)	A	A	A	A	A	A	NA	NA
	FOR-OFF-REV selector switch (Bulletin 506…507)		**3**	1, 3R/4X12, 4/4X, 3R	A	A	A	A	A	A	NA	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	NA	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	NA
		Bulletin 523	**1**	Bolted	A	A	A	A	A	A	NA	NA
	HIGH-OFF-LOW selector switch	Bulletin 522…523	**3**	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	NA
		Bulletin 523	**3**	Bolted	A	A	A	A	A	A	NA	NA
	HIGH-LOW-OFF-AUTO selector switch		**3J**	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	NA
	PILOT LIGHT (2)	Transformer Type — Incandescent Bulb	**4**❄‡	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	NA
		Transformer Type—LED Bulb	**4L**‡	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	NA
	PUSH-TO-TEST PILOT LIGHT	Transformer— Incandescent Bulb	**5**❄	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	NA
		Transformer—LED Bulb	**5L**∗	1, 3R/4/12, 4/4X	A	A	A	A	A	A	NA	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

Modifications — Factory Installed

NEMA Combination Contactors/Starters

For Use on Bulletins 502, 502L, 503, 503L, 506, 506X, 507, 507X, 512, 512H, 512M, 512V, 513, 513H, 513M, 513V, 522, 522E, 522F, 522G, 523, 523E, 523F, 523G, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1232X, 1232V, 1233X, and 1233V, 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 W extra capacity, 60 or 50 Hz		**6XP**	1, 3R/4X/12, 4/4X, 3R	A	A	A	A	A	A	A	A
	With 100 W extra capacity with fuse covers		**6XPC**	1, 3R/4X/12, 4/4X, 3R	A	A	A	A	A	A	A	A
	With 100 W extra capacity, 60 or 50 Hz		**6XP**	Bolted∗	A	A	A	A	A	A	NA	NA
	With 100 W extra capacity, 60 or 50 Hz		**6XP**	Unilock❄	A	A	A	A	A	A	NA	NA
	With 200VA capacity		**6XXP**	1, 3R/4X/12, 4/4X, 3R	A	A	A	NA	NA	NA	NA	NA
	With 200VA capacity with fuse covers		**6XXPC**	1, 3R/4X/12, 4/4X, 3R	A	A	A	NA	NA	NA	NA	NA
	With 200 W extra capacity, 60 or 50 Hz		**6YP**	1, 3R/4X/12, 4/4X, 3R	A	A	A	A	A	A	NA	NA
	With 200 W extra capacity with fuse covers		**6YPC**	1, 3R/4X/12, 4/4X, 3R	A	A	A	A	A	A	NA	NA
	With 300 W extra capacity, 60 or 50 Hz		**6XYP**	1, 3R/4X/12, 4/4X, 3R	A	A	A	A	A	A	NA	NA
	With 300 W extra capacity with fuse covers		**6XYPC**	1, 3R/4X/12, 4/4X, 3R	A	A	A	A	A	A	NA	NA
	With 400 W extra capacity, 60 or 50 Hz		**6YYP**	1, 3R/4X/12, 4/4X, 3R	A	A	A	A	A	A	NA	NA
	With 400 W 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‡**	1, 3R/4X/12, 4/4X	A	A	A	A	A	A	A	A
		N.C.	**91‡**	Bolted	A	A	A	A	A	A	NA	NA
	Auxiliary contact — contactor (four maximum) N.C. — 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**	1, 3R/4/12, 4/4X, 3R	A	A	A	A	A	A	A	A
		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	A	A	A	A	A	A	A	A
		N.O.	**98**	Bolted∗	A	A	A	A	A	A	NA	NA
		N.O.	**98**	Unilock❄	A	A	A	A	A	A	NA	NA
		N.C.	**99**	1, 3R/4X/12, 4/4X, 3R	A	A	A	A	A	A	A	A
		N.C.	**99**	Bolted∗	A	A	A	A	A	A	NA	NA
		N.C.	**99**	Unilock❄	A	A	A	A	A	A	NA	NA
Control Circuit	Control circuit fuse block less transformer	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
		2 Fuses — Fuses Included	**22**	1, 3R/4X/12, 4/4X, 3R	A	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	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	A
Overload Relays (Eutectic Alloy)	N.O. alarm contact adder (Bulletin 592)		**9**	1, 3R/4X/12, 4/4X, 3R Bolted∗ Unilock❄	A	A	A	A	A	A	NA	NA
	N.C. alarm contact adder (Bulletin 592)		**9A**		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	NA
		For Bulletins 522, 523 Deduct	**23**		A	A	A	A	A	A	NA	NA
Accessories	3-phase 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**		A	A	A	A	A	A	NA	NA
		Off Delay	**87B**		A	A	A	A	A	A	NA	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. White LED option not available, incandescent only.

‡ For Bulletins 506, 507, 522 and 523 devices. One auxiliary contact is installed on each of the two contactors.

A = Available, NA = Not Available

Modifications — Factory Installed

NEMA Combination Contactors/Starters

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

	Description of Modification		Suffix No.	Enclosure Type	NEMA Size 0	1	2	3	4	5	6	7
Circuit Breakers	Marine Requirements		**345**	—	A	A	A	A	A	A	NA	NA
	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	Enclosure	Breather	**136**	Bolted∗	A	A	A	A	A	A	NA	NA
		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 Stainless steel Molded plastic (deduct)	**412** **413** **419**	1, 3R/4/12, 3R 4/4X 1, 3R/4/12, 4/4X, 3R	A A A	A A A	A A A	A A A	A A A	S S NA	S S NA	S S 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 3-Pole	**415** **416**	1, 3R/4/12, 4/4X, 3R	A A	A A	A A	A A	A A	A A	A A	A A
	Timing Relay (Plug-In)	On-Delay Off-Delay	**417** **418**	1, 3R/4/12, 4/4X, 3R	A A	A A	A A	A A	A A	A A	A A	A A
	Electrical Interlock	Early Break (1 N.O. and 1 N.C.) Early Break (2 N.O. and 2 N.C.)	**420** **421**	1, 3R/4/12, 4/4X, 3R 1, 3R/4/12, 4/4X, 3R	A A	A A	A A	A A	A A	A A	NA NA	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

Contactor Accessories

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

Description		NEMA Size	Cat. No.
	Coils (60 Hz) 115…120V	0…1	**CB-236**
	200…208V		**CB-249**
	230…240V		**CB-254**
	460…480V		**CB-273**
	575…600V		**CB-278**
	115…120V	2	**CC-236**
	200…208V		**CC-249**
	230…240V		**CC-254**
	460…480V		**CC-273**
	575…600V		CC-278
	115…120V	3	**CD-236**
	200…208V		**CD-249**
	230…240V		**CD-254**
	460…480V		**CD-273**
	575…600V		CD-278
	115…120V	4	**CE-236**
	200…208V		**CE-249**
	230…240V		**CE-254**
	460…480V		**CE-273**
	575…600V		CE-278
	115…120V	5 (SER. L)	**AF-236**
	200…208V		AF-249
	230…240V		AF-254
	460…480V		**AF-273**
	575…600V	5	AF-278

Note: For complete listing of coils available, see page 1-167

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.

Cat. No. 100-FSC280

Cat. No. 599-K04

	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	0…5	**599-K04**
	240…264V AC Varistor		**599-KA04**
	12…120V AC	6	**199-FSMA1**❄
	12…120V AC Varistor		**199-GSMA1**‡
	120V AC	7…8	**700-N24**

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

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
	Line side lug covers (set of 3)	3	**599-LC-3-L**
		4	**599-LC-4-L**
		5	**599-LC-5-L**
	Line side lug covers (set of 3)	3	**599-LC-3-T**
		4	**599-LC-4-T**
		5	599-LC-5-T
	Tie Point Terminal	0…2	599-TP02
		3…5	599-TP34

Cat. No. 599-PS01

Description	For Use With	No. of Poles	NEMA Size	Cat. No.
Protective Covers	500F/FL, 500L, 500LP, 505	3	0…1	**599-PC01**
	509, 505, 520E (2), 520F/G	3	0…1	**599-PS01**➢
	500L, 500LP	5	0…1	599-PC01-5⌘
	520F/G	5	0…1	599-PS01-5➢
	500F/FL, 500L, 500LP, 505	3	2	**599-PC2**
	509, 505, 520E (2), 520F/G	3	2	**599-PS2**➢
	500L, 500LP	5	2	599-PC2-5⌘
	520F/G	5	2	599-PS2-5➢
	500F/FL, 500L, 500LP, 505	3	3	**599-PC3**
	509, 505, 520E (2), 520F/G	3	3	**599-PS3**➢
	500L, 500LP	5	3	599-PC3-5⌘
	520F/G	5	3	599-PS3-5➢
	500F/FL, 500L, 500LP, 505	3	4	**599-PC4**
	509, 505, 520E (2), 520F/G	3	4	**599-PS4**➢
	500L, 500LP	5	4	599-PC4-5⌘
	520F/G	5	4	599-PS4-5➢
	500F/FL, 500L, 500LP	3	5	**599-PC5**
	509	3	5	**599-PS5**➢

⌘ Used on 5-pole contactors and starters.
➢ Bul. 592 Eutectic alloy or solid-state overload relays.

Accessories — Field Installed

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

Contactor Accessories

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

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 ms is allowed.
Note:
- 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 1-167 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: Please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

Contact Ratings: NEMA A600 (10 A, 600V AC max.)
NEMA P300 (5 A, 300V DC max.)

Description		NEMA Size	Cat. No.
	**On-Delay**	00§	**100-FPTA30**
	On-Delay		**100-FPTA180**
	Off-Delay		**100-FPTB30**
	Off-Delay		**100-FPTB180**
	Left-hand ON Delay	0…5	**596-TL32**
	Left-hand OFF Delay		**596-TL33**
	Right-hand ON Delay		**596-TR32**
Cat No. 596-TR32	Right-hand OFF Delay		596-TR33

§ 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**
	1 N.O.	6	**195-GA10**
	1 N.O.	7	♣ **1495-J6**
	2 N.O. auxiliary contacts for disconnect switch	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**

♣ The normally open contacts can easily be changed to normally closed in the field.

Power Pole Adders — The 1 N.O. and 1 N.C. power poles may be field added to all size 0…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.

Description		NEMA Size	Cat. No.
	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
Cat. No. 599-P01A (1 N.O.) Size 0…1, 27 Amps.	1 N.O.	4	599-P4A
	1 N.C.		599-P4B

Contactor 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.

Description		NEMA Size	Cat. No.
	—	0…1	599-N11
		2	599-N12
		3	599-N13
		4…5	599-N14

Wire Size		NEMA Size	Cat. No.
	**Lug Connectors (3 per package)**		
	#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	42450-804-01

* 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	Two #1/0 150…500 MCM 1 required per terminal	6	**199-LJ1**
	Terminal Lug Kit	#4 AWG…500 MCM 3 required per terminal for Size 7 and 4 required per terminal for Size 8	7…8	**199-LG1**

Description		NEMA Size	Cat. No.
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 on to 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.**			
 *4-pole*	2 N.O.	00	**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.C.		**100-FA04**
24V DC Interface Module — Mounts to the top of the contactor. It provides a 24V DC, 0.5 w input signal that can be used to operate the 24…240V AC coil of the contactor. **Fits on Open Type devices only.**			
	—	00	**100-JE**
Latch Attachment — On the front of the contactor. **Fits on Open Type devices only.**			
	—	00	**100-FL11⊗**
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)			
 *Bulletin 500 with device markers*	—	0…5	599-DM ‡ 5
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.			
 *Cat No. 599-TW01*	—	0…1	**599-TW01**
	—	2	**599-TW2**
	—	3	**599-TW3**
	—	4	599-TW4
	—	5	599-TW5P

⊗ 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, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]	24	48	100	110	120	230… 240	240	277	380… 400	400… 415	400	480
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

Contactor Accessories

Description		Enclosure Type	NEMA Size	Cat. No.
 	**Adapter Plates —** For replacement of: • 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

For use on Bulletins 512V, 513V, 1232V, 1233V

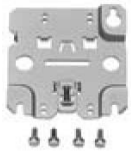
Contactors are supplied with one normally open and one normally closed auxiliary contact (A600 rating) as standard. Additional auxiliary contacts, two normally open and two normally closed, can be added in the field.

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

Overload Accessories

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

Description		NEMA Size	Cat. No.
 **Auxillary Contact —** For eutectic alloy overload relays only∗ **Contact Ratings —** NEMA A600 (10 A, 600V AC max.) NEMA P300 (5 A, 300V DC max.)	**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		Max. Continuous Current Rating [A]	Cat. No.
	**DIN Rail Mounting Adapter** for Bulletin 592 compact type 3-pole overload relays	40	**599-MP1**
	DIN Rail Mounting Adapter for Bulletin 592 compact type 1-pole overload relays	62	599-MP2

∗ Auxiliary contact for solid-state overload relays is included in the product.
❄ Non-combination starters only.
‡ Auxiliary contact mounted on right-hand side of overload relay provides N.O. contact function. Auxiliary contact 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.

Voltage Control Accessories

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

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		**1497-N2PK**		**1497-N16PK**		**1497-N8PK**		**1497-N11PK**		**1497-N19PK**
	600V		**1497-N3PK**		**1497-N17PK**		1497-N9PK		1497-N12PK		1497-N20PK
3	208V	200	**1497-N4PK**	250	1497-N7PK	350	1497-N10PK	500	1497-N18PK	500	1497-N18PK
	240V & 480V		**1497-N5PK**		**1497-N8PK**		**1497-N11PK**		**1497-N19PK**		**1497-N19PK**
	600V		1497-N6PK		1497-N9PK		1497-N12PK		1497-N20PK		1497-N20PK
4	208V	250	1497-N7PK	350	1497-N10PK	500	1497-N18PK	—	—	—	—
	240V & 480V		**1497-N8PK**		**1497-N11PK**		**1497-N19PK**	—	—	—	—
	600V		1497-N9PK		1497-N12PK		1497-N20PK	—	—	—	—
5	208V	350	1497-N10PK	500	1497-N18PK	—	—	—	—	—	—
	240V & 480V		**1497-N11PK**		**1497-N19PK**	—	—	—	—	—	—
	600V		1497-N12PK		1497-N20PK	—	—	—	—	—	—
6	208V	500	1497-N18PK	—	—	—	—	—	—	—	—
	240V & 480V		**1497-N19PK**	—	—	—	—	—	—	—	—
	600V		1497-N20PK	—	—	—	—	—	—	—	—

∗ Transformers for NEMA sizes 7…9 are included as standard.

❄ 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 8-36.

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 8-36.

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, 512H, 512M, 512V, 513, 513H, 513M, 513V, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, 1232V, 1232X, and 1233V, 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

* 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.

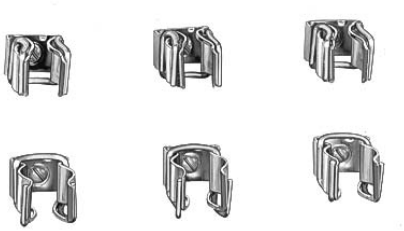
♣ One cover per pole is required. Example: transformer with top-mounted fuse block requires three covers. Fuse block kit for separate control requires two covers. Fuses not included.

Description		NEMA Size	Cat. No.
	Single-pole kit — Bulletin 500 line controller mounted (Class CC fuses)	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.

Disconnect Switch Accessories

For use on Bulletins 502, 502L, 506, 506X, 512, 512H, 512M, 512V, 522, 532, 542, 572, 1242, 1272, 1282, 1232X, and 1232V

	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	0…2❄	**1401-N50** **1401-N51**
	31…60 A, 600V AC, Class R	1…3	**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	⌘
	61…100 A, 250V AC HRC Form II Fusing✶ 61…100 A, 600V AC HRC Form II Fusing✶	2…4	1401-HRC100
	101…200 A, 250V AC HRC Form II Fusing✶ 101…200 A, 600V AC HRC Form II Fusing✶	3…5	1401-HRC200
	201…400 A, 250V AC HRC Form II Fusing✶ 201…400 A, 600V AC HRC Form II Fusing✶	4…5	1401-HRC400
	**Auxiliary Contacts for Disconnect Switches** 1 N.O.	0…5	**1495-N8**
	1 N.C.	0…5	**1495-N9**

✶ HRC Form II fusing for Canada only.
❄ For 0…30 A only.
⌘ Fuse clip not required. Fuse bolts directly to switch and trailer fuse block.

Accessories — Field Installed

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

Cat. No. 1494R-N3

Description		For Use With	Cat. No.	
Lug Connectors (3 per package)				
Disconnect Size [A]	**Wire Size**			
30	#14…8 AWG Wire	1494C, 1494F, 1494G, and 1494V Disconnect Switches	✶	
60	#14…4 AWG Wire		§	**1494R-N1**
100	#8…1/0 AWG Wire		§	**1494R-N2**
200	#6…4/0 AWG Wire		§	**1494R-N3**
400	(2) of #1/0…250 MCM Wire			**1494R-N14**
400	#4 AWG…500 MCM Wire (oversized)			**1494R-N15**
600	(2) of #1/0…350 MCM Wire		§	**1494R-N10**
600	(2) of #1/0…350 MCM Wire	1491-N621 or 1491-R621 600 A fuse blocks	♣	**1494R-N11**

Protective Fuse Covers

Switch Rating [A]	Fuse Class	Fuse Clip Rating [A]		Cat. No.	
		250V	600V		
30	Non-fusible	—	—	**1495-N64**	
30	H, R	30	—		
60	H, R	60	—		
30	J	30	30		
60	J	60	60		
60	Non-fusible	—	—		
100	Non-fusible	—	—		
30	H, R	—	30	**1495-N65**	
60	H, R	—	60		
100	J	100	100		
100	H, R	100	100	**1495-N66**	
200	Non-fusible	—	—	➢	**1495-N67**
200	H, J, R	200	200		
200	Non-fusible	—	—	⌘	**1495-N62**
200	H, J, R	200	200		
400	Non-fusible	—	—	➢	**1495-N68**
400	H, J, R	400	400		
400	Non-fusible	—	—	⌘	**1495-N63**
400	H, J, R	400	400		
600	Non-fusible	—	—	➢	**1495-N61**
	J	600	600		

✶ All terminals of the 30 A switches are furnished with self-lifting pressure plate connectors (N56, N57, and N58) as standard.
§ Each kit contains three lugs.
♣ Each kits contains two lugs.
➢ Switch with right-hand mechanism.
⌘ Switch with left-hand mechanism.

Circuit Breaker Accessories

For use on Bulletins 503, 503L, 507, 507X, 513, 513H, 513M, 513V, 523, 533, 543, 573, 1243, 1273, 1283, 1233X, and 1233V

	Description	NEMA Size	Cat. No.
	**Circuit Breaker Kits**		
	3 A, 0…1/3 Hp @ 200 and 230V 3 A, 0…1 Hp @ 460 and 575V	0…1	1401-N60
	7 A, 0.5…1 Hp @ 200 and 230V 7 A, 1.5…3 Hp @ 460 and 575V	0…1	**1401-N61**
	15 A, 1.5…3 Hp @ 200 and 230V 15 A, 5…7.5 Hp @ 460 and 575V	0…1	**1401-N62**
	30 A, 5 Hp @ 200V 30 A, 5…7.5 Hp @ 230V 30 A, 10…15 Hp @ 460 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**
	100 A, 15…25 Hp @ 200 and 230V 100 A, 30…50 Hp @ 460V 100 A, 40…50 Hp @ 575V	2…4	**1401-N65**
	150 A, 30 Hp @ 200V 150 A, 30…40 Hp @ 230V 150 A, 60…75 Hp @ 460V 150 A, 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 open (1 N.O.)❄	0…5‡ 4…5§	**1495-N8**
	One normally closed (1 N.C.) Adapter kit may be required.✶ Bolted — One normally closed (1 N.C.)❄ Unilock — One normally closed (1 N.C.)❄	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) 400 A Frame❄	5	**1495-N16**
	150 A Frame	3…4	**1495-N21**
	250 A Frame - Enclosure Type 1, 3R/4/12, 3R and 4/4X (stainless steel) 250 A Frame - Enclosure Type 7 & 9 (bolted & Unilock) and 4/4X (non-metallic)	4…5♣ 0…5➢	1495-N22
	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

Pilot Device Accessories

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

	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	1481-N48
	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.

Pilot Device Accessories

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

Description	Enclosure Type	NEMA Size	Cat. No.
Pilot Light Kits‡ 120V	1, 3R/4/12	0…5	**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	0…5	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, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

[V]	115…120	230…240	460…480	575…600
60 Hz	D	A	B	C

∗ For non-combination starters only.
❄ Bulletins 500, 505, 509, and 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 and 520 with two pilot lights are supplied in hinged enclosures, with or without control circuit transformers.

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, 512H, 512M, 512V, 513, 513H, 513M, 513V, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, 1232V, 1233X, and 1233V, 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 10-2)
	Additional pilot devices	4/4X, 4X	0…9	Use Bulletin 800H Type 4X devices (See page 10-2)
	Additional pilot devices (bolted)	3R, 7 & 9	0…9	Use Bulletin 800H Type 7 & 9 devices (See page 10-132)

∗ 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.

Enclosure Accessories

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

	Description	Enclosure Type	NEMA Size	Cat. No.
	**Metallic Conduit Connectors** 1 in. (24.5 mm)	1, 3R/4/12, 3R	0…1	1232-N11
	1-1/4 in. (31.75 mm)		2	1232-N12
	1-1/2 in. (38.1 mm)		3	1232-N13
	2-1/2 in. (63.5 mm)		4	1232-N14
	3 in. (76.2 mm)		5	1232-N15
	**Non-metallic Conduit Connectors** 1/2 in. (12.7 mm)	4, 4X (stainless steel and non-metallic)	0…1	**1490-N1**
	3/4 in. (19 mm)			**1490-N9**
	1 in. (24.5 mm)			**1490-N10**
	1-1/4 in. (31.75 mm)		2	**1490-N11**
	1-1/2 in. (38.1 mm)		3	**1490-N5**
	2 in. (50.8 mm)		4	1490-N6
	2-1/2 in. (63.5 mm)			1490-N7
	3 in. (76.2 mm)		5	1490-N8
	**Grounding Adapters** 1/2 in. (12.7 mm), #14…10 AWG	4, 4X (stainless steel and non-metallic)❄	0…1	1490-N19
	3/4 in. (19 mm), #14…8 AWG			**1490-N20**
	1 in. (24.5 mm), #14…8 AWG			**1490-N21**
	1-1/4 in. (31.75 mm), #14…4 AWG		2	1490-N22
	1-1/2 in. (38.1 mm), #8…1/0 AWG		3	1490-N23
	2 in. (50.8 mm), #8…1/0 AWG		4	1490-N24
	2-1/2 in. (63.5 mm), #6…2/0 AWG			1490-N25
	3 in. (76.2 mm), #6…4/0 AWG		5	1490-N26
	**Handle Kits with Universal Link for Switch and Breaker** Painted Metal 5-1/2 in. base	1, 3R, 3R/4/12✶	0…4	**1494F-M1**
	Painted Metal 7-1/2 in. base		5	**1494F-M2**
	Stainless Steel 5-1/2 in. base	4/4X (stainless steel)	0…4	**1494F-S1**
	Stainless Steel 7-1/2 in. base		5	**1494F-S2**
	Non-Metallic Handle 5-1/2 in. base	1, 3R, 3R/4/12, 4/4X (non-metallic)	0…4	**1494F-P1**
	**Hole Plugs** 30.5 mm hole plug for pilot devices	All	0…5	**800T-N1**
	19.5 mm hole plug for resets and door safety hardware			598-N1

✶ For combination starters only.

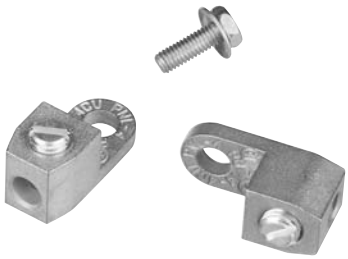
❄ Bulletin 1490 grounding adapters are available for use with these conduit hubs. These bushings provide a convenient method of connecting a ground wire to the conduit system. See conduit connector (hub) above proper size.

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, 512V, 513, 513M, 513V, 520, 520V, 522, 523, 530, 532, 533, 540, 542, 543, 570, 572, 573, 1242, 1243, 1272, 1273, 1282, 1283, 1232X, 1232V, 1233X, and 1233V, Continued

Description		Enclosure Type	NEMA Size	Cat. No.
	**Door Safety Hardware Kits** **Enclosure Size (H x W x D)** 27 x 10 x 8.2 in.	3R/4/12❄	0…2	1494F-V1
	30 x 20 x 9.7 in.		0…4	1494F-V2
	50 x 22 x 11.1 in.		3…4	1494F-V3
	56 x 30 x 14 in.		5	1494F-V4
	Breather Bulletin 505, 507, 509, and 513 — Unilock and bolted Class I, Groups C and D Class II, Groups E, F and G♣‡		0…5	1401-N1
	Drain Bulletin 505, 507, 509, and 513 — Unilock and bolted Class I, Groups C and D Class II, Groups E, F and G♣‡			1401-N2
	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♣‡			1401-N3
	**Ground Lug Kits**		0…2	**599-GR1**
			3…5	599-GR2
			6…7	599-GR3

Description of Accessory Kit	Size 0…2 Cat. No.	Size 3 Cat. No.	Size 4 Cat. No.	Size 5 Cat. No.	Size 6…9 Cat. No.
Reset Buttons (Each Kit Contains One Reset)					
Type 1, 3R/12 Bulletin 506…507 — One Kit Required Per Starter	1493-N21	1493-N21	1493-N21	—	—
Bulletin 512…513 — One Kit Required Per Starter				1493-N21➢	—
Bulletin 522…523 — Two Kits Required Per Starter				—	—
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.

System Accessories

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

	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 10.1…10 s	1 (hinged), 3R, 3R/4/12, 4/4X (stainless)	0…7	**700-HT12AU120**
	120V AC, ON-Delay — 8-pin socket (Cat. No. 700-HN125) required 1.0…180 s			**700-HT12BU120**
	120V AC, OFF-Delay — 11-pin socket (Cat. No. 700-HN126) required 0.1…10 s	1 (hinged), 3R, 3R/4/12, 4/4X (stainless)	0…7	**700-HT22AU120**
	120V AC, OFF Delay — 11-pin socket (Cat. No. 700-HN126) required 1.0…180 s	1 (hinged), 3R, 3R/4/12, 4/4X (stainless)	0…7	**700-HT22BU120**
	**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	1 (hinged), 3R, 3R/4/12, 4/4X (stainless)	0…7	**700-HA33A1**
	**Relay Sockets**∗ 8-pin socket	1 (hinged), 3R, 3R/4/12, 4/4X (stainless)	0…7	**700-HN125**
	11-pin socket		0…7	**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 Specifications

NEMA Non-Combination and Combination Contactors/Starters

Electrical Ratings

NEMA Size	Load Voltage [V]	Continuous Current Rating [A]	Service Limit Current Rating [A]✶	Maximum Hp Rating (Non-plugging and non-jogging duty)		Maximum Hp Rating (Plugging and jogging duty)❄		Transformer Primary Switching 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	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 3000 A, please contact your local Rockwell Automation sales office, Allen-Bradley distributor, or NEMA ICS-2 Standard.

Mechanical Ratings

NEMA Size	Mechanical Life (Millions of Operations)	Maximum Number of Auxiliary Contacts	Operating Time [ms]	
			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 AWG…500 MCM	375 lb•in	
6			Lugs sold separately. See page 1-123.			
7						
8						
9			Direct bus connections only.			
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) Starters with SMP Overload relay –13…+131 °F (–25…+55 °C) (provided condensation is prevented)	10 000 feet before derating	All metal parts are treated for corrosion-resistance	Vertical
1				
1P				
2				
3				
4				
5				
6				Horizontal
7				Vertical
8				
9				
00				Horizontal

NEMA Specifications

NEMA Non-Combination and Combination Contactors/Starters, Continued

Short Circuit Rating

Combination contactors and starters with disconnect switch: Bulletin 502, 506, 512, 522E, 522F, 522G, and 1232X

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	10 000	
0…5	J, R	100 000	
6	L	18 000	
7	L	18 000	
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	10 000	
20…300	J, R	100 000	
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	65 000	480
4/4X (non-metallic)	0…5	22 000	
Unilock 3R, 7, & 9	0…5	65 000	
Bolted 3R, 7, & 9	0…2	65 000	
1, 3R, 3R/4/12, 4/4X (stainless)	0…5	25 000	600
4/4X (non-metallic)	0…3	5000	
4/4X (non-metallic)	4…5	10 000	
Unilock 3R, 7, & 9	0…3	5000	
Unilock 3R, 7, & 9	4…5	10 000	
Bolted 3R, 7, & 9	0…2	5000	
3R, 3R/4/12	6…7	10 000	
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	65 000	480
4/4X (non-metallic)	20…300	22 000	
Unilock 3R, 7, & 9	20…300	65 000	
Bolted 3R, 7, & 9	20…300	65 000	
1, 3R, 3R/4/12, 4/4X (stainless)	20…300	25 000	600
4/4X (non-metallic)	20…100	5000	
4/4X (non-metallic)	20…300	10 000	
Unilock 3R, 7, & 9	20…100	5000	
Unilock 3R, 7, & 9	20…300	10 000	
Bolted 3R, 7, & 9	20…300	5000	

AC Coil Data

NEMA Size	Operating Volt Amperes Burden [VA] 60 Hz Coils Inrush	Operating Volt Amperes Burden [VA] 60 Hz Coils Sealed	Heat Dissipation [W]	Coil Operating Limits
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	—	

∗ 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.

Auxiliary Contacts (NEMA A600 and P300) — Bulletin 595, 596

Maximum AC Contact Rating Per Pole						
AC Rating Designation	Maximum Voltage 60 or 50 Hz	[A] Make	[A] Break	Continuous Carrying Current [A]	[VA] Make	[VA] 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 A)			
DC Rating Designation	125V DC	250V DC	600V DC
P300	0.55 A	0.55 A (Requires 2 Contacts in Series)	—
	1.1 A (Requires 2 Contacts in Series)		

1

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 Rockwell Automation 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.

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).

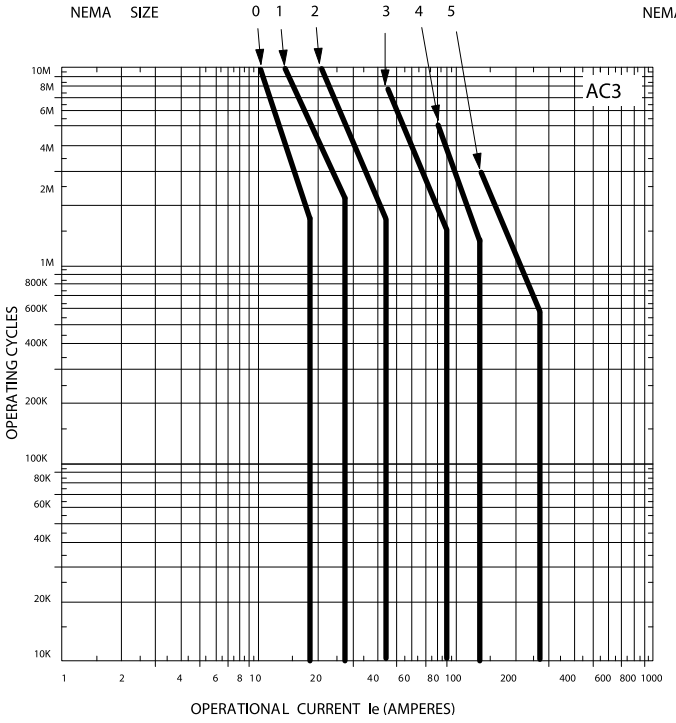
L_{AC4} Approximate contact life in operations for AC4 utilization category (from AC4 life-load curves below).

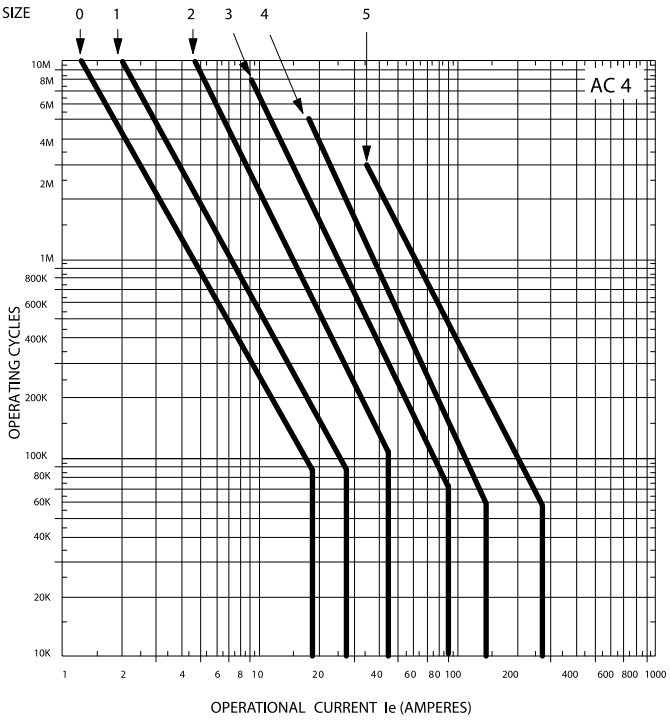
P_{AC4} Percentage of AC4 operations.

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.

Bulletin 500 Load/ Life Curves — AC3 and AC4





Group Motor Ratings for NEMA Contactors/Starters

Manual Starters	FLA Range (Amps)	Group Rating (480V)		Contactors				
		w/o Limiter	with Limiter	Size 00	Size 0	Size 1	Size 2	Size 3
140-MN-0016	0.10…0.16	42 kA	42 kA	500-TO∗	500-AO∗	500-BO∗	—	—
140-MN-0025	0.16…0.25	42 kA	42 kA	500-TO∗	500-AO∗	500-BO∗	—	—
140-MN-0040	0.25…0.40	42 kA	42 kA	500-TO∗	500-AO∗	500-BO∗	—	—
140-MN-0063	0.40…0.63	42 kA	42 kA	500-TO∗	500-AO∗	500-BO∗	—	—
140-MN-0100	0.63…1.0	42 kA	42 kA	500-TO∗	500-AO∗	500-BO∗	—	—
140-MN-0160	1.0…1.6	42 kA	42 kA	500-TO∗	500-AO∗	500-BO∗	—	—
140-MN-0250	1.6…2.5	42 kA	42 kA	500-TO∗	500-AO∗	500-BO∗	—	—
140-MN-0400	2.5…4.0	42 kA	42 kA	500-TO∗	500-AO∗	500-BO∗	—	—
140-MN-0630	4.0…6.3	42 kA	42 kA	500-TO∗	500-AO∗	500-BO∗	—	—
140-MN-1000	6.3…10.0	42 kA	42 kA	500-TO∗	500-AO∗	500-BO∗	—	—
140-MN-1600	10.0…16.0	10 kA	42 kA	—	500-AO∗	500-BO∗	500-CO∗	—
140-MN-2000	16.0…20.0	10 kA	14 kA	—	500-AO∗	500-BO∗	500-CO∗	—
140-MN-2500	20.0…25.0	10 kA	10 kA	—	—	500-BO∗	500-CO∗	—
190-MN+190-P320	24.0…32.0	—	42 kA	—	—	—	500-CO∗	500-DO∗
190-MN+190-P400	32.0…42.0	—	30 kA	—	—	—	500-CO∗	500-DO∗

Manual Starters	FLA Range (Amps)	Group Rating (480V)		Starters				
		w/o Limiter	with Limiter	Size 00	Size 0	Size 1	Size 2	Size 3
140-MN-0016	0.10…0.16	42 kA	42 kA	509-TO❄	509-AO❄	509-BO❄	—	—
140-MN-0025	0.16…0.25	42 kA	42 kA	509-TO❄	509-AO❄	509-BO❄	—	—
140-MN-0040	0.25…0.40	42 kA	42 kA	509-TO❄	509-AO❄	509-BO❄	—	—
140-MN-0063	0.40…0.63	42 kA	42 kA	509-TO❄	509-AO❄	509-BO❄	—	—
140-MN-0100	0.63…1.0	42 kA	42 kA	509-TO❄	509-AO❄	509-BO❄	—	—
140-MN-0160	1.0…1.6	42 kA	42 kA	509-TO❄	509-AO❄	509-BO❄	—	—
140-MN-0250	1.6…2.5	42 kA	42 kA	509-TO❄	509-AO❄	509-BO❄	—	—
140-MN-0400	2.5…4.0	42 kA	42 kA	509-TO❄	509-AO❄	509-BO❄	—	—
140-MN-0630	4.0…6.3	42 kA	42 kA	509-TO❄	509-AO❄	509-BO❄	—	—
140-MN-1000	6.3…10.0	42 kA	42 kA	509-TO❄	509-AO❄	509-BO❄	—	—
140-MN-1600	10.0…16.0	10 kA	42 kA	—	509-AO❄	509-BO❄	509-CO❄	—
140-MN-2000	16.0…20.0	10 kA	14 kA	—	509-AO❄	509-BO❄	509-CO❄	—
140-MN-2500	20.0…25.0	10 kA	10 kA	—	—	509-BO❄	509-CO❄	—
190-MN+190-P320	24.0…32.0	—	42 kA	—	—	—	509-CO❄	509-DO❄
190-MN+190-P400	32.0…42.0	—	30 kA	—	—	—	509-CO❄	509-DO❄

∗ Cat. No. is incomplete. Refer to page 1-32.
❄ Cat. No. is incomplete. Refer to page 1-37.

1

Full Load Currents of 3-Phase, 60 Hertz AC Induction Motors

The full load currents listed below are "average values" for horsepower rated motors of several manufacturers at the more common rated voltages and speeds. These "average values", along with the similar values listed in the U. S. National Electrical Code (NEC), should be used only as a guide for selecting suitable components for the Motor Branch Circuit. The rated full load current, shown on the motor nameplate, may vary considerably from the listed value depending on the specific motor design.

ATTENTION: The motor nameplate full load current should always be used in determining the rating of the devices used for Motor Running Overcurrent Protection.

HP	RPM*	Full Load Current [A]					
		208V	240V	480V	600V	2200V	4000V
1/4	**3600**	1.20	1.04	0.52	0.42	—	—
	1800	1.39	1.20	0.60	0.48	—	—
	1200	1.62	1.40	0.70	0.56	—	—
	900	—	—	—	—	—	—
1/3	**3600**	1.48	1.28	0.64	0.51	—	—
	1800	1.69	1.46	0.73	0.58	—	—
	1200	1.89	1.64	0.82	0.66	—	—
	900	—	—	—	—	—	—
1/2	**3600**	2.08	1.80	0.90	0.72	—	—
	1800	2.54	2.20	1.10	0.88	—	—
	1200	2.89	2.50	1.25	1.00	—	—
	900	—	—	—	—	—	—
3/4	**3600**	2.89	2.50	1.25	1.00	—	—
	1800	3.47	3.00	1.50	1.20	—	—
	1200	3.81	3.30	1.65	1.32	—	—
	900	—	—	—	—	—	—
1	**3600**	3.51	3.04	1.52	1.22	—	—
	1800	4.25	3.68	1.84	1.47	—	—
	1200	4.60	3.98	1.99	1.59	—	—
	900	—	—	—	—	—	—
1-1/2	**3600**	5.04	4.36	2.18	1.74	—	—
	1800	5.80	5.02	2.51	2.01	—	—
	1200	6.49	5.62	2.81	2.25	—	—
	900	—	—	—	—	—	—
2	**3600**	6.51	5.64	2.82	2.26	—	—
	1800	7.18	6.22	3.11	2.49	—	—
	1200	8.20	7.10	3.55	2.84	—	—
	900	—	—	—	—	—	—
3	**3600**	9.24	8.00	4.00	3.20	—	—
	1800	10.4	9.04	4.52	3.62	—	—
	1200	11.6	10.1	5.04	4.03	—	—
	900	—	—	—	—	—	—
5	**3600**	15.7	13.6	6.80	5.44	—	—
	1800	15.9	13.8	6.88	5.50	—	—
	1200	18.6	16.1	8.07	6.46	—	—
	900	—	—	—	—	—	—
7-1/2	**3600**	22.1	19.1	9.57	7.66	—	—
	1800	25.0	21.7	10.8	8.66	—	—
	1200	26.6	23.1	11.5	9.22	—	—
	900	—	—	—	—	—	—
10	**3600**	29.7	25.7	12.9	10.3	—	—
	1800	31.5	27.3	13.7	10.9	—	—
	1200	32.9	28.4	14.2	11.4	—	—
	900	—	—	—	—	—	—
15	**3600**	43.0	37.2	18.6	14.9	—	—
	1800	46.7	40.4	20.2	16.2	—	—
	1200	49.1	42.5	21.3	17.0	—	—
	900	—	—	—	—	—	—
	600	—	—	—	—	—	—
20	**3600**	59.2	51.3	25.6	20.5	5.2	2.9
	1800	59.6	51.6	25.8	20.6	5.3	3.0
	1200	61.7	53.4	26.7	21.4	5.4	3.1
	900	—	—	—	—	5.8	3.2
	600	—	—	—	—	6.4	3.5
25	**3600**	70.9	61.4	30.7	24.6	6.3	3.4
	1800	74.7	64.7	32.3	25.9	6.5	3.6
	1200	76.0	65.8	32.9	26.3	6.7	3.7
	900	—	—	—	—	6.9	3.8
	600	—	—	—	—	8.1	4.4
30	**3600**	85.7	74.2	37.1	29.7	—	—
	1800	88.2	76.4	38.2	30.5	7.8	4.3
	1200	91.6	79.3	39.7	31.7	8.0	4.4
	900	—	—	—	—	8.2	4.5
	600	—	—	—	—	9.3	5.0
40	**3600**	111	96.0	48.0	38.4	—	—
	1800	117	102	50.8	40.6	10.0	5.5
	1200	119	103	51.7	41.4	10.3	5.7
	900	—	—	—	—	10.6	5.8
	600	—	—	—	—	11.5	6.3
50	**3600**	141	122	61.2	49.0	—	—
	1800	144	125	62.3	49.8	12.3	6.8
	1200	147	127	63.4	50.7	12.4	6.8
	900	—	—	—	—	13.1	7.2
	600	—	—	—	—	14.2	7.8
60	**3600**	165	143	71.6	57.3	—	—
	1800	172	149	74.3	59.4	14.6	8.0
	1200	173	150	74.9	59.9	14.9	8.2
	900	—	—	—	—	15.4	8.5
	600	—	—	—	—	16.7	9.2
75	**3600**	204	177	88.5	70.8	—	—
	1800	211	183	91.4	73.1	18.0	9.9
	1200	215	186	93.1	74.5	18.2	10.0
	900	—	—	—	—	19.0	10.5
	600	—	—	—	—	21.0	11.6
100	**3600**	267	231	116	92.6	—	—
	1800	276	239	119	95.5	23.6	13.0
	1200	281	243	122	97.2	24.2	13.3
	900	—	—	—	—	24.8	13.6
	600	—	—	—	—	26.4	14.5
	450	—	—	—	—	29.8	16.4
125	**3600**	333	288	144	115	—	—
	1800	340	294	147	118	29.2	16.1
	1200	347	300	150	120	29.9	16.4
	900	—	—	—	—	30.9	17.0
	720	—	—	—	—	31.3	17.2
	600	—	—	—	—	32.8	18.0
	450	—	—	—	—	36.0	19.8
150	**3600**	397	344	172	138	—	—
	1800	404	350	175	140	34.8	19.1
	1200	414	358	179	143	35.5	19.5
	900	—	—	—	—	37.0	20.4
	720	—	—	—	—	37.0	20.4
	600	—	—	—	—	38.8	21.3
	450	—	—	—	—	42.0	23.1
200	**3600**	524	454	227	182	—	—
	1800	531	460	230	184	46.7	25.7
	1200	538	466	233	186	47.0	25.9
	900	—	—	—	—	49.4	27.2
	720	—	—	—	—	49.0	27.0
	600	—	—	—	—	50.9	28.0
	450	—	—	—	—	53.7	29.5
250	**3600**	642	556	278	222	—	—
	1800	658	570	285	228	57.5	31.6
	1200	682	590	295	236	58.5	32.2
	900	—	—	—	—	61.5	33.8
	720	—	—	—	—	61.5	33.8
	600	—	—	—	—	61.0	33.6
	450	—	—	—	—	65.3	35.9
	360	—	—	—	—	70.0	38.5
300	**3600**	774	670	335	268	—	—
	1800	790	684	342	274	69.0	38.0
	1200	804	696	348	278	70.0	38.5
	900	—	—	—	—	73.5	40.4
	600	—	—	—	—	72.3	39.8
	450	—	—	—	—	76.0	41.8
	360	—	—	—	—	82.8	45.5
350	**3600**	—	748	374	299	—	—
	1800	—	762	381	305	—	—
	1200	—	774	387	310	—	—
400	**3600**	—	874	437	350	—	—
	1800	—	892	446	357	—	—
	1200	—	902	451	361	—	—
450	**3600**	—	972	486	389	—	—
	1800	—	992	496	397	—	—
	1200	—	1004	502	402	—	—
500	**3600**	—	1074	537	430	—	—
	1800	—	1096	548	438	—	—
	1200	—	1108	554	443	—	—

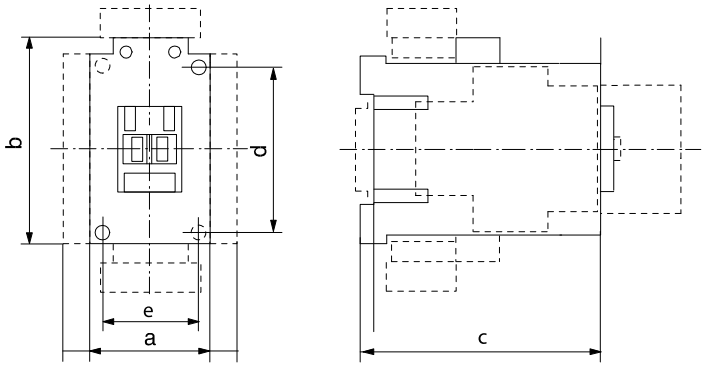
* Synchronous speed nameplate is usually less due to slip.

Approximate Dimensions

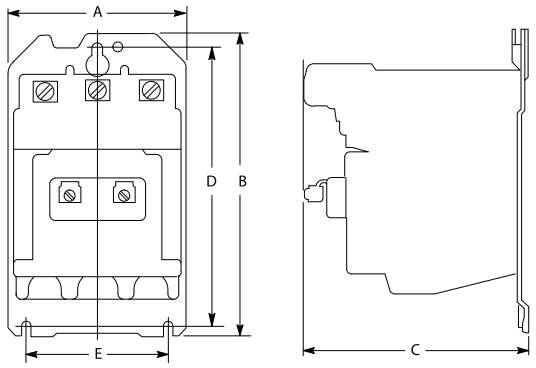
NEMA AC Contactors

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 and 500LP Contactors



Sizes 00



Sizes 0...5

Note: Top mounting hole on Size 00 is 1/4 in. (6.35 mm) 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)
	Bulletin 500 500F-500FL	Bulletin 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 mm).
❄ For Feed-Through Wiring this dimension is 11-11/16 in. (297 mm).
‡ For Feed-Through Wiring this dimension is 12-37/64 in. (320 mm).

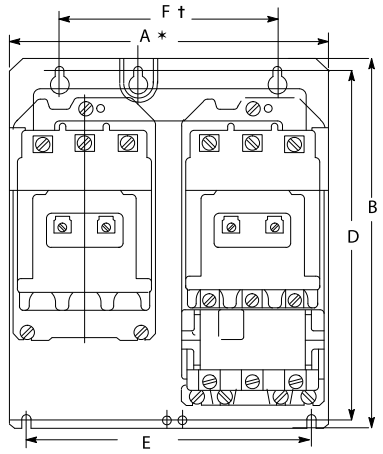
Approximate Dimensions

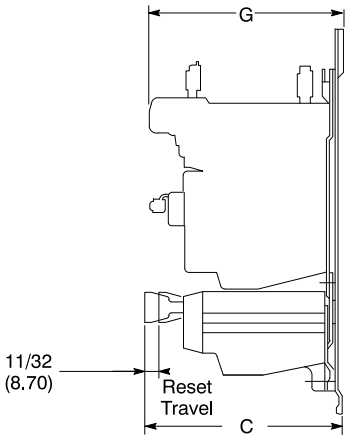
NEMA Reversing Starters

Product Selection — page 1-32

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





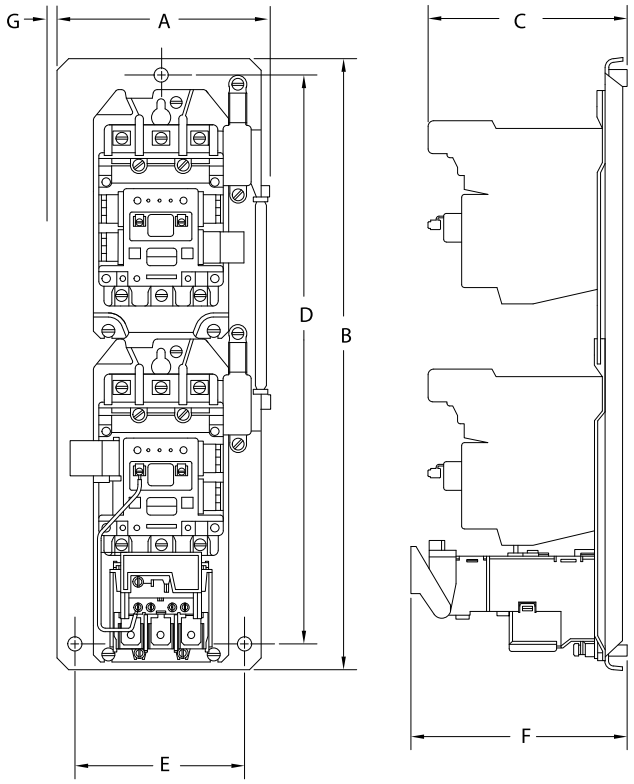
NEMA Size	Style	Dimensions in Inches (Millimeters)							Approx. Shipping Weight in lbs (kg)
		A Width	B Height	C Relay Reset Depth	D	E	F	G Depth	
00	With Eutectic Alloy Overload Protection	4-7/8 (124)	6-9/16 (167)	3-27/32 (98)	6-1/64 (153)	4-3/8 (111)	—	—	4 (1.8)
0…1		8 (203)	9-5/32 (233)	4-11/16 (119)	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, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.							
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, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.							

* Sizes 00…2 only.

❄ Sizes 3…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)	Size 0: 11.5 (5.2) Size 1: 12.2 (5.5)
		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)
		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)
		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)
		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)
		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)	

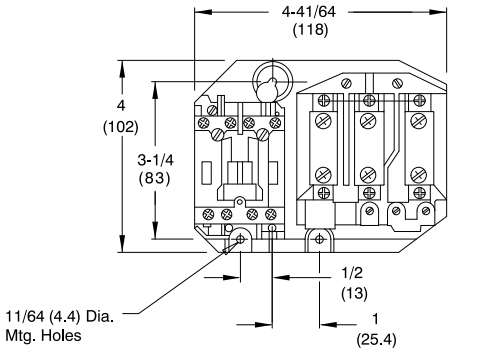
* Allow additional space for internal wiring.

Approximate Dimensions

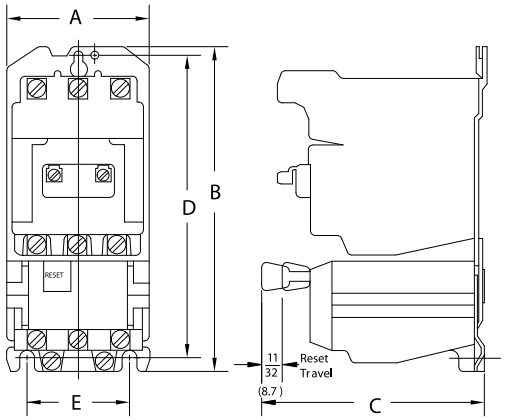
NEMA Starters

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

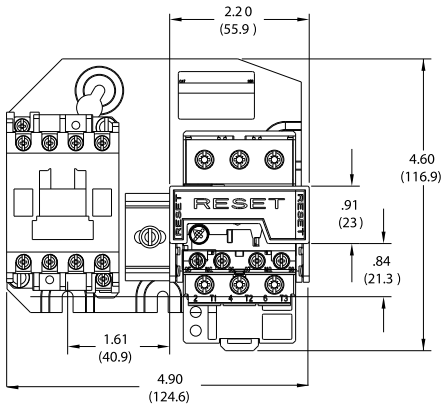
Open Type without Enclosure for Bulletin 509 Full Voltage Starters with Eutectic Alloy and Solid-State Overload Relay

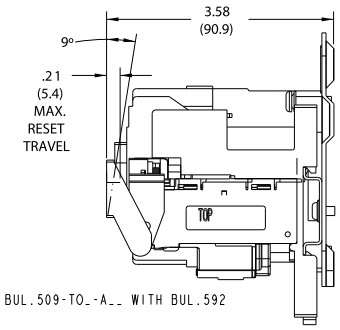


Size 00 with Eutectic Alloy Overload Relay



Size 0...9 with Eutectic Alloy



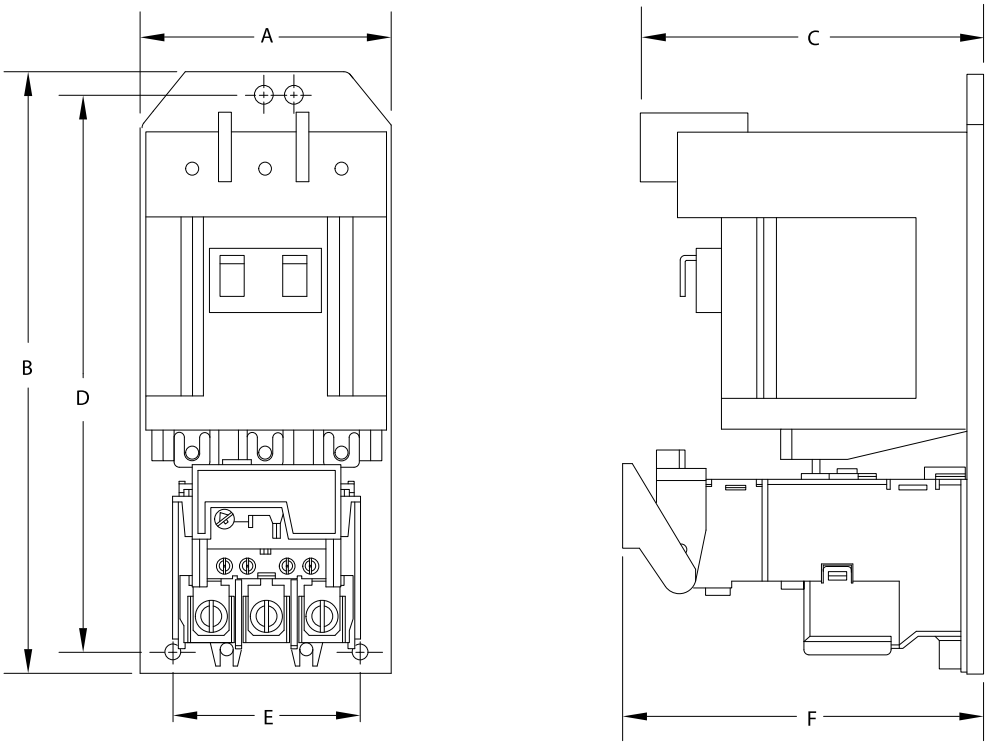


Size 00 with Solid-State Overload Relay

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 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	
0…1	Solid-State E1 Plus	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 E3 Plus	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 E1 Plus	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 E3 Plus	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 E1 Plus	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 E3 Plus	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 E1 Plus	6-1/2 (165)	16-1/2 (419)	7-13/16 (198)	14-31/32 (380)	6-5/16 (160)	7-27/32 (199)	24.6 (11.2)
	Solid-State E3 Plus	6-1/2 (165)	16-1/2 (419)	7-13/16 (198)	14-31/32 (380)	6-5/16 (160)	8-29/64 (215)	
5	Solid-State E1 Plus	6-1/2 (165)	16-29/32 (429)	8-11/32 (212)	14-31/32 (380)	6-5/16 (160)	7-5/8 (194)	33.9 (15.4)
	Solid-State E3 Plus	6-1/2 (165)	16-29/32 (429)	8-11/32 (212)	14-31/32 (380)	6-5/16 (160)	8-11/64 (208)	
6	Solid-State E1 Plus	13-1/4 (337)	25-3/32 (637)	11-13/32 (289)	17-23/32 (450)	11-13/16 (300)	9-25/32 (248)	116 (52.6)
	Solid-State E3 Plus	13-1/4 (337)	25-3/32 (637)	11-13/32 (289)	17-23/32 (450)	11-13/16 (300)	9-5/8 (244)	

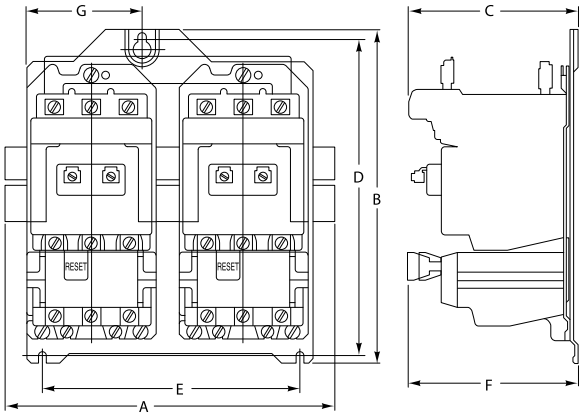
Note: For Bulletin 509 Size 00, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

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, and 520G Multi-Speed Starters with Eutectic Alloy Overload Relay

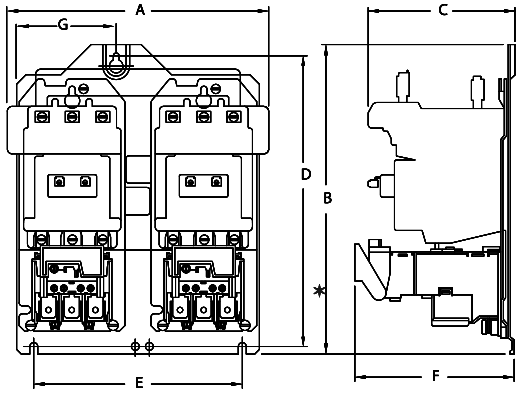


NEMA Size	Dimensions in Inches (Millimeters)							Approx. Shipping Weight in lbs (kg)
	A Width	B Height	C Depth	D	E	F Relay Reset Depth	G	
2-Speed Separate Winding Bulletin 520E								
0…1	8 (203)	9-5/32 (233)	4-11/16 (119)	8-21/32 (220)	7-3/32 (180)	—	4-5/8 (117)	11-1/4 (5.1)
2	9-1/16 (230)	10-11/32 (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)	6-1/16 (154)	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)	7-13/16 (198)	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)	8-17/32 (217)	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)	6-1/16 (154)	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)	7-13/16 (198)	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)	8-17/32 (217)	8-13/16 (224)	85 (38.6)

Product Selection — page 1-48

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

Open Type Enclosure for Bulletin 520E, 520F, and 520G Multi-Speed Starters with Solid State Overload Relay



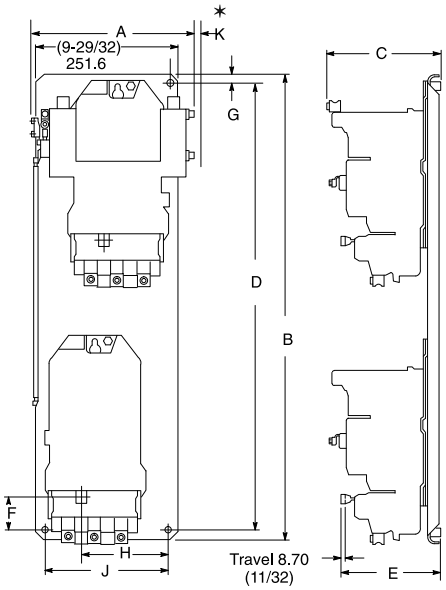
NEMA Size	Overload Relay	Dimensions in Inches (Millimeters)							Approx. Shipping Weight in lbs (kg)
		A Width	B Height	C Depth	D	E	F Relay Reset Depth	G	
2-Speed Separate Winding Bulletin 520E									
0…1	Solid-State	8 (203)	9-5/32 (233)	4-5/8 (118)	8-21/32 (220)	7-3/32 (180)	4-11/16 (118)	3-3/16 (81)	11.3 (5.1)
		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)
		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)
		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)
		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)
		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)
		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)
		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)
		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)
		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)
		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)
		18-11/32 (466)	17-7/8 (454)	8-13/16 (224)	16-15/16 (430)	15-3/4 (400)	9-3/16 (233)	—	

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, and 520VG Multi-Speed Starters with Eutectic Alloy Overload Relay

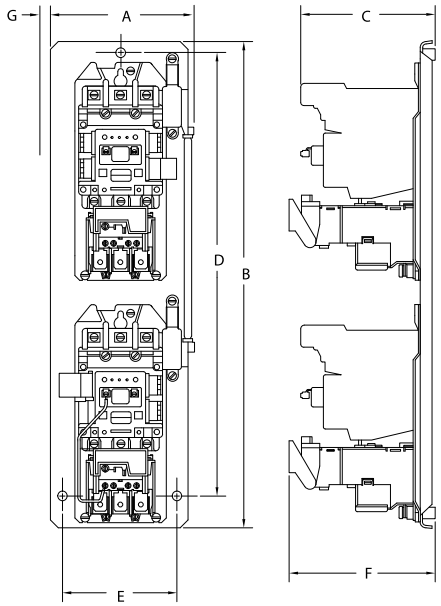


NEMA Size	Dimensions in Inches (Millimeters)										
	A Width	B Height	C Depth	D	E Relay Reset Depth	F	G	H	J	K	Approx. Shipping Weight in lbs (kg)
2-Speed Separate Winding Bulletin 520VE											
0…1	5-11/16 (144.5)	17-9/64 (435.4)	4-15/16 (125.4)	15-3/4 (400)	5 (127)	1-11/32 (34.1)	29/64 (11.5)	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, and 520VG Multi-Speed Starters with Solid State Overload Relay



Note: The typical drawing above shows 3-point mounting. Sizes 3…5 have 4-point mounting holes at each corner of the mounting plate.

2-Speed Separate Winding Bulletin 520VE									
	Dimensions in Inches (Millimeters)								Approx. Shipping Weight in lbs (kg)
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)
		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)
		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)
		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)
		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)
		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)	

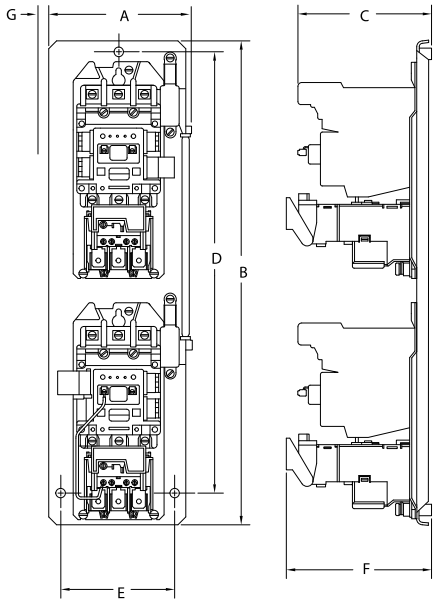
* Allow additional space for internal wiring.

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, and 520VG Multi-Speed Starters with Solid State Overload Relay, Continued

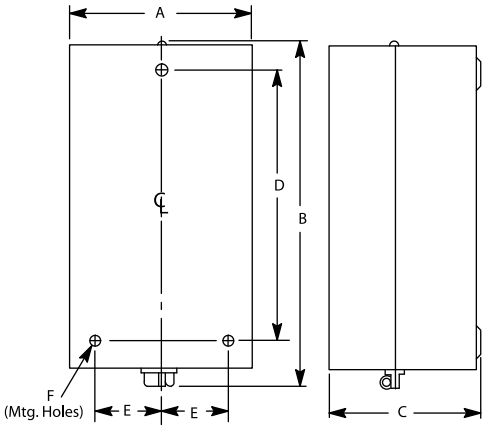


2-Speed Consequent Pole Bulletin 520VF and 520VG									
		Dimensions in Inches (Millimeters)							Approx. Shipping Weight in lbs (kg)
NEMA Size	Overload Relay	A Width	B Height	C Depth	D	E	F Relay Reset Depth	G*	
0…1	Solid-State	6-5/8 (168)	17-1/2 (444.5)	4-15/16 (126)	15-3/4 (146)	5-1/8 (130)	5 (127)	1/2 (13)	12.7 (5.8)
		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)
		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)
		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)
		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)
		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.

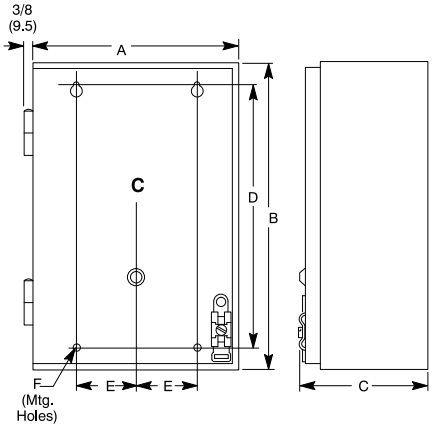
Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Type 1 General Purpose Enclosure for Bulletins 500 & 500L Contactors 1-…3-Pole



NEMA Size	Dimensions in Inches (Millimeters) A Width	B Height	C Depth	D	E	F	Approx. Shipping Weight in lbs (kg)
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) A Width	B Height	C Depth	D	E	F	Approx. Shipping Weight in lbs (kg)
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)	—

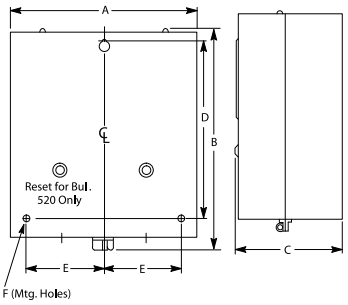
Note: For Types 3R/12, 4/4X, 4X, and Bolted Type 7 & 9 and 3R, 7 & 9 dimensions, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

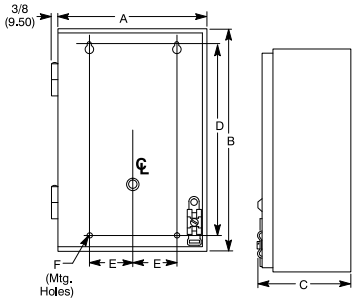
Approximate Dimensions

For NEMA AC Contactors

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

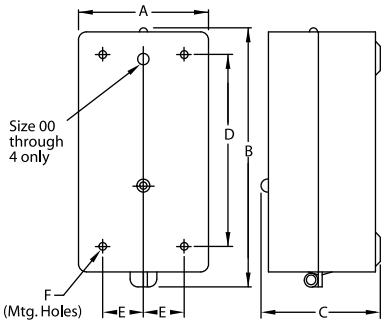
Type 1 General Purpose Enclosures for Bulletins 505, 520E, 520F, and 520G Starters





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	Please contact your local Rockwell Automation sales office or 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 (186)	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	Please contact your local Rockwell Automation sales office or Allen-Bradley distributor.						
8…-9							

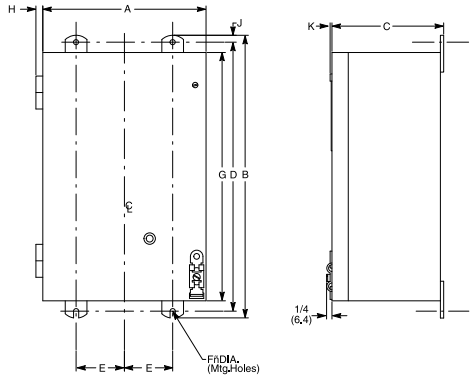
✶ With reset only.

❄ With push button, selector switch, or pilot light.

Note: For Type 1 with control transformer dimensions, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

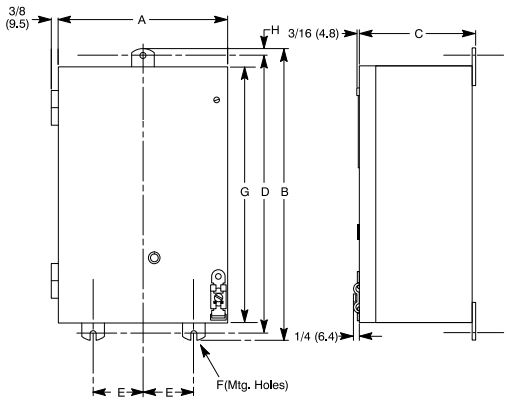
Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

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)

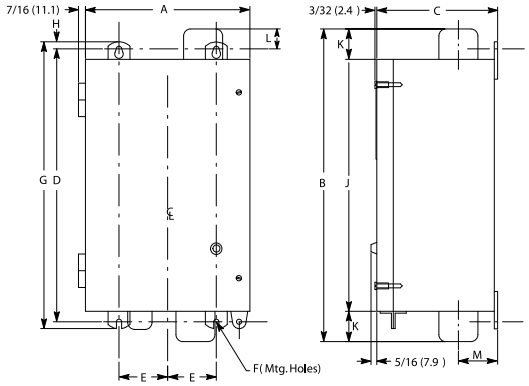
Note: For Type 3R/12 with control transformer dimensions, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

Approximate Dimensions

For NEMA AC Contactors

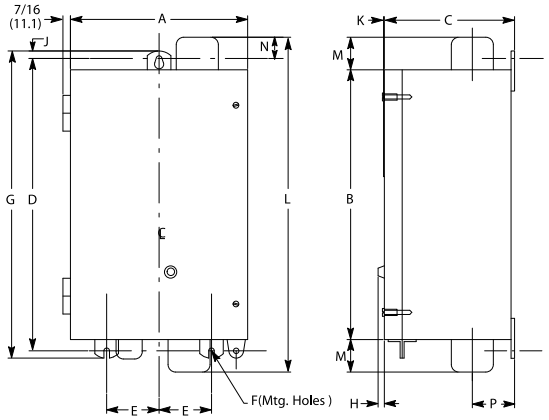
Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

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)

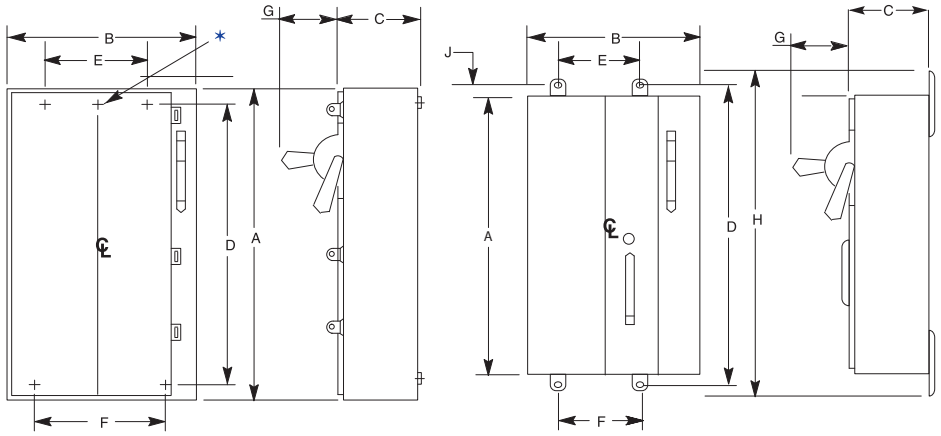
Note: For Type 4/4X with control transformer and Type 4X dimensions, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

Approximate Dimensions

For NEMA AC Contactors

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

Type 1 (Enclosure Code "A") General Purpose Painted Enclosure for Bulletins 502, 502L, 503, 503L, 506, 506X, 507, 507X, 512, 512M, 512V, 513, 513M, 513V, 522E, 522F, 522G, 523E, 523F, 523G, 530, 532, 533, 540, 542, 543, 570, 572 and 573



Size 1...4 *Size 5*

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	27.50 (968)	10.50 (267)	8.25 (210)	25.13 (639)	*	5.25 (133)	5.56 (141)	40 (18.14)
0...2	502, 502L, 503, 503L, 512, 513								
0...2	506, 507, 512M, 513M, 522E, 522F, 522G, 523E, 523F, 523G	30 (762)	20.5 (521)	9.88 (251)	27.63 (702)	15.25 (387)	15.25 (387)	5.56 (141)	90 (40.82)
3	502, 502L, 503, 503L, 512, 513								
4	503, 503L, 513								
1PW, 2PW	530, 532, 533								
1YD	540, 542, 543								
3	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)
4	506, 507, 522E, 522F, 522G, 523E, 523F, 523G								
	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	60 (1524)	37.38 (949)	16.00 (406)	61.69 (1567)	33.88 (861)	33.88 (861)	7.62 (194)	420 (190.5)
5, 6	570, 572, 573								
5	522E, 522F, 522G								
5PW	530								

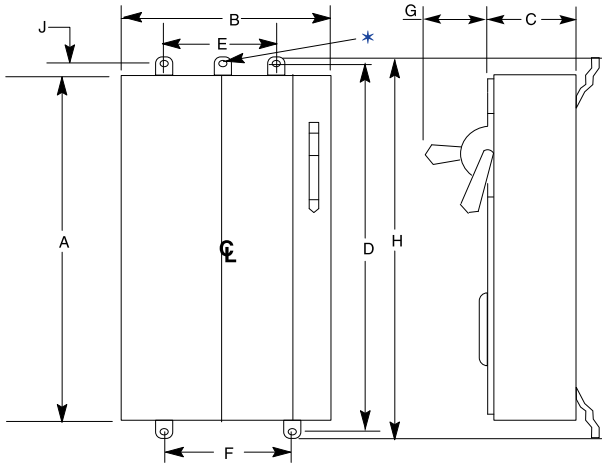
* Sizes 0, 1, and 2 have one top mounting hole located on the center line. Larger size enclosures have two top mounting holes located as shown.

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, 512V, 513, 513M, 513V, 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										
	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)
3	502, 507 503, 503L, 512, 513										
4	513										
1PW, 2PW	530, 532, 533										
1YD	540, 542, 543										
3	506, 507, 522E, 522F, 522G, 523E, 523F, 523G	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)
4	502, 502L, 507, 512, 522E, 522F, 522G, 523E, 523F, 523G										
3PW	530, 532, 533										
2YD, 3YD	540, 542, 543										
2	570, 572, 573										
4PW	530, 532, 533	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)
5PW	532, 533										
4YD	540, 542, 543										
3, 4	570, 572, 573										
5	502, 502L, 503, 503L, 506, 512, 513 523E, 523F, 523G										
6	512❄, 513										
6	512‡	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)
5	522E, 522F, 522G										
5PW	530										
5YD	540, 542, 543										
5, 6	570, 572, 573										
7	512, 513	84 (2134)	39.5 (1003)	18 (457)	—	—	—	7.62 (194)	—	—	650 (249.8)

* 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.

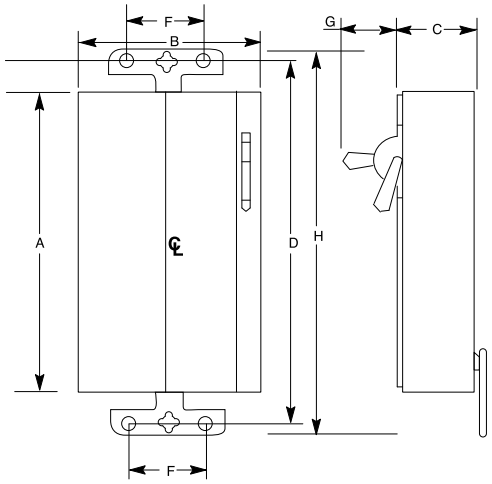
‡ Fusible disconnect switch with Class R fuses.

Approximate Dimensions

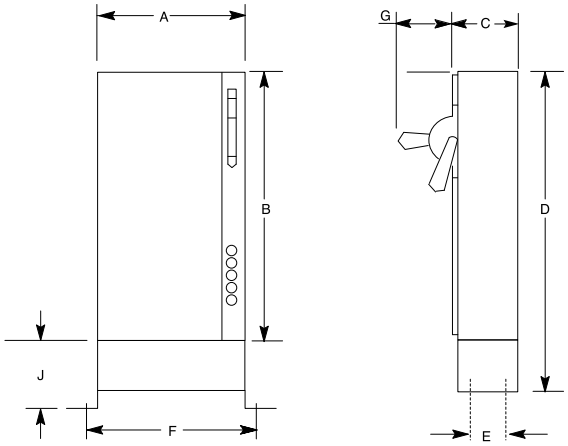
For NEMA AC Contactors

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 Bulletins 1232X, 1233X, 1242, 1243, 1272, 1273, 1282, 1283



Size 1,2, 3, 4



Size 5,6,7

NEMA Size	Bulletin No.	Approximate Dimensions in Inches (Millimeters)									Approx. Shipping Weight in lbs (kg)
		A Width	B Height	C Depth	D Mounting	E Mounting	F Mounting	G Handle Depth	H	J	
1...2	1232X	20.5 (521)	30 (762)	8.72 (221)	34.88 (886)	10 (254)	10 (254)	5.56 (141)	36.38 (924)	—	90 (40.82)
1…2	1233X										
3…4	1232X, 1233X	22 (559)	50 (1270)	9.90 (251)	54.88 (1394)	15.25 (387)	15.25 (387)	5.56 (141)	56.38 (1432)	—	250 (113.4)
1PW, 2PW	1282, 1283										
1YD, 2YD	1242, 1243										
2	1272, 1273										
4	1232X										
3PW, 4PW	1282	30.5 (775)	56 (1422)	13.78 (350)	—	11 (279)	40.72 (1034)	7.62 (194)	—	—	—
3PW…5PW	1283										
3YD, 4YD	1242										
3YD…5YD	1243										
3, 4	1272										
3…5	1273										
5	1232X, 1233X	30.5 (775)	56 (1422)	13.78 (350)	65.68 (1668)	11 (279)	33.84 (860)	7.62 (194)	—	9.68 (246)	360 (163.3)
6	1233X										
5PW	1282										
5YD	1242										
5, 6	1272										
6	1273										
6	1232X✶										
6	1232X❄	37.38 (949)	60 (1524)	16 (406)	69.68 (1769.9)	11 (279)	40.72 (1034)	7.62 (194)	—	9.68 (246)	420 (190.5)
7	1232X, 1233X	39.5 (1003)	84 (2134)	18 (457)	93.68 (2379.5)	11 (279)	42.84 (1088)	7.62 (194)	—	9.68 (246)	650 (294.8)

✶ Fusible disconnect switch with Class J fuses.

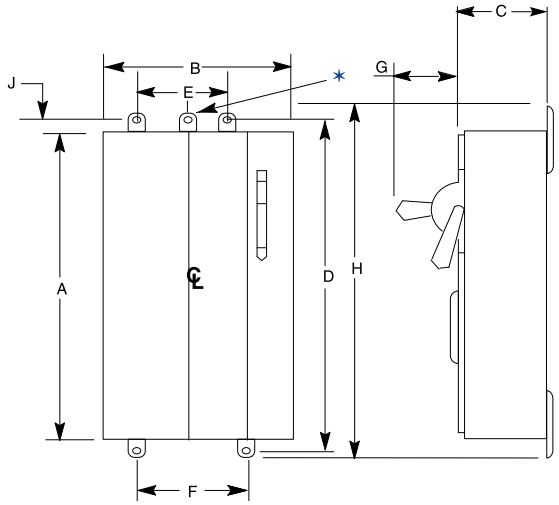
❄ Fusible disconnect switch with Class R fuses.

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



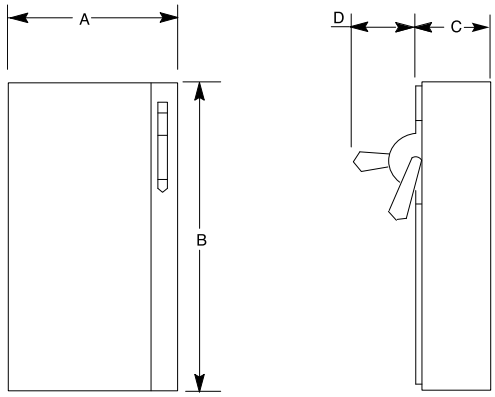
NEMA Size	Bulletin No.	Approximate Dimensions in Inches (Millimeters)									Approx. Shipping Weight in lbs (kg)
		A Height	B Width	C Depth	D Mounting	E Mounting	F Mounting	G Handle Depth	H	J	
0...2	502, 502L 503, 503L 512, 513	27.50 (698)	10.50 (267)	8.25 (210)	28.88 (733)	*	7 (178)	5.56 (141)	29.75 (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



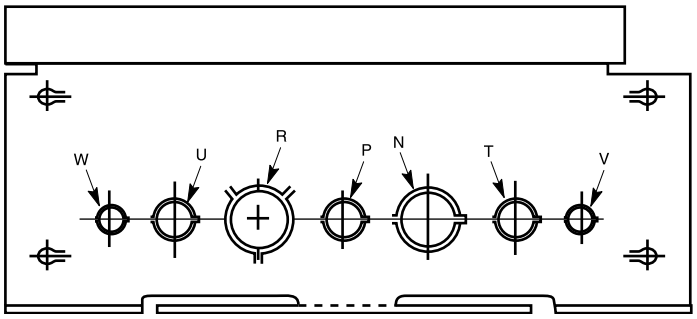
NEMA Size	Bulletin No.	Approximate Dimensions in Inches (Millimeters)				Approx. Shipping Weight in lbs (kg)
		A Height	B Width	C Depth	D Handle Depth	
0...2	512, 513	24 (610)	10 (254)	6.88 (175)	4.88 (124)	28 (12.7)
0...2	506, 507, 522E, 522F, 522G, 523E, 523F, 523G,	24 (610)	21 (533)	9.25 (235)	4.88 (124)	60 (27.2)
3	512					
4	513					
3	506, 507, 522E, 522F, 522G, 523E, 523F, 523G	49.19 (1249)	21.38 (543)	11 (279)	4.88 (124)	180 (81.6)
4	506, 507, 512, 523E, 523F, 523G				5.75 (146)	
5	506, 507, 512, 513, 522E, 522F, 522G, 523E, 523F, 523G	76.52 (1422)	21.63 (549)	19 (483)	5.75 (146)	280 (127)

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

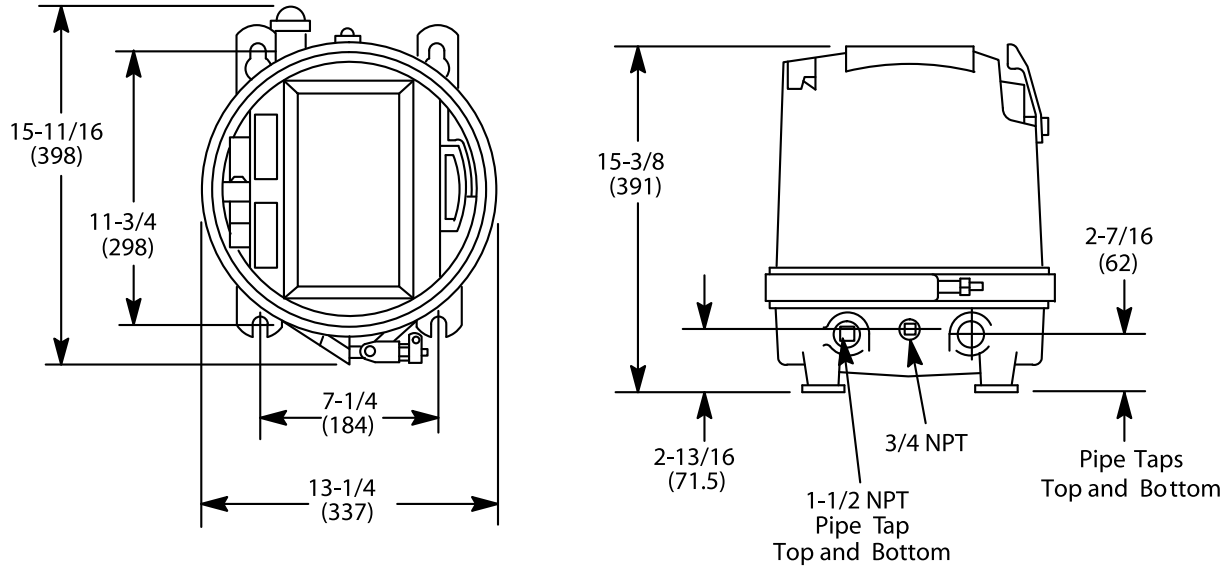


Bulletin No.	NEMA Size	Approximate Dimensions in Inches (Millimeters)							
		N		P		R		T	
		Inside	Outside	Inside	Outside	Inside	Outside	Inside	Outside
1232X, 1233X	1	1-3/8 (35) 1 in. Hub	1-23/32 (44) 1-1/4 in. Hub	7/8 (22) 1/2 in. Hub	1-1/8 (29) 3/4 in. Hub	1-23/32 (44) 1-1/4 in. Hub	1-31/32 (50) 1-1/2 in. Hub	7/8 (22) 1/2 in. Hub	1-1/8 (29) 3/4 in. Hub
	2								
	3	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	1-3/8 (35) 1 in. Hub	—	1-3/8 (35) 1 in. Hub	1-23/32 (44) 1-1/4 in. Hub
	4								
	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

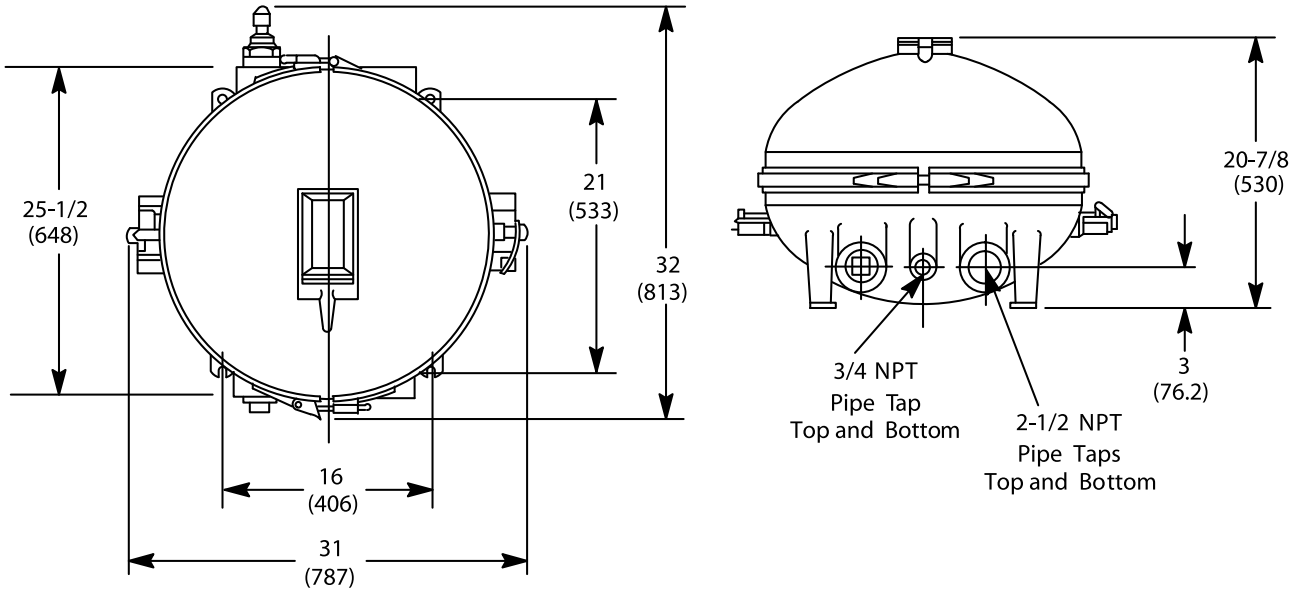
Bulletin No.	NEMA Size	Approximate Dimensions in Inches (Millimeters)					
		U		V		W	
		Inside	Outside	Inside	Outside	Inside	Outside
1232X, 1233X	1	7/8 (22) 1/2 in. Hub	1-1/8 (29) 3/4 in. Hub	—	—	7/8 (22) 1/2 in. Hub	1-1/8 (29) 3/4 in. Hub
	2						
	3	7/8 (22) 1/2 in. Hub	1-1/8 (29) 3/4 in. Hub	1-31/32 (50) 1-1/2 in. Hub	2-15/32 (63) 2 in. Hub	3 (76) 2-1/2 in. Hub	3 (76) 2-1/2 in. Hub
	4						
	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, and 513



Sizes 0-1-2



Sizes 3-4-5

Note: For bolted enclosures Type 7 & 9 and 3R, 7, & 9 dimensions, consult factory.

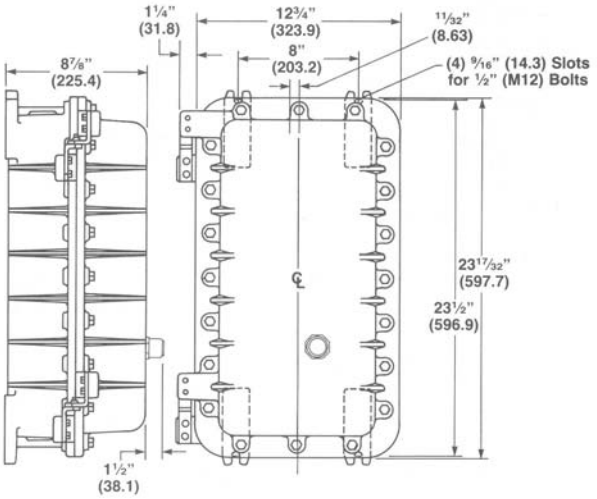
Approximate Dimensions

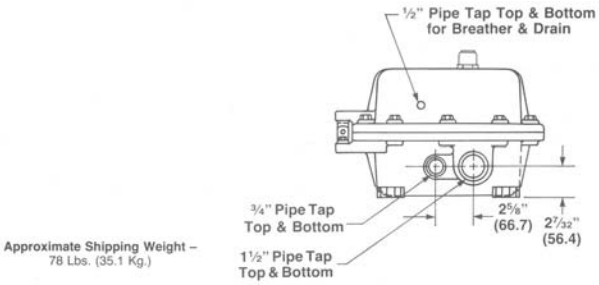
For NEMA AC Contactors

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

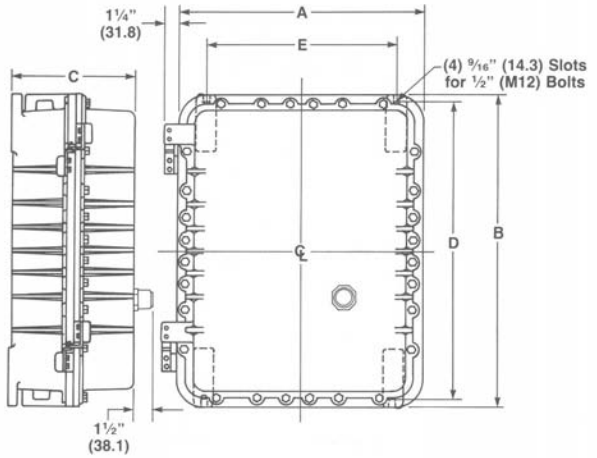
Bolted Enclosures — Type 7 & 9 and Type 3R, 7 & 9, Class I, Groups C & D, Class II, Groups E, F, & G — Divisions 1 & 2 for Bulletin 505 Full Voltage Reversing Starters

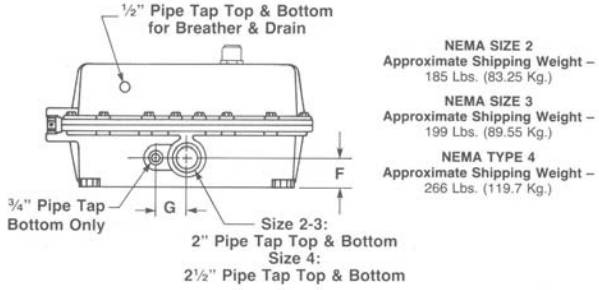
NEMA Sizes 0...1





NEMA Sizes 2...4



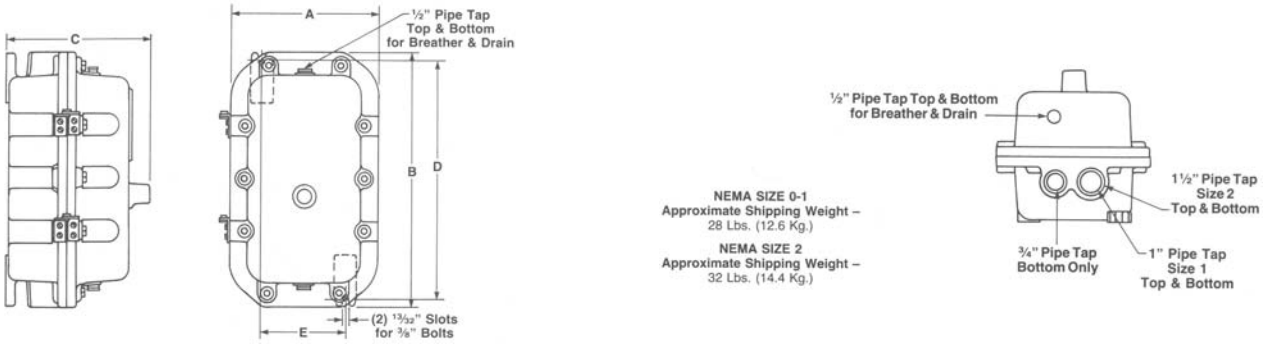


NEMA Size	Approximate dimensions in inches (millimeters)						
	A Wide	B High	C Deep	D	E	F	G
2	21 (533.4)	26-3/4 (679.5)	10-7/32 (259.6)	25-1/2 (647.7)	16-1/4 (412.8)	2-7/16 (61.9)	2-5/8 (66.7)
3							
4	21-3/8 (542.9)	32-5/8 (828.7)	11-7/16 (290.5)	31-3/8 (796.9)	16-1/4 (412.8)	2-13/16 (71.4)	3-1/2 (88.9)

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

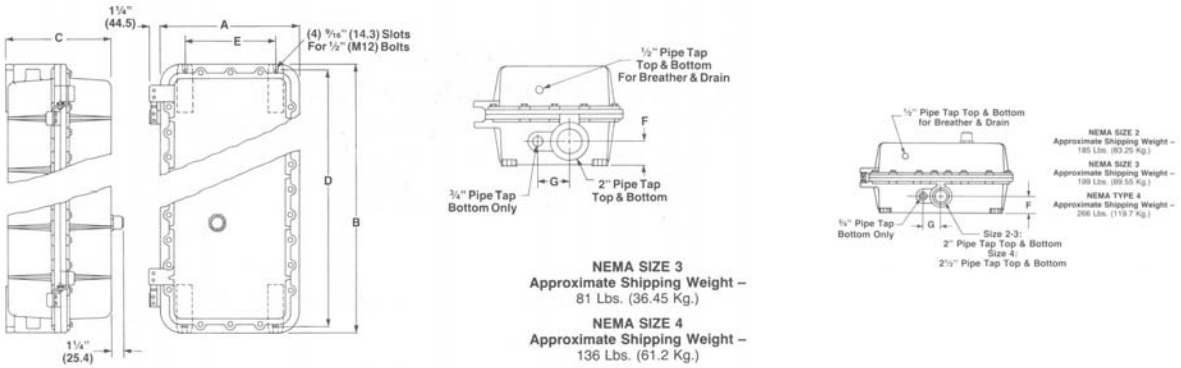
Bolted Enclosures — Type 7 & 9 and Type 3R, 7 & 9, Class I, Groups C & D, Class II, Groups E, F & G — Divisions 1 & 2 for Bulletin 509 Full Voltage Starters

NEMA Sizes 0...2



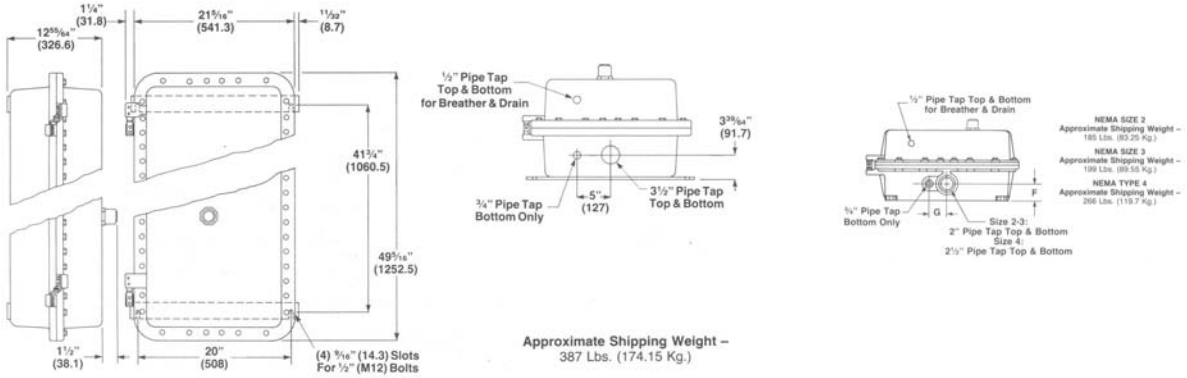
NEMA Size	Approximate dimensions in inches (millimeters)				
	A Wide	B High	C Deep	D	E
0-1	8-3/4 (222.2)	15-1/16 (382.6)	8-13/18 (208.8)	14-3/16 (360.4)	5 (127)
2	8-7/8 (225.4)	18-5/16 (465.1)	8-13/16 (208.8)	17-7/16 (442.9)	5-3/8 (136.5)

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 Size 5



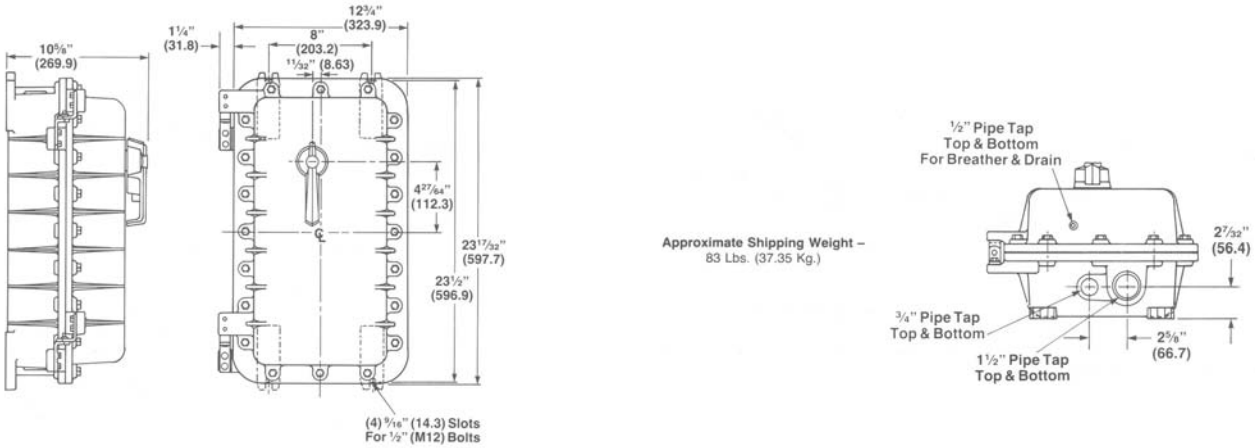
Approximate Dimensions

For NEMA AC Contactors

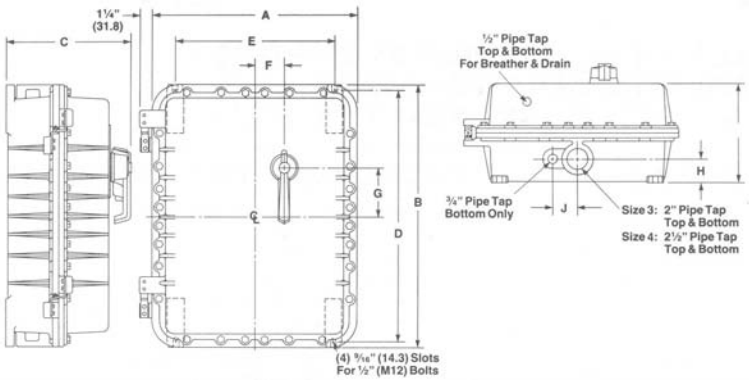
Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

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

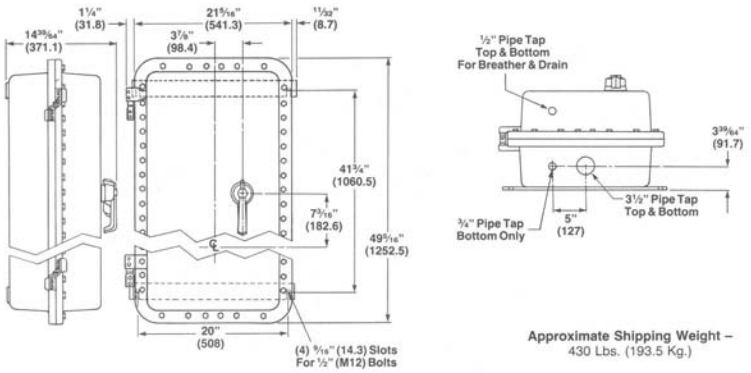


NEMA Sizes 3...4



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 Size 5



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 Series A	Size 00 Series B	Size 00 Series D	Size 0…1 Size 15/20…30 A 2-…3-Pole∗❄	Size 0…1 Size 15/20…30 A 4-Pole∗ 4-…5-Pole❄	Size 2 Size 60 A 2-Pole∗ 2-…3-Pole❄	Size 2 Size 60 A 3-…4-Pole∗ 4-…5-Pole❄
		Part No.						
24	50	—	GA407	TA407	—	—	—	—
	60	69A27	**GA013**	**TA013**	**CB013**		**CC013**	CC013C
115…120 110	60 50	**69A86**	— GA473‡	**TA473**	**CB236**		**CC236**	**CC236C**
110…115	50		—		**CB322**	**CB322C**	**CC322**	CC322C
200…208	60	**69A113**	—	**TA049**	**CB249**		**CC249**	CC249C
208	60	—	**GA049**	—	—	—	—	—
220	50	—	GA474§	**TA474§**	—	—	—	—
220…230	50	69A83	—		**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 60	69A288	—	—	—	—	—	—
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		—	TA476	**CB278**		CC278	CC278C
600	60	—	GA476		—	—	—	—

Voltage [V]	Frequency [Hz]	Size 3 Size 100 A 2-Pole∗ 2-…3-Pole❄	Size 3 Size 100 A 3-…4-Pole∗ 4-…5-Pole❄	Size 4 Size 200 A 2-Pole∗ 2-…3-Pole❄	Size 4 Size 200 A 3-…4-Pole∗ 4-…5-Pole❄	Size 5 Size 300 A Series A	Size 5 Size 300 A Series L
		Part No.					
24	60	CD013	CD013C	—	—	—	—
115…120 110	60 50	**CD236**	**CD236C**	**CE236**	**CE236C**	**CF236**	**AF236**
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**
	60	**CD254**	CD254C	**CE254**	CE254C	**CF254**	AF254
277		CD260	CD260C	CE260	CE260C	CF260	**AF260**
380	50	CD354	CD354C	CE354	CE354C	CF354	AF354
415		CD357	CD357C	CE357	CE357C	CF357	AF357
440…460		CD360	CD360C	CE360	CE360C	CF360	**AF360**
460…480	60	**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.

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)

Motor Rated Contactors and Starters (Bulletin 500, 505, 509, and 520)			Non-Motor Rated Contactors (Bulletin 500L)		
Size	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 1-52 and 1-54 for heater element selection tables.

Size	Part No.
3-Phase	
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**
1-Phase	
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 1-122 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 1-122.

§ 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

Visit our website: www.ab.com/catalogs

Preferred availability cat. nos. are printed in **bold**

Allen-Bradley

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 ✦❖♠[11]

These products are intended for field installation of Bulletin 592 Eutectic, or 592 solid-state overload relays. (Select Bulletin 592 overload relays from page 1-180…page 1-182.) 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 1-188. 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.
[11] 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.

E1 Plus Solid-State Overload Relay (Selectable Class 10, 20, or 30) (Automatic/Manual Reset)

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
		Class 20
00	0.1…0.5	A2A
	0.2…1.0	A2C
	1.0…5.0	A2D
	1.0…5.0	A2E
	3.2…16	A2F
0, 1 1PW 1YD	0.2…1.0	A2B
	0.2…1.0	A2C
	1.0…5.0	A2D
	1.0…5.0	A2E
	3.2…16	A2F
	5.4…27	A2G
1	9…45	A2H
2 2PW 2YD	5.4…27	A2G
	9…45	A2H
	9…45	A2J
3 3PW 3YD	9…45	A2J
	18…90	A2K
	18…90	A2L
4 4PW 4YD	30…150	A2K
	30…150	A2L
	30…150	A2M
5 5PW 5YD	60…300	A2N
6 6PW 6YD	120…600	A2R
7✦	256…810	§
8✦	384…1215	
9✦	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, 532, 533, 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, 542, 543, 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.

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
4	28…140	EC1F
5	60…302	EC1H
6	125…630	EC1K

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
	9…45	EC2D
3	9…45	EC2D
	18…90	EC2E
4	28…140	EC2F
5	60…302	EC2H

✶ 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 will denote the low speed overload relay.
❄ Rockwell Automation recommends using 120 or 240V AC coils on all NEMA Starters with E3 solid-state overload relays. When using coil voltages other than 120 or 240V AC, consult your local Rockwell Automation distributor.

1

Overload Relays

				
Bulletin	**592-EE**	**592-EC1**	**592-EC2/EC3**	**592**
Type	E1 Plus Electronic Overload Relay	E3 Electronic Overload Relay	E3 Plus Electronic Overload Relay	Eutectic Alloy Overload Relay
Rated Current (Range)	0.1…800 A	0.4…5000 A	0.4…5000 A	0.2…2250 A
NEMA Operating Voltage, Nominal	600V			
IEC Operating Voltage, Nominal	690/1000V	690/1000V		—
Overload Type	Solid-State	Microprocessor-Based	Microprocessor-Based	Euctectic Alloy
Trip Class (Fixed)	—	—	—	10, 20, 30
Trip Class (Adjustable)	10, 15, 20, 30	5…30	5…30	—
Ambient Temperature Compensated	✓	✓	✓	—
Reset Type	Automatic and Manual	Automatic and Manual	Automatic and Manual	Manual Only
Adjustment Range	5:1	5:1	5:1	—
Phase Loss	3 s	Adjustable Delay	Adjustable Delay	—
Ground (Earth) Fault	Optional	—	Sensitive	—
Overcurrent (Jam) Detection	Optional	✓	✓	—
Stall Detection	—	✓	✓	—
Underload Detection	—	✓	✓	—
Current Imbalance	—	✓	✓	—
PTC Thermistor Monitoring	Optional	—	✓	—
Warning Settings	—	✓	✓	—
N.C. Trip Contact	✓	✓	✓	✓
N.O. Alarm Contact	✓	—	—	✓ (Option)
No. of Outputs	—	1	2	—
No. of Inputs	—	2	4	—
ODVA (DeviceNet) Conformance	Optional	✓	✓	—
Variable Frequency Drive (VFD) Compatible	—	✓	✓	✓
Product Selection	**Page 1-171**	**Page 1-173**		**Page 1-174**

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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Standards Compliance

IEC EN 60947-4-1
EN 60947-5-1
CSA 22.2, No. 14
UL 508

Certifications

cULus Listed (File No. E14840, Guide No. NKCR, NKCR7)

1

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	592-EEAT
	0.2…1.0	592-EEBT
	1.0…5.0	592-EECT
	3.2…16	592-EEDT
0…2	0.2…1.0	**592-EEBC**
	1.0…5.0	**592-EECC**
	3.2…16	**592-EEDC**
	5.4…27	**592-EEEC**
	9…45	**592-EEFC**
3	9…45	592-EEFD
	18…90	**592-EEGD**
4	30…150	**592-EEHE**
5	60…300	**592-EEKF**

Bulletin 592S-EE – Single-Phase Devices

- Selectable Trip Class (10, 15, 20, 30)
- Selectable Manual/Auto-Manual Reset

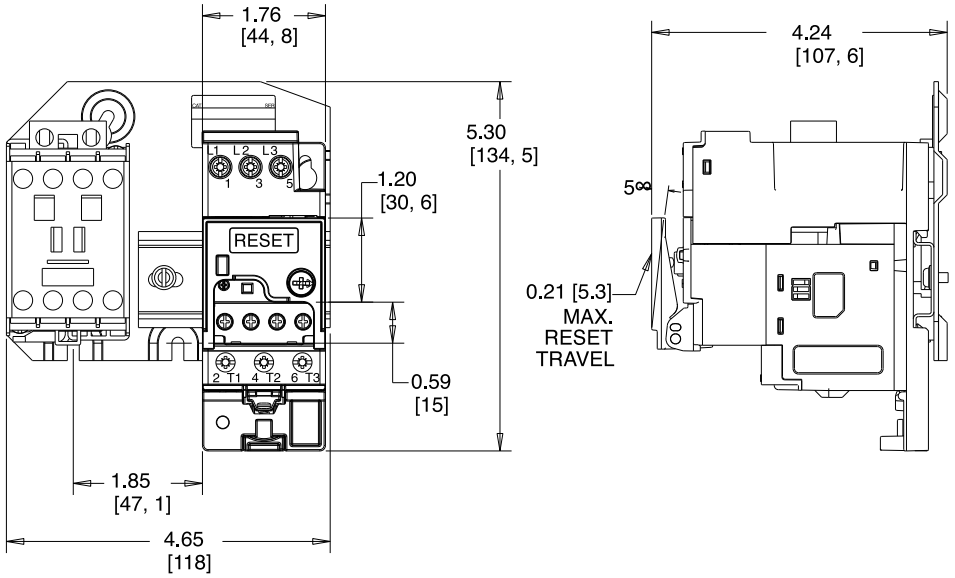
Mounts to Contactor	Adjustment Range	Cat. No.
00	1.0…5.0	592S-EEPT
	3.2…16	592S-EERT
	5.4…27	592S-EEST
0…2	1.0…5.0	592S-EEPC
	3.2…16	592S-EERC
	5.4…27	592S-EESC
	9…45	592S-EETC
3	18…90	592S-EEUD

E1 Plus Solid-State Overload Relays

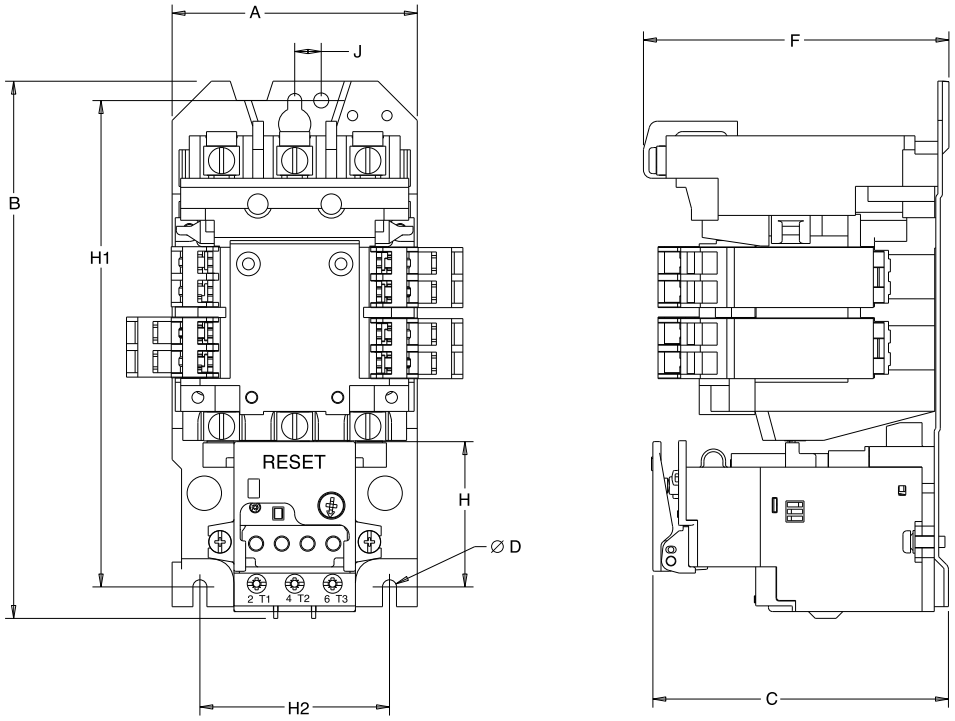
Approximate Dimensions

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)

Bulletin 592

Bul. 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)

Bul. 592-EC2 and -EC3 also include:
- Integrated I/O (4 In / 2 Out)
- Ground Fault Protection
- PTC Thermistor Monitoring
- DeviceLogix Component Technology (series B only)

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Standards Compliance

EN 60947-4-1, EN 60947-5-1
CSA 22.2, No. 14
UL 508
UL 1053

Certifications

CE
cULus (File No. E14840, Guide No. NKCR, NKCR7) (File E53935, Guide No. KDAX)
C-tick
ABS

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.

Catalog Number Explanation

592 – EC1 (*a*) B (*b*) T (*c*)

a

Type	
Code	Description
EC1	E3
EC2	E3 Plus
EC3	E3 Plus

b

Adjustment Range [A]	
Code	Description
P	0.4…2.0
A	1…5
B	3…15
C	5…25
D	9…45
E	18…90
F	28…140
H	60…302

c

Bulletin 500 Contactor Size	
Code	Description
T	Size 00
C	Size 0…2
D	Size 3
E	Size 4
F	Size 5

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 NEMA Starter Size	Adjustment Range❄	Cat. No.
00	0.4…2.0	592-EC1PT
	1…5	592-EC1AT
	3…15	592-EC1BT
0…2	0.4…2.0	592-EC1PC
	1…5	**592-EC1AC**
	3…15	**592-EC1BC**
	5…25	**592-EC1CC**
	9…45	**592-EC1DC**
3	9…45	592-EC1DD
	18…90	592-EC1ED
4	28…140	592-EC1FE
5	60…302	592-EC1HF

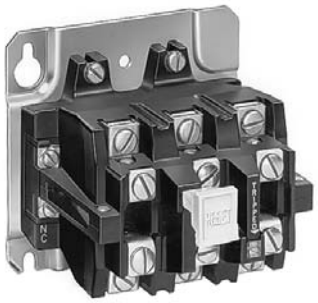
Bulletin 592-EC2 and -EC3 Electronic Motor Protection Relays — Direct Contactor Mount

- 4 Inputs/2 Outputs
- Ground Fault Sensing
- PTC Thermistor Input
- DeviceLogix (series B)

For Installation on NEMA Starter Size	Adjustment Range ❄	Cat. No.	
00	0.4…2.0	592-EC2PT	—
	1…5	592-EC2AT	—
	3…15	592-EC2BT	—
0…2	0.4…2.0	**592-EC2PC**	592-EC3PC
	1…5	**592-EC2AC**	592-EC3AC
	3…15	**592-EC2BC**	592-EC3BC
	5…25	**592-EC2CC**	592-EC3CC
	9…45	**592-EC2DC**	592-EC3DC
3	9…45	592-EC2DD	—
	18…90	**592-EC2ED**	592-EC3ED
4	28…140	**592-EC3FE**	—
5	60…302	592-EC3HF	—

❄ For applications greater than 300 A, see the Bulletin 193 panel mount devices for use with external current transformers.

1



Eutectic Alloy Type

Bulletin 592

- A Rockwell Automation 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.

Table of Contents

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)

Product Selection

Eutectic Alloy Type — Manual Reset, Starter Mount

STARTER MOUNT — For installation on Rockwell Automation NEMA starters.
Heater Elements — Overload relays require 1 or 3 overload heater elements. See page 1-177 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 1-177 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	—	—

∗ For Renewal Part Overload Relay used on starter mounted devices, see page page 1-138.

Current Transformer Type — Eutectic Alloy, Manual Reset

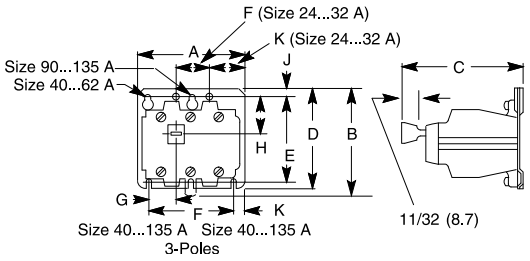
Heater Elements — Overload relays require 3 overload heater elements. See page 1-152 for heater element selection.

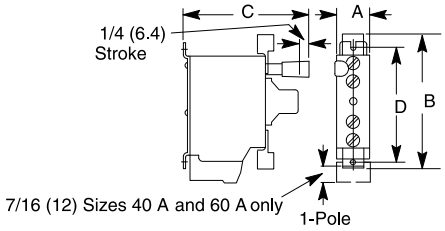
Full Load Current Range (A)	Cat. No.❄	Lug Kits Cat. No.
60…200‡	**592-TPD200**	**199-LF1**
120…300‡	**592-TPD300**	**199-LG1**
160…496	**592-TPD400**	**199-LH1**
250…630‡	**592-TPD630**	**199-LJ1**

❄ Terminal lugs are not included.
‡ Can be applied up to 1500V.

Open Type without Enclosure for Bulletin 592 Eutectic Alloy Type — Manual Reset — Panel Mount

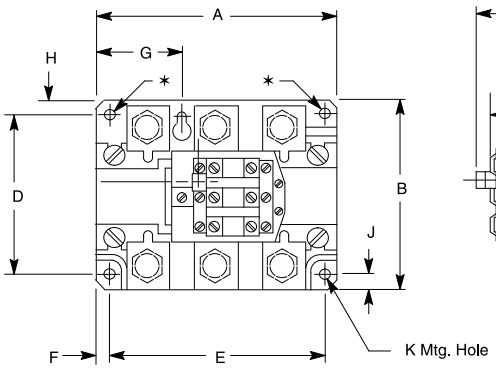
Dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

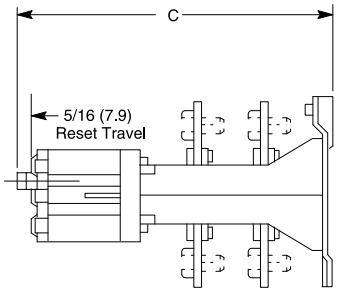




Maximum Current [A]	No. of Poles	A Wide	B High	C Deep	D	E	F	G	H	J	K
24/32	3	2-11/16 (68.3)	3-1/4 (82.6)	3-41/64 (92.6)	—	2-3/4 (70)	55/64 (22)	—	—	1/4 (6.4)	29/32 (23)
40	1	7/8 (22.2)	3-1/4 (82.6)	3-9/16 (90.5)	2-29/32 (73.8)	—	—	—	—	—	—
	3	3-15/16 (100)	—	4-1/2 (114)	3-21/32 (93)	3-5/32 (80)	3-5/32 (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





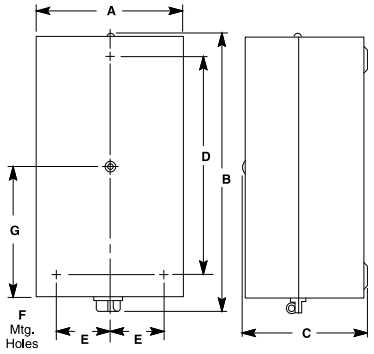
Cat. No.	A Wide	B High	C Deep	D	E	F	G	H	J	K
592-TPD200	5-5/16 (135)	5-19/32 (142)	8-9/16 (217.5)	4-23/32 (120)	4-23/32 (120)	19/64 (7.5)	1-59/64 (49)	29/64 (12)	51/64 (10)	21/64 (8.4)
592-TPD300	6-63/64 (177.3)	5-19/32 (142)	9-5/32 (233)	4-23/32 (120)	6-9/64 (156)	27/64 (10.6)	22-1/2 (63.6)	29/64 (12)	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.

1

Type 1 General Purpose Enclosure for Bulletin 592

Dimensions are shown in inches (millimeters). Dimensions are not intended 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)

Type W Heater Elements

Eutectic Alloy Overload Relay Heater Elements

- Type J — CLASS 10
- Type P — CLASS 20 (Bul. 600 ONLY)
- Type W — CLASS 20
- Type WL — CLASS 30

Table of Contents

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 1-180 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 — Please contact your local Rockwell Automation sales office or Allen-Bradley distributor for additional information.

Heater Element Selection Procedure — When Temperature at Controller is ±10 °C (±18 °F) Greater than Temperature at Motor

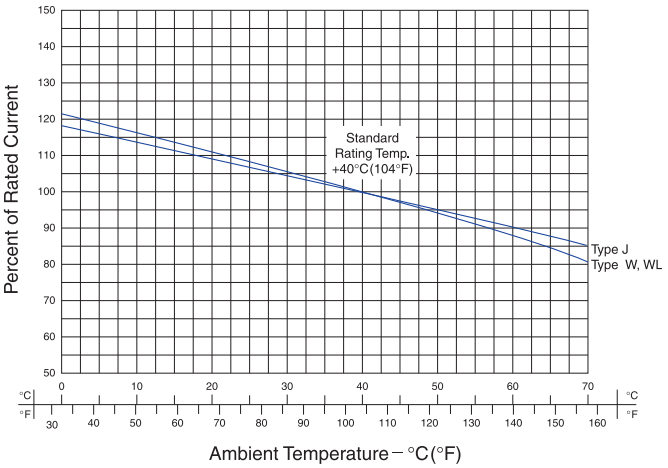
Ambient Temperature Correction

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 ±10 °C (±18 °F) Greater 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 1-177.

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:

$$\text{C.F.R.} = \frac{\text{C.F. motor}}{\text{C.F. controller}}$$

   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,

$$\text{C.F. Ratio} = \frac{\text{C.F. motor}}{\text{C.F. controller}} = \frac{108\%}{100\%} = 1.08$$

Now, using this correction factor, the readjusted full load current value can be determined by:

$$\text{FLC} = 34 \times 1.08$$
$$= 36.7 \text{ A}$$

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:

$$\text{C.F. Ratio} = \frac{\text{C.F. motor}}{\text{C.F. controller}} = \frac{91\%}{100\%} = 0.91$$

Having determined the correction factor, the current rating to be used when selecting a heater element would be:

$$\text{FLC} = 34.0 \times 0.91$$
$$= 30.9 \text{ A}$$

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:

$$\text{C.F. Ratio} = \frac{\text{C.F. motor}}{\text{C.F. controller}} = \frac{91\%}{108\%} = 0.84$$

The readjusted value of current FLC for this example is:

$$\text{FLC} = 34.0 \times 0.84$$
$$= 28.6 \text{ A}$$

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 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 1-177), 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:

$$\text{FLC} = 34.0 \times 1.22$$
$$= 41.48 \text{ A}$$

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:

$$\text{C.F. Ratio} = \frac{\text{C.F. motor}}{\text{C.F. controller}} = \frac{88\%}{97\%} = 0.91$$

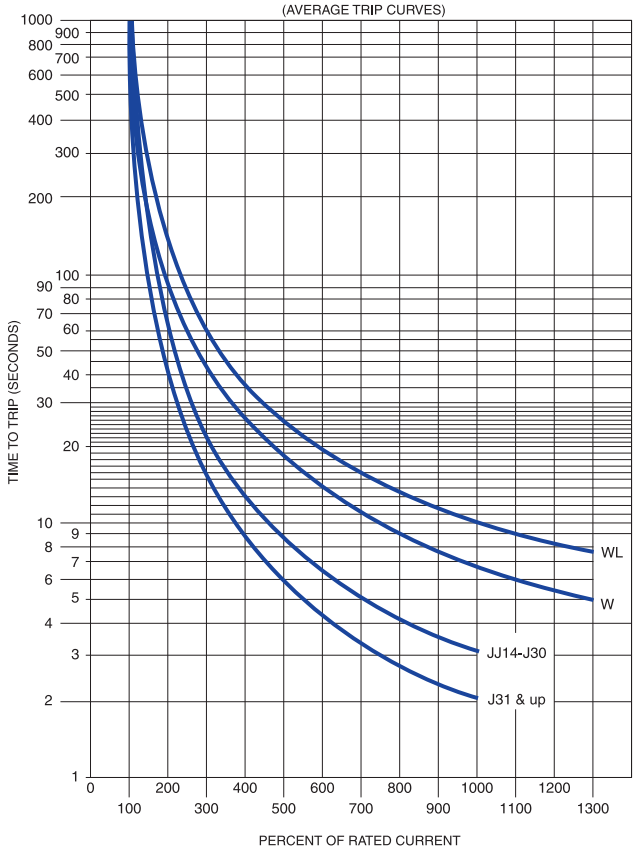
This means that the rating of the heater element should be 90% of the normal nameplate motor full load current or:

$$35.0 \times 0.91 = 31.9 \text{ A}$$

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



Heater Elements Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283 Line Starters, Continued

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
		5	—	347	—	547
505	Open 1, 3R/4/12, 4/4X	6	—	195	—	196
		7…8	—	133	—	132
505	4/4X	0…4	—	146	—	158
		5	—	177	—	178
505	4X	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
		4	—	168	—	162
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.".

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 1-177 before using tables.

Heater Elements 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 1-177 before using tables.

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 1-177 before using tables.

Heater Elements 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 1-177 before using tables.

Heater Elements 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 Elements 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	—	—	—	—	—

Preferred availability cat. nos. are printed in **bold**

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 Elements Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283

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	—	—	—	—	—

Preferred availability cat. nos. are printed in **bold**

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 Elements 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 1-177 before using tables.

Preferred availability cat. nos. are printed in **bold**

Heater Elements 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 1-177 before using tables.

Heater Elements 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 1-177 before using tables.

Heater Elements 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

Refer to Heater Element Selection Procedure on page 1-177 before using tables.

Heater Elements 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 1-177 before using tables.

Heater Elements Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283, Continued

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 Elements Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283, Continued

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 1-177 before using tables.

Heater Elements Selection

For Application on Bulletin 100/500/609/1232/1233/1242/1243/1272/1273/1282/1283, 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 Elements Selection

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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 1-177 before using tables.

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

Refer to Heater Element Selection Procedure on page 1-177 before using tables.

Heater Elements 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

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Heater Elements 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

Heater Elements Selection

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

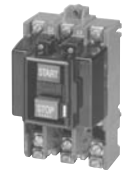
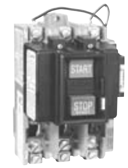
Refer to Heater Element Selection Procedure on page 1-177 before using tables.

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 1-177 before using tables.

Manual Motor Starters

		 	
Bulletin	600	609	609U
Features	• Single phase switch • Used on compressors, fans, pumps, and table saws	• Single and 3-phase switches • Contact position indicator • Locking feature • Reversing and 2-speed	• Single and 3-phase switches • Contact position indicator • Locking feature • Undervoltage protection
Type of Operator 1-Phase Motor Voltage Push Button / Toggle / Lever / Key	**Single Pole:** 115…230V AC (1 Hp) **Two Pole:** 115…230V AC (1 Hp)	115…230V AC, 60 Hz (1…5 Hp)	115…230V AC, 60 Hz (1…5 Hp)
Type of Operator 3-Phase Motor Voltage Push Button / Toggle Lever	—	115…230V AC, 60 Hz (3…10 Hp)	115…230V AC, 60 Hz (3…10 Hp)
Enclosures NEMA Type	1, 4, 7 & 9	1, 3R, 4/4X, 7 & 9, and 12	1, 3R, 4/4X, 7 & 9, and 12
Standards	• NEMA/EEMAC ICS2 (Industrial Controls and Systems) • UL 508 • CSA C22.2, No. 14 • EN60947-4-1 • ABS 4/5.115 • USCG 46 • CFR 111.70	• NEMA/EEMAC ICS2 (Industrial Controls and Systems) • UL 508 • CSA C22.2, No. 14 • EN60947-4-1 • ABS 4/5.115 • USCG 46 • CFR 111.70	• NEMA/EEMAC ICS2 (Industrial Controls and Systems) • UL 508 • CSA C22.2, No. 14 • EN60947-4-1 • ABS 4/5.115 • USCG 46 • CFR 111.70
Certifications	• UL Listed – Enclosed Products Only (File No. E14841; Guide No. NLRV) • UL Recognized – Open Style Products (File No. E14841; Guide No. NLRV2) • CSA Certified (File No. LR 1234) • American Bureau of Shipping (ABS) • CE Marked	• UL Listed (File No. E14841; Guide No. NLRV) • CSA Certified (File No. LR 1234) • American Bureau of Shipping (ABS) • CE Marked	• UL Listed (File No. E14841; Guide No. NLRV) • CSA Certified (File No. LR 1234) • American Bureau of Shipping (ABS) • CE Marked
Product Selection	**Page 1-205**	**Page 1-208**	**Page 1-210**

Type 1 General Purpose Enclosure with Neon Pilot Light

Bulletin 600

Starting and overload protection of small 1-phase 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.

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1

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.

Standards Compliance

- UL 508
- EN60947-4-1
- CSA C22.2, No. 14

Certifications

- UL Listed — Enclosed Products (File No. E14841; Guide No. NLRV)
- UL Recognized — Open Style Products (File No. E14841; Guide No. NLRV2)
- CSA Certified (File No. LR 1234)
- American Bureau of Shipping (ABS)
- CE Marked
- Hazardous Location: UL Listed (File No. E10314) CSA Certified (File No. LR 11924)

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 1-177 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 — Stainless Steel Flush Plate	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.	Cat. No.	Cat. No.	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
Hand-Off-Auto						600-N14

∗ For use with Bulletin 800H, Type 7 and 9, Series C or later bases.

Single Phase NEMA Manual Starting Switches

Accessories — Field-Installed/Modifications — Factory Installed/Approximate Dimensions

Description	NEMA Enclosure Type	Cat. No.
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. 	4, 7, and 9	**800S-N60**
Locking Attachment (For Toggle Operated Only) 	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**
Drain (For 3/4 in. (19 mm) Conduit Opening) 	7 and 9	**800H-NP21**
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). 	3, 7, and 9	**800H-NP20**
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). 	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 Rockwell Automation sales office or 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 & 9 integrity. Add the letter **S** to the end of the cat. no. Example: **Cat. No. 600-TEX9S.**

Conduit Openings (Type 4 and Type 7 & 9 only) — 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: Suffix **12** is only an option for the Type 4 and 7 & 9 enclosures.

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 two 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.

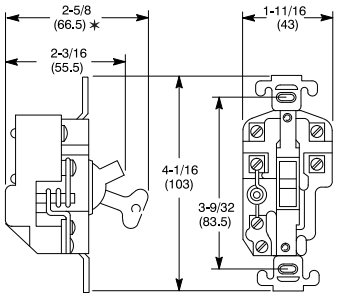
Sealing Well with Integral Flange Seal for Type 3, 7, and 9 — To order this option insert the letter **R** at the end of the listed cat. no. Example: **Cat. No. 600-TEX5R.**

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



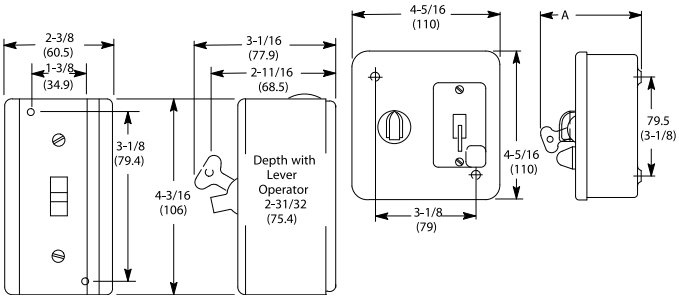
Cat. Nos.

600- TOX4
TOX5
TOX49

600- TOX109
TOX110
TOX149

600- TOX216

Type 1 General Purpose Enclosure Surface Mounting



Cat. Nos.

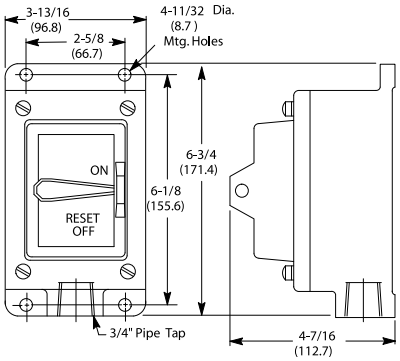
600- TAX4 TAX5 TAX49
600- TAX109 TAX110 TAX149
600- TAX216

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- TAX9 TAX10
600- TAX142 TAX144
600- TAX145

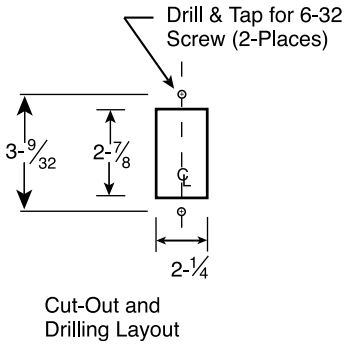
Type 4 Watertight Enclosure; Type 7 and 9 Hazardous Locations Enclosure



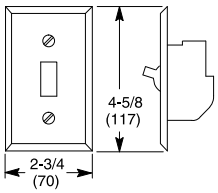
Cat. Nos.

600- TCX5
600- TEX45

Type 1 General Purpose Enclosure Flush Mounting

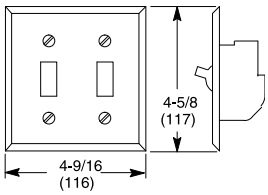


Cut-Out and Drilling Layout



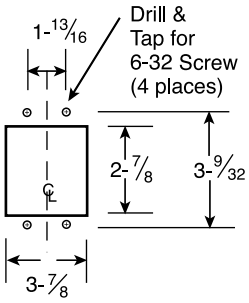
Cat. Nos.

600- TQX4 TQX5 TQX49
600- TQX109 TQX110 TQX216



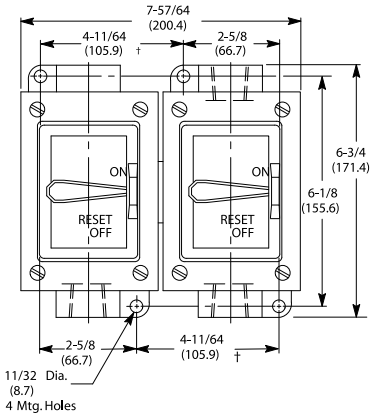
Cat. Nos.

600- TQX9 TQX142
600- TQX144



Cut-Out and Drilling Layout

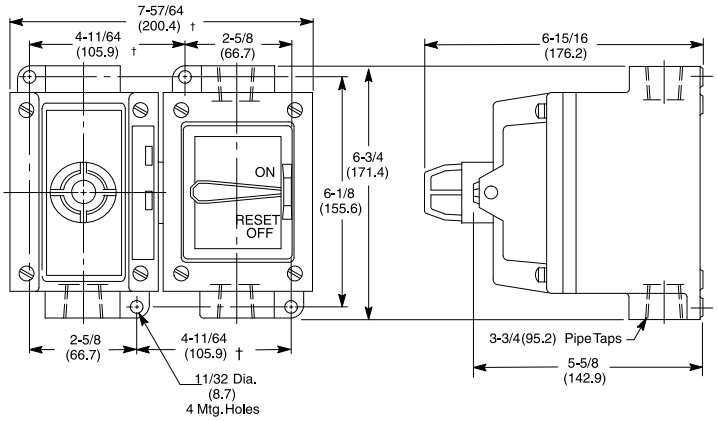
Type 4 Watertight Enclosure, Type 7 & 9



Cat. Nos.

600- TCX9 TCX142
600- TEX9 TEX10

Type 7 & 9 Hazardous Locations Enclosure



Cat. Nos.

600- TCA7 TCD75
600- TEA7 TED7

✶ Lever Type Dimension is 2-17/32 in. (64.5 mm).
❄ This dimension may vary up to ±1/8 in. (3.2 mm). Mounting holes should be located at time of installation using device as a template.

Single and Three Phase NEMA Manual Starting Switches

Overview/Product Selection

Open Type without Enclosure

Bulletin 609

- Contact position indicator
- Locking features
- Wide range of enclosures:
  Open-type without enclosure, Type 1, and Type 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.

Table of Contents

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.

Standards Compliance

- NEMA/EEMAC ICS2 (Industrial Controls and Systems)
- UL 508
- EN60947-4-1
- ABS 4/5.115
- USCG 46
- CFR 111.70

Certifications

- UL Listed (File No. E14841; Guide No. NLRV)
- CSA Certified (File LR 1234)
- American Bureau of Shipping (ABS)
- CE Marked
- Hazardous Location: UL Listed (File No. E10314) CSA Certified (LR 11924)

Type of Operator	Phase	Size	Maximum Horsepower Rating — Motor Voltage — AC, 60 Hz 115V	AC, 60 Hz 200V	AC, 60 Hz 230V	AC, 60 Hz 460…575V	AC, 50 Hz 380…415V	DC 115…125V	DC 230…250V	Open Type without Enclosure Cat. No.	Type 1 General Purpose Enclosure Surface Mounting* Cat. No.	Type 12 Dusttight Industrial Use Enclosure Cat. No.	Type 4/4X Watertight, Corrosion-Resistant Enclosure Fiberglass-Reinforced Polyester‡ Cat. No.	Hazardous Locations — Enclosure Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2 — Type 7 & 9 Cat. No.	Hazardous Locations — Type 3R, 7 & 9§ 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**
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**	—	—	—	—
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.)

Visit our website: www.ab.com/catalogs

Preferred availability cat. nos. are printed in **bold**

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

Note: 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 table 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, Type 1, and Type 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.

Table of Contents

Standards Compliance

- NEMA/EEMAC ICS2
  (Industrial Controls and Systems)
- UL 508
- EN60947-4-1
- ABS 4/5.115
- USCG 46
- CFR 111.70

Certifications

- UL Listed (File No. E14841; Guide No. NLRV)
- CSA Certified (File LR 1234)
- American Bureau of Shipping (ABS)
- CE Marked
- Hazardous Location:
  UL Listed (File No. E10314)
  CSA Certified (File LR 11924)

With Undervoltage Protection

Type Of Operator	Phase	Size	Maximum Horsepower Rating – Motor Voltage – AC, 60 Hz: 115V	200V	230V	50 Hz 380…415V	460…575V	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 – Enclosure Class I, Groups C & D Class II, Groups E, F & G – Divisions 1 & 2: Type 7 & 9	Type 3R, 7 & 9‡
								Cat. No.	Cat. No.	Cat. No.	Cat. No.	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⊗**	—	—	—	—

∗ 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.

⊗Coil Voltage Code for 1-Phase

The cat. no. as listed is incomplete. Select a coil voltage 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 Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	24	110…115	115…120	200…208	220…230	230…240	240	277
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

⊗Coil Voltage Code for 3-Phase

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 609U-AA⊗** becomes **Cat. No. 609U-AAA**. For other voltages, consult your local Rockwell Automation sales office or Allen-Bradley distributor.

	[V]	24	110	115…120	200…208	220…230	230…240	240	277	380	415	440…460	460…480	500	550	575…600
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	—	—	—	—	—	—	—

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.)

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.

Modifications

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.
Note: Replacement lamp is ANSI part number B2A (NE-51H), A-B. Cat. No. 609-N9.

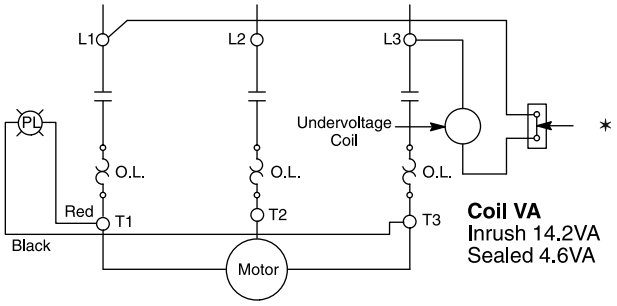
Group Fusing

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 table 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)

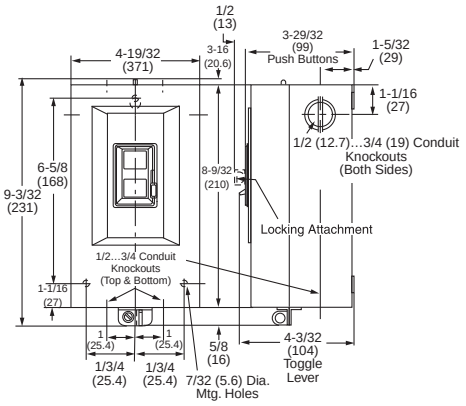


∗ Remove Jumper "A" to connect remote stop operator wires to vacated terminals.
Note: Jumper not available on devices in Type 7 and 9 Enclosure.

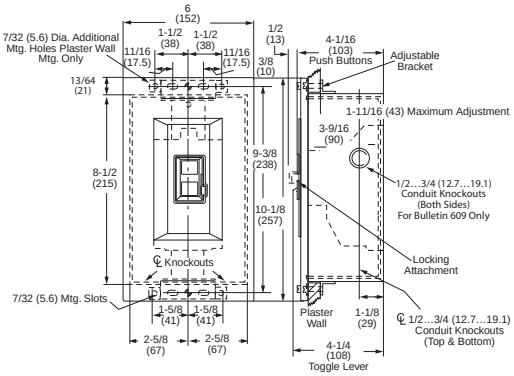
Dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Bulletin 609 – 609U

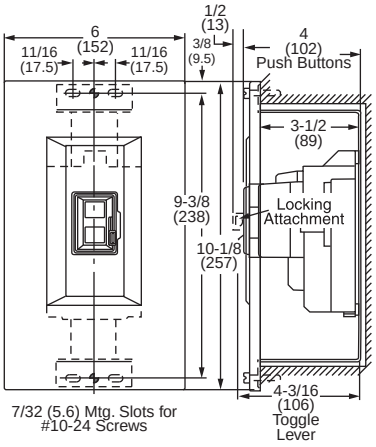
NEMA Type 1



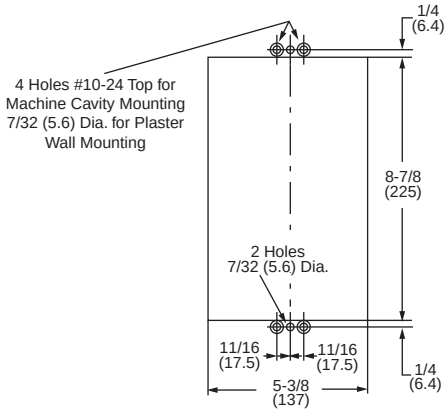
Surface Mounting



Flush Mounting for Plaster Wall

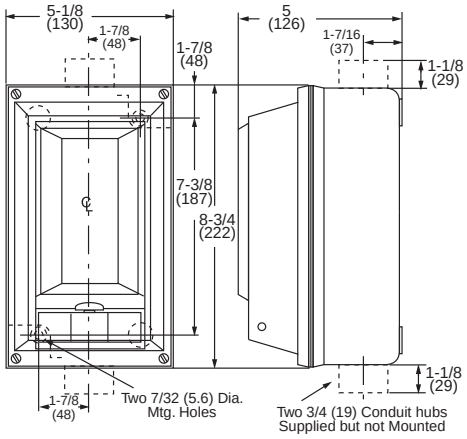


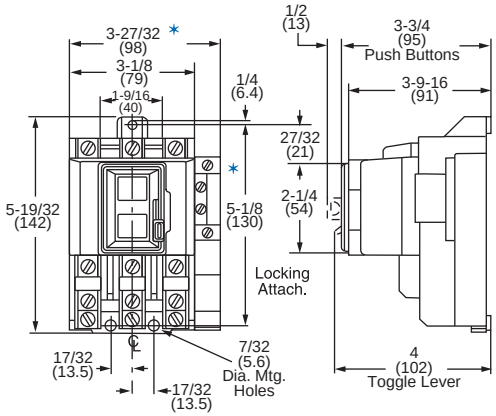
Flush Mounting for Machine Cavity



Flush Mounting Cavity and Drilling Layout

NEMA Type 4/4X





Open Type — Without Enclosure

∗ Undervoltage solenoid applies only to Bulletins 609U and 609TU.

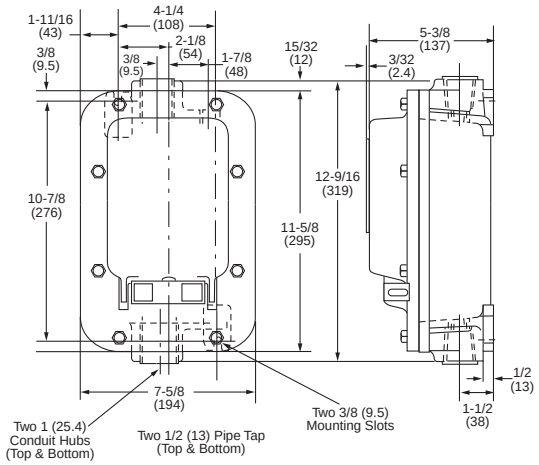
Manual Starting Switches

Approximate Dimensions, Continued

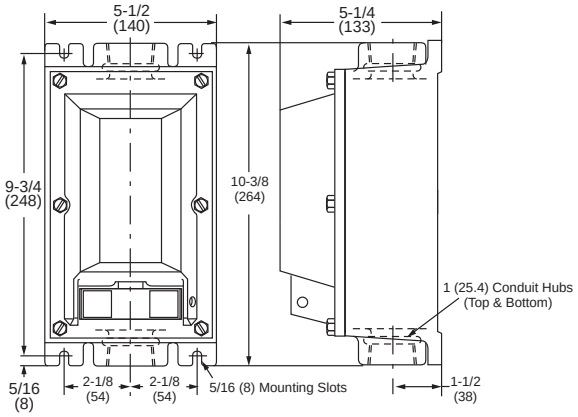
Dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Bulletin 609 – 609U, Continued

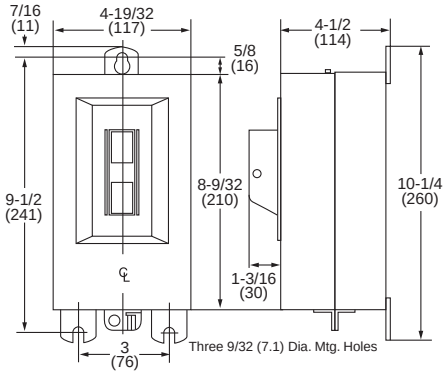
NEMA Type 3R, 7 & 9



NEMA Type 7 & 9

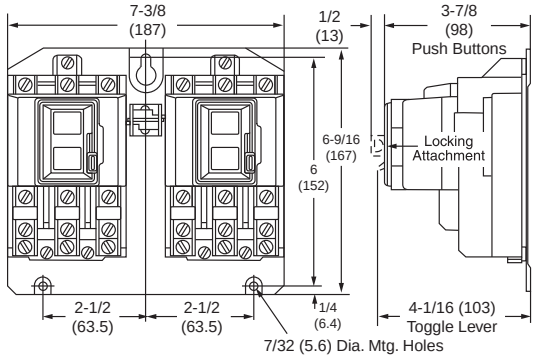


NEMA Type 12

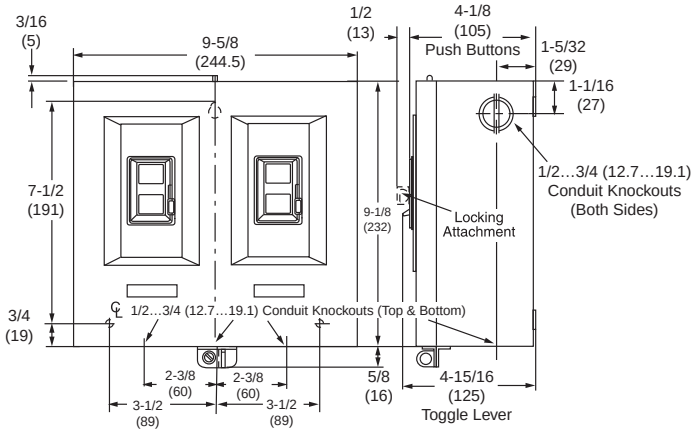


Bulletin 609RS – 609TS

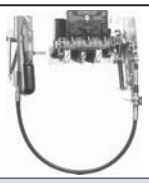
Open Type Without Enclosure



NEMA Type 1



Disconnect Switches

					
Bulletin	**1494V**	**1494C**	**1494F**	**1494G**	**1494H**
Description	Variable depth rod operated	Variable depth cable operated	Fixed depth pre-assembled	Safety switch	Safety switch
Panel Mounting Location	Flange mounted	Flange mounted	Flange mounted	Flange-mounted handle	Side-mounted handle
Switch Ratings	30…600 A	30…600 A	30…200 A	30…600 A	30…200 A
Fuse Versions	Fusible & non-fusible	Fusible & non-fusible	Fusible & non-fusible	Fusible & non-fusible	Fusible & non-fusible
Fuse Accommodations	Class H, J, and R	Class H, J, and R	Class H, J, and R	Class H, J, and R	Class H, J, and R
For Use with Enclosure Types	1/3R/4/4X/12	1/3R/4/4X/12	1, 3R, and 12	3R/4/12 and 4/4X	1, 3R, and 12
Safety Feature – Visible Blade Construction	✓	✓	✓	✓	✓
200 kA A.I.C. With Proper Fusing	✓	✓	✓	✓	✓
NFPA 79 Compliant — Handle Always Linked to the Switch	✓	✓	✓	✓	✓
Product Selection	**Page 1-216**	**Page 1-220**	**Page 1-224**	**Page 1-231**	**Page 1-236**

Circuit Breaker Mechanisms

	
Bulletin	**1494V**
Description	Variable Depth Rod Operated
Panel Mounting Location	Flange mounted
Circuit Breaker Frame Size	up to 400 A
For Use with Circuit Breaker Brands	• Allen-Bradley (140-U) • Cutler-Hammer
For Use with Enclosure Types	1/3R/4/4X/12
Handle always linked to the circuit breaker	✓
Product Selection	**Page 1-225**

Variable-Depth Flange-Mounted Disconnect Switches

Fusible and Non-Fusible Kits

Bul. 1494V Disconnect Switch — 30…400 A (Handle & connecting rod not shown)

Bul. 1494V Disconnect Switch — 600 A (Handle & connecting rod not shown)

Bulletin 1494V — Variable-Depth Flange-Mounted Disconnect Switches

Industrial rated disconnect switch for use in flange constructed enclosures up to 24 in. deep.

- 3 pole, 600V AC rating
- 30…600 A ratings
- Can accommodate Class E, H, J, and R fuses
- Available in fusible and non-fusible versions
- Complete kits with accessories
- Accessories field installed
- NFPA 79 compliant — Disconnect switch linked to the handle at all times
- Visible blade construction for safety
- Can be used with enclosure Types 1, 3R, 4, 4X, and 12
- Lockable handle in OFF and ON positions

Table of Contents

Standards Compliance

UL 98
CSA C22.2 No. 4

Certifications

cULus Listed (File No. E47426, Guide No. WHTY, WHTY7)
CE Certified

Catalog Number Explanation

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	
30…600 A Switch with Right-Hand Mechanism§	
Code	Description
DN	Non-fusible
DH	Class H fuse clips
DJ	Class J fuse clips
DR	Class R fuse clips
30…400 A Switch with Left-Hand Mechanism	
Code	Description
DNX	Non-fusible
DHX	Class H fuse clips
DJX	Class J fuse clips
DRX	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
263	250V; 60 A switch, 30 A clips
266	250V; 60 A switch, 60 A clips
261	250V; 60 A switch, 100 A clips
216	250V; 100 A switch, 60 A clips
211	250V; 100 A switch, 100 A clips
212	250V; 100 A switch, 200 A clips
221	250V; 200 A switch, 100 A clips
222	250V; 200 A switch, 200 A clips
224	250V; 200 A switch, 400 A clips
242	250V; 400 A switch, 200 A clips
244	250V; 400 A switch, 400 A clips
204	250V; 600 A switch, 400 A clips
206	250V; 600 A switch, 600 A clips
633	600V; 30 A switch, 30 A clips
636	600V; 30 A switch, 60 A clips
663	600V; 60 A switch, 30 A clips
666	600V; 60 A switch, 60 A clips
661	600V; 60 A switch, 100 A clips
616	600V; 100 A switch, 60 A clips
611	600V; 100 A switch, 100 A clips
612	600V; 100 A switch, 200 A clips
621	600V; 200 A switch, 100 A clips
622	600V; 200 A switch, 200 A clips
624	600V; 200 A switch, 400 A clips
642	600V, 400 A switch, 200 A clips
644	600V; 400 A switch, 400 A clips
604	600V; 600 A switch, 400 A clips
606	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	Standard size line & load lugs‡
D1	Oversized 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✶
H	(1) N.O. and N.C. electrical interlock
HH	(2) N.O. and N.C. electrical interlock

‡ Only available for 60…600 A switches (lugs included with 30 A switch as standard)
✶ Maximum of (2) auxiliary contacts
❄ Only available for 200 & 400 A switch
§ 600 A switch convertible to left-hand operation in the field

Visit our website: www.ab.com/catalogs

Preferred availability cat. nos. are printed in **bold**

Fusible and Non-Fusible Disconnect Switch Kits

- Non-fusible disconnect switch kit includes: switch, connecting rod, and metal handle.
- Fusible disconnect switch kit includes: switch, connecting rod, metal handle, trailer fuse block, and fuse clips.
- Optional kit accessories listed on the following pages can be added to the disconnect switch kits to create (1) cat. no. Example: **Cat. No. 1494V-DR233-A-B-F**.

Complete Disconnect Switch Kits for Type 1, 3R, 4, and 12 Metal Enclosures

Cont. Current Rating [A] 600V AC 250V DC	UL and CSA Applications Maximum HP									IEC Applications Maximum kW (AC23)			Fuse Clip Rating [A]		Fuse Class	Switch with Right-Hand Mechanism❄		Switch with Left-Hand Mechanism❄	
	3-Phase, 60 Hz					AC 1-Phase		DC∗		3-Phase, 50 Hz						Fusible Disconnect Switch Kit	Non-Fusible Disconnect Switch Kit	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.	Cat. No.	Cat. No.
30	3	7.5	7.5	15	20	2	3	3	5	5.5	11	15	30	—	H	**1494V-DH233**	**1494V-DN30**	1494V-DHX233	**1494V-DNX30**
													30	—	R	**1494V-DR233**		1494V-DRX233	
													30	—	J	**1494V-DJ233**		**1494V-DJX233**	
													—	30	H	**1494V-DH633**		**1494V-DHX633**	
													—	30	R	**1494V-DR633**		**1494V-DRX633**	
													—	30	J	**1494V-DJ633**		**1494V-DJX633**	
													60	—	H	**1494V-DH236**		1494V-DHX236	
													60	—	R	**1494V-DR236**		1494V-DRX236	
													60	—	J	**1494V-DJ236**		**1494V-DJX236**	
													—	60	H	**1494V-DH636**		1494V-DHX636	
													—	60	R	**1494V-DR636**		1494V-DRX636	
													—	60	J	**1494V-DJ636**		**1494V-DJX636**	
60	7.5	15	15	30	50	3	10	5	10	11	22	37	30	—	H	**1494V-DH263**	**1494V-DN60**	1494V-DHX263	**1494V-DNX60**
													30	—	R	**1494V-DR263**		1494V-DRX263	
													30	—	J	**1494V-DJ263**		**1494V-DJX263**	
													—	30	H	**1494V-DH663**		**1494V-DHX663**	
													—	30	R	**1494V-DR663**		1494V-DRX663	
													—	30	J	**1494V-DJ663**		**1494V-DJX663**	
													60	—	H	**1494V-DH266**		**1494V-DHX266**	
													60	—	R	**1494V-DR266**		1494V-DRX266	
													60	—	J	**1494V-DJ266**		**1494V-DJX266**	
													—	60	H	**1494V-DH666**		**1494V-DHX666**	
													—	60	R	**1494V-DR666**		**1494V-DRX666**	
													—	60	J	**1494V-DJ666**		**1494V-DJX666**	
													100	100	H	**1494V-DH661**		1494V-DHX661	
													100	100	R	1494V-DR661		1494V-DRX661	
													100	100	J	**1494V-DJ661**		**1494V-DJX661**	
100	—	25	30	60	75	—	—	—	20	22	45	55	60	—	H	**1494V-DH216**	**1494V-DN100**	1494V-DHX216	**1494V-DNX100**
													60	—	R	**1494V-DR216**		1494V-DRX216	
													60	—	J	**1494V-DJ216**		**1494V-DJX216**	
													—	60	H	**1494V-DH616**		1494V-DHX616	
													—	60	R	**1494V-DR616**		1494V-DRX616	
													—	60	J	**1494V-DJ616**		**1494V-DJX616**	
													100	—	H	**1494V-DH211**		**1494V-DHX211**	
													100	—	R	**1494V-DR211**		1494V-DRX211	
													100	—	J	**1494V-DJ211**		**1494V-DJX211**	
													—	100	H	**1494V-DH611**		**1494V-DHX611**	
													—	100	R	**1494V-DR611**		1494V-DRX611	
													—	100	J	**1494V-DJ611**		**1494V-DJX611**	
													—	200	J	**1494V-DJ612**		1494V-DJX612	
200	—	50…60	60	125	150	—	—	—	40	48	90	110	100	—	H	**1494V-DH221**	**1494V-DN200**	1494V-DHX221	**1494V-DNX200**
													100	—	R	**1494V-DR221**		**1494V-DRX221**	
													100	—	J	**1494V-DJ221**		**1494V-DJX221**	
													—	100	H	**1494V-DH621**		1494V-DHX621	
													—	100	R	**1494V-DR621**		**1494V-DRX621**	
													—	100	J	**1494V-DJ621**		**1494V-DJX621**	
													200	—	H	**1494V-DH222**		**1494V-DHX222**	
													200	—	R	**1494V-DR222**		**1494V-DRX222**	
													200	—	J	**1494V-DJ222**		**1494V-DJX222**	
													—	200	H	**1494V-DH622**		**1494V-DHX622**	
													—	200	R	**1494V-DR622**		**1494V-DRX622**	
													—	200	J	**1494V-DJ622**		**1494V-DJX622**	
													—	400	J	1494V-DJ624		**1494V-DJX624**	

∗ 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 can be installed on Class H fuse clips. However, when selecting a fuse cover (option code E), select the proper clip (Class H, J, or R) in order to receive the correct size fuse cover. Example: **Cat. No. 1494V-DH233-E** becomes **Cat. No. 1494V-DJ233-E** or **Cat. No. 1494V-DR233-E**.

Variable-Depth Flange-Mounted Disconnect Switches

Fusible and Non-Fusible Disconnect Switch Kits

Complete Disconnect Switch Kits for Type 1, 3R, 4, and 12 Metal Enclosures

Cont. Current Rating [A] 600V AC 250V DC	UL and CSA Applications Maximum HP					AC 1-Phase		DC∗		IEC Applications Maximum kW (AC23)			Fuse Clip Rating [A]		Fuse Class	Switch with Right-Hand Mechanism‡		Switch with Left-Hand Mechanism‡	
	3-Phase, 60 Hz									3-Phase, 50 Hz						Fusible Disconnect Switch Kit	Non-Fusible Disconnect Switch Kit	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.	Cat. No.	Cat. No.
400	—	75	125	250	350	—	—	—	50	90	185	257	200	—	H	**1494V-DH242**	**1494V-DN400**	**1494V-DHX242**	**1494V-DNX400**
													200	—	R	**1494V-DR242**		1494V-DRX242	
													200	—	J	**1494V-DJ242**		**1494V-DJX242**	
													—	200	H	**1494V-DH642**		**1494V-DHX642**	
													—	200	R	**1494V-DR642**		1494V-DRX642	
													—	200	J	**1494V-DJ642**		**1494V-DJX642**	
													400	—	H	**1494V-DH244**		**1494V-DHX244**	
													400	—	R	**1494V-DR244**		**1494V-DRX244**	
													400	—	J	**1494V-DJ244**		**1494V-DJX244**	
													—	400	H	**1494V-DH644**		**1494V-DHX644**	
													—	400	R	**1494V-DR644**		**1494V-DRX644**	
													—	400	J	**1494V-DJ644**		**1494V-DJX644**	
600	—	150	200	400	500	—	—	—	50	150	295	375	400	—	H	**1494V-DH204**	**1494V-DN600**	**1494V-DH204**	**1494V-DN600**
													400	—	R	**1494V-DR204**		**1494V-DR204**	
													400	—	J	**1494V-DJ204**		**1494V-DJ204**	
													—	400	H	**1494V-DH604**		**1494V-DH604**	
													—	400	R	1494V-DR604		§ 1494V-DR604	
													—	400	J	**1494V-DJ604**		**1494V-DJ604**	
													600	—	H	**1494V-DH206**		**1494V-DH206**	
													600	—	R	**1494V-DR206**		**1494V-DR206**	
													600	—	J	**1494V-DJ206**		**1494V-DJ206**	
													—	600	H	1494V-DH606		1494V-DH606	
													—	600	R	**1494V-DR606**		§ **1494V-DR606**	
													—	600	J	❄ **1494V-DJ606**		❄ **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.

‡ Class J fuses can be installed on Class H fuse clips. However, when selecting a fuse cover (option code E), select the proper clip (Class H, J, or R) in order to receive the correct size fuse cover. Example: **Cat. No. 1494V-DH233-E** becomes **Cat. No. 1494V-DJ233-E** or **Cat. No. 1494V-DR233-E**.

§ Switch can be converted in the field for left-hand operation.

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 (9-1/2…23 in.)		**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	—	—
Standard size wire connecting lugs — Line and load side		**D**	Included	A	A	A	A	A
Oversize wire connecting lugs — Line and load side		**D1**	—	—	—	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	A
	2 N.O.	**FF**	A	A	A	A	A	A
	1 N.C.	**G**	A	A	A	A	A	A
	2 N.C.	**GG**	A	A	A	A	A	A
Electrical interlock (Early break)	1 N.O. & 1 N.C.	**H**	A	A	A	A	A	A
	2 N.O. & 2 N.C.	**HH**	A	A	A	A	A	A

➢ Metal disconnect handle provided as standard. For stainless steel handle, select suffix code **B**. For non-metallic handle, select suffix code **C**.

♣ Select the proper fuse clip (Class J, H, or R) in order to receive the correct size fuse cover.
Example: Cat. Nos. 1494V-D**H**233-E, 1494V-D**J**233-E, or 1494V-D**R**233-E.

Disconnect Switches

Continuous Current Rating✶ [A] 600V AC 250V DC	NEMA, UL, CSA Maximum Rating Hp 3-Phase, 60 Hz 200…208V	230V	460V	575V	AC 1-Phase 115	230	DC❄ 250	IEC Utilization Category AC-23 Maximum Rating kW 3-Phase, 50 Hz 220…240V	380…440V	500…600V	Switch with Right-Hand Mechanism Cat. No. Switch Only	Switch with Left-Hand Mechanism Cat. No. Switch Only
30	7.5	7.5	15	20	2	3	5	5.5	11	15	**1494V-DS30**	**1494V-DSX30**
60	15	15	30	50	3	10	10	11	22	37	**1494V-DS60**	**1494V-DSX60**
100	25	30	60	75	—	—	20	22	45	55	**1494V-DS100**	**1494V-DSX100**
200	50…60	60	125	150	—	—	40	48	90	110	**1494V-DS200**	**1494V-DSX200**
400	75	125	250	350	—	—	50	90	185	257	**1494V-DS400**	**1494V-DSX400**
600	150	200	400	500	—	—	50	150	295	375	**1494V-DS600** ♣	**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.
♣ Switch can be converted in the field for left-hand operation.

Connecting Rods

Dimensions are in inches (millimeters). Approximate dimensions are not intended for manufacturing purposes.

Disconnect Switch Size [A]	Enclosure Depth♣ Minimum	Maximum	Cat. No.
30, 60, 100, 200	6-3/4 (172)	9-1/8 (232)	**1494V-RA3**
	9-1/8 (232)	21-5/8 (549)	**1494V-RA4**
400, 600	9-1/2 (241)	10 (254)	➢ **1494V-RB3**
	9-1/2 (241)	23 (584)	➢ **1494V-RB4**

♣ Enclosure depth is measured from the top of the flange to the disconnect switch mounting surface (mm).
➢ Kit includes two connecting rods.

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**
Type 1, 3R, 4, 12	Painted Metal	Right or Left Flange	30, 60, 100, 200	**1494F-M1**
			400, 600	**1494F-M2**
Type 4, 4X	Stainless Steel	Right or Left Flange	30, 60, 100, 200	**1494F-S1**
			400, 600	**1494F-S2**

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 — 600 A Class J fuse	**1494-FS600**
600 — 400 A Class J fuse	**1494V-FSV400**
600 — 600 A Class H fuse	✦ **1491-N621**
600 — 600 A Class R fuse	✦ **1491-R621**

❖ When installing 400 A Class J fuses, use adapter kit (**Cat. No. 1401-N171**).
✦ Separately mounted fuse blocks (3 required).

Fuse Clip Kits

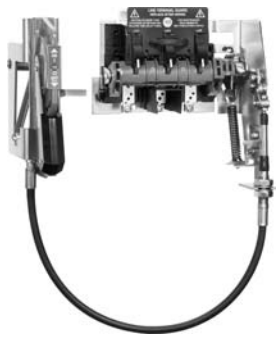
• Includes six clips and mounting hardware

Fuse Class	Fuse Clip Rating [A] 250V	600V	For Use With	Cat. No.
H	30	—	1494C, 1494F, 1494G, 1494M, 1494V Disconnect Switches	**1401-N41**
	60	30		**1401-N42**
	—	60		**1401-N43**
	100	100		**1401-N44**
	200	200		**1401-N45**
	400	400		**1401-N46**
	600	600		[11]
J	30	30		**1401-N42**
	60	60		**1401-N43**
	100	100		**1401-N44**
	200	200		**1401-N45**
	400	400		**1401-N46**
	600	600		♠
R	30	—		**1401-N50**
	60	30		**1401-N51**
	—	60		**1401-N52**
	100	100		**1401-N53**
	200	200		**1401-N54**
	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.

Cable-Operated Disconnect Switches

Catalog Number Explanation



Bulletin 1494C — Cable-Operated Disconnect Switches

Allen-Bradley Bulletin 1494C cable-operated, flange-mounted disconnect switches that meet industrial requirements for dependable disconnecting means.

- 30…600 A ratings
- Available with 3, 4, 5, 6, and 10 ft cable lengths
- Can accommodate Class E, H, J, and R fuses
- Precise alignment of the switch with respect to the handle is not required resulting in faster installation
- Complete kits with accessories
- Accessories field installed
- Disconnect switch linked to the handle at all times
- Visible blade construction for safety
- Can be used with enclosure Types 1, 3R, 4, 4X, and 12
- Lockable handle in OFF and ON positions

Table of Contents

Standards Compliance

UL 98
CSA C22.2, No. 4

Certifications

cULus Listed (File No. E47426, Guide No. WHTY, WHTY7)

Catalog Number Explanation

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.

1494C	–	DR	233	–	A4	–	B	–	FF
a		*b*	*c*				*d*		

a

Disconnect Switch	
Code	Description
1494C	Cable operated flange mounted

b

Fusing	
30…600 A Switch with **Right-Hand** Mechanism	
Code	Description
DN	Non-fusible
DH	Class H fuse clips
DJ	Class J fuse clips
DR	Class R fuse clips
30…600 A Switch with **Left-Hand** Mechanism	
Code	Description
DNX	Non-fusible
DHX	Class H fuse clips
DJX	Class J fuse clips
DRX	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
263	250V, 60 A switch 30 A clips
266	250V, 60 A switch 60 A clips
261	250V, 60 A switch 100 A clips
216	250V, 100 A switch 60 A clips
211	250V, 100 A switch 100 A clips
212	250V, 100 A switch 200 A clips
221	250V, 200 A switch 100 A clips
222	250V, 200 A switch 200 A clips
224	250V, 200 A switch 400 A clips
242	250V, 400 A switch 200 A clips
244	250V, 400 A switch 400 A clips
204	250V, 600 A switch 400 A clips
206	250V, 600 A switch 600 A clips
633	600V, 30 A switch 30 A clips
636	600V, 30 A switch 60 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	600V, 600 A switch 400 A clips
606	600V, 600 A switch 600 A clips

d

Accessories (Field Installed)	
Code	Description
A3	3 ft. cable✶
A4	4 ft. cable
A5	5 ft. cable
A6	6 ft. cable❄
A10	10 ft. cable
B	Stainless steel handle
B1	Painted metal handle
D	Standard size line & load lugs♣
D1	Oversized 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‡
H	(1) N.O. and N.C. electrical interlock
HH	(2) N.O. and N.C. electrical interlock

✶ Only available with 30…100 A switches
❄ Only available with 200…600 A switches
‡ Maximum of (2) auxiliary contacts
§ Only available for 200 & 400 A switches
♣ Only available for 60…600 A switches (lugs included on 30 A switches as standard)

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Preferred availability cat. nos. are printed in **bold**

Fusible and Non-Fusible Disconnect Switch Kits

- Non-fusible disconnect switch kit includes: switch and non-metallic handle (cable mechanism code must be added to complete the kit).
- Fusible disconnect switch kit includes: switch, non-metallic handle, trailer fuse block, and fuse clips (cable mechanism code must be added to complete the kit).
- Optional kit accessories listed on the following pages can be added to the disconnect switch kits to create (1) cat. no. Example: **Cat. No. 1494C-DR233-A3-F**.

Complete Disconnect Switch Kits for Type 1, 3R, 4, and 12 Metal Enclosures

Cont. Current Rating [A] 600V AC 250V DC	UL and CSA Applications Maximum HP									IEC Applications Maximum kW (AC23)			Fuse Clip Rating [A]		Fuse Class	Switch with Right-Hand Mechanism‡		Switch with Left-Hand Mechanism‡	
	3-Phase, 60 Hz					AC 1-Phase		DC❄		3-Phase, 50 Hz						Fusible Disconnect Switch Kit	Non-Fusible Disconnect Switch Kit	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.∗	Cat. No.∗	Cat. No.∗
30	3	7.5	7.5	15	20	2	3	3	5	5.5	11	15	30	—	H	**1494C-DH233**	**1494C-DN30**	1494C-DHX233	1494C-DNX30
													30	—	R	**1494C-DR233**		1494C-DRX233	
													30	—	J	**1494C-DJ233**		**1494C-DJX233**	
													—	30	H	**1494C-DH633**		1494C-DHX633	
													—	30	R	**1494C-DR633**		1494C-DRX633	
													—	30	J	**1494C-DJ633**		**1494C-DJX633**	
													—	60	H	**1494C-DH236**		1494C-DHX236	
													60	—	R	**1494C-DR236**		1494C-DRX236	
													60	—	J	**1494C-DJ236**		**1494C-DJX236**	
													—	60	H	**1494C-DH636**		1494C-DHX636	
													—	60	R	**1494C-DR636**		1494C-DRX636	
													—	60	J	**1494C-DJ636**		**1494C-DJX636**	
60	7.5	15	15	30	50	3	10	5	10	11	22	37	30	—	H	**1494C-DH263**	**1494C-DN60**	1494C-DHX263	1494C-DNX60
													30	—	R	**1494C-DR263**		1494C-DRX263	
													30	—	J	**1494C-DJ263**		**1494C-DJX263**	
													—	30	H	**1494C-DH663**		1494C-DHX663	
													—	30	R	**1494C-DR663**		1494C-DRX663	
													—	30	J	**1494C-DJ663**		**1494C-DJX663**	
													60	—	H	**1494C-DH266**		1494C-DHX266	
													60	—	R	**1494C-DR266**		1494C-DRX266	
													60	—	J	**1494C-DJ266**		**1494C-DJX266**	
													—	60	H	**1494C-DH666**		1494C-DHX666	
													—	60	R	**1494C-DR666**		1494C-DRX666	
													—	60	J	**1494C-DJ666**		**1494C-DJX666**	
													100	100	H	**1494C-DH661**		1494C-DHX661	
													100	100	R	**1494C-DR661**		1494C-DRX661	
													100	100	J	**1494C-DJ661**		**1494C-DJX661**	
100	—	25	30	60	75	—	—	—	20	22	45	55	60	—	H	**1494C-DH216**	**1494V-DN100**	**1494C-DHX216**	**1494V-DNX100**
													60	—	R	**1494C-DR216**		**1494C-DRX216**	
													60	—	J	**1494C-DJ216**		**1494C-DJX216**	
													—	60	H	**1494C-DH616**		1494V-DHX616	
													—	60	R	**1494C-DR616**		1494V-DRX616	
													—	60	J	**1494C-DJ616**		**1494C-DJX616**	
													100	—	H	**1494C-DH211**		**1494C-DHX211**	
													100	—	R	**1494C-DR211**		**1494C-DRX211**	
													100	—	J	**1494C-DJ211**		**1494C-DJX211**	
													—	100	H	**1494C-DH611**		**1494V-DHX611**	
													—	100	R	**1494C-DR611**		1494V-DRX611	
													—	100	J	**1494C-DJ611**		1494C-DJX611	
													—	200	J	**1494C-DJ612**		1494V-DJX612	
200	—	50…60	60	125	150	—	—	—	40	48	90	110	100	—	H	**1494C-DH221**	**1494C-DN200**	**1494C-DHX221**	**1494C-DNX200**
													100	—	R	**1494C-DR221**		**1494C-DRX221**	
													100	—	J	**1494C-DJ221**		**1494C-DJX221**	
													—	100	H	**1494C-DH621**		1494C-DHX621	
													—	100	R	**1494C-DR621**		**1494C-DRX621**	
													—	100	J	**1494C-DJ621**		**1494C-DJX621**	
													200	—	H	**1494C-DH222**		**1494C-DHX222**	
													200	—	R	**1494C-DR222**		**1494C-DRX222**	
													200	—	J	**1494C-DJ222**		**1494C-DJX222**	
													—	200	H	**1494C-DH622**		**1494C-DHX622**	
													—	200	R	**1494C-DR622**		**1494C-DRX622**	
													—	200	J	**1494C-DJ622**		**1494C-DJX622**	
													—	400	J	1494C-DJ624		1494C-DJX624	

∗ The catalog number is incomplete until you select the cable mechanism code from Cable Mechanism Code table.

❄ 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 line.

‡ Class J fuses can be installed on Class H fuse clips. However, when selecting a fuse cover (option code E), select the proper clip (Class H, J, or R) in order to receive the correct size fuse cover. Example: **Cat. No. 1494V-DH233-E** becomes **Cat. No. 1494V-DJ233-E** or **Cat. No. 1494V-DR233-E**.

Cable-Operated Disconnect Switches

Fusible and Non-Fusible Disconnect Switch Kits, Continued

Complete Disconnect Switch Kits for Type 1, 3R, 4, and 12 Metal Enclosures

Cont. Current Rating [A] 600V AC 250V DC	UL and CSA Applications Maximum HP: 3-Phase, 60 Hz 115V	200…208V	230V	460V	575V	AC 1-Phase 115V	230V	DC❄ 125V	250V	IEC Applications Maximum kW (AC23): 3-Phase, 50 Hz 220…240V	380…440V	500…600V	Fuse Clip Rating [A] 250V	600V	Fuse Class	Switch with Right-Hand Mechanism‡: Fusible Disconnect Switch Kit Cat. No.∗	Non-Fusible Disconnect Switch Kit Cat. No.∗	Switch with Left-Hand Mechanism‡: Fusible Disconnect Switch Kit Cat. No.∗	Non-Fusible Disconnect Switch Kit Cat. No.∗
400	—	75	125	250	300	—	—	—	50	90	185	259	200	—	H	1494C-DH242	1494C-DN400	1494C-DHX242	1494C-DNX400
													200	—	R	1494C-DR242		1494C-DRX242	
													200	—	J	1494C-DJ242		1494C-DJX242	
													—	200	H	1494C-DH642		1494C-DHX642	
													—	200	R	1494C-DR642		1494C-DRX642	
													—	200	J	1494C-DJ642		1494C-DJX642	
													400	—	H	1494C-DH244		1494C-DHX244	
													400	—	R	1494C-DR244		1494C-DRX244	
													400	—	J	1494C-DJ244		1494C-DJX244	
													—	400	H	1494C-DH644		1494C-DHX644	
													—	400	R	1494C-DR644		1494C-DRX644	
													—	400	J	1494C-DJ644		1494C-DJX644	
600	—	150	200	400	500	—	—	—	50	150	295	375	400	—	H	1494C-DH204	1494C-DN600	1494C-DHX204	1494C-DNX600
													400	—	R	1494C-DR204		1494C-DRX204	
													400	—	J	1494C-DJ204		1494C-DJX204	
													—	400	H	1494C-DH604		1494C-DHX604	
													—	400	R	1494C-DR604		1494C-DRX604	
													—	400	J	1494C-DJ604		1494C-DJX604	
													600	—	H	1494C-DH206		1494C-DHX206	
													600	—	R	1494C-DR206		1494C-DRX206	
													600	—	J	1494C-DJ206		1494C-DJX206	
													—	600	H	1494C-DH606		1494C-DHX606	
													—	600	R	1494C-DR606		1494C-DRX606	
													—	600	J	1494C-DJ606		1494C-DJX606	

∗ The catalog number is incomplete until you select the cable mechanism code from Cable Mechanism Code table.

❄ 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 line.

‡ Class J fuses can be installed on Class H fuse clips. However, when selecting a fuse cover (option code E), select the proper clip (Class H, J, or R) in order to receive the correct size fuse cover. Example: **Cat. No. 1494V-DH233-E** becomes **Cat. No. 1494V-DJ233-E** or **Cat. No. 1494V-DR233-E**.

Cable Mechanism Code

Select the desired cable length to complete the catalog number. ***Example:*** *1494C-DH633 with a 4 foot cable = 1494C-DH633-A4*

Bulletin 1494C Cable Mechanism Code

Description	Suffix Code
3 ft cable	§ **A3**
4 ft cable	**A4**
5 ft cable	**A5**
6 ft cable	♣ **A6**
10 ft cable	**A10**

§ Only available with 30…100 A switches.

♣ Only available with 200…600 A switches.

Kit Accessories

Example: *1494C-DH233-A4-D-E Basic 30A fusible disconnect switch with 4 foot cable, non-metallic handle, line and load lugs, fuse cover*

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 (9-1/2…23 in.)		**A**	A	A	A	A	A	A
Disconnect handle — Stainless steel		➢ **B**	A	A	A	A	A	A
Disconnect handle — Metal		➢ **B1**	A	A	A	A	—	—
Standard size wire connecting lugs — Line and load side		**D**	Included	A	A	A	A	A
Oversize wire connecting lugs — Line and load side		**D1**	—	—	—	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	A
	2 N.O.	**FF**	A	A	A	A	A	A
	1 N.C.	**G**	A	A	A	A	A	A
	2 N.C.	**GG**	A	A	A	A	A	A
Electrical interlock (Early break)	1 N.O. & 1 N.C.	**H**	A	A	A	A	A	A
	2 N.O. & 2 N.C.	**HH**	A	A	A	A	A	A

➢ Non-metallic handle provided as standard. For stainless steel handle, select suffix code **B**. For metal handle, select suffix code **B1**.

⌘ Select the proper fuse clip (Class J, H, or R) in order to receive the correct size fuse cover.
Example: Cat. Nos. 1494V-D**H**233-E, 1494V-D**J**233-E, or 1494V-D**R**233-E.

Disconnect Switches

Cont. Current Rating✶ [A] 600V AC 250V DC	NEMA, UL, CSA Maximum Rating Hp 3-Phase, 60 Hz				AC 1-Phase		DC❄	IEC Utilization Category AC-23 Maximum Rating kW 3-Phase, 50 Hz			Switch for Right-Hand Mechanism	Switch for Left-Hand Mechanism
	200…208V	230V	460V	575V	115	230	250	220…240V	380…440V	500…600V	Cat. No. Switch Only	Cat. No. Switch Only
30	7.5	7.5	15	20	2	3	5	5.5	11	15	**1494F-D30**	**1494F-DX30**
60	15	15	30	40	3	10	10	11	22	30	**1494F-D60**	1494F-DX60
100	30	30	60	75	—	—	20	22	45	55	**1494F-D100**	**1494F-DX100**
200	50…60	60	100	100	—	—	40	45	75	75	**1494F-D200**	**1494F-DX200**
400	75	125	250	350	—	—	50	90	185	257	1494F-D400	1494F-DX400
600	150	200	400	500	—	—	50	150	295	375	**1494V-DS600**	‡ **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.
‡ Switch can be converted in the field for left-hand operation.

Cable Mechanisms

Disconnect Switch Size [A]	Cable Length [ft]	Right-Hand Cable Mechanisms	Left-Hand Cable Mechanisms
		Cat. No.	Cat. No.
30, 60, 100	3	**1494C-CM1**	**1494C-CMX1**
	4	**1494C-CM2**	**1494C-CMX2**
	5	**1494C-CM3**	**1494C-CMX3**
	10	**1494C-CM4**	1494C-CMX4
200	4	**1494C-CM5**	**1494C-CMX5**
	5	**1494C-CM6**	1494C-CMX6
	6	**1494C-CM7**	1494C-CMX7
	10	**1494C-CM8**	1494C-CMX8
400	4	**1494C-CM9**	1494C-CMX9
	5	**1494C-CM10**	1494C-CMX10
	6	1494C-CM11	1494C-CMX11
	10	1494C-CM12	1494C-CMX12
600	4	1494C-CM13	1494C-CMX13
	5	1494C-CM14	1494C-CMX14
	6	1494C-CM15	1494C-CMX15
	10	1494C-CM16	1494C-CMX16

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**
Type 1, 3R, 4, 12	Painted Metal	Right or Left Flange	30, 60, 100, 200	**1494F-M1**
			400, 600	**1494F-M2**
Type 4, 4X	Stainless Steel	Right or Left Flange	30, 60, 100, 200	**1494F-S1**
			400, 600	**1494F-S2**

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 — 600 A Class J fuse	**1494-FS600**
600 — 400 A Class J fuse	**1494V-FSV400**
600 — 600 A Class H fuse	✦ **1491-N621**
600 — 600 A Class R fuse	✦ **1491-R621**

❖ When installing 400 A Class J fuses, use adapter kit (**Cat. No. 1401-N171**). Fuse clips not required.
✦ Separately mounted fuse blocks (3 required).

Fuse Clip Kits

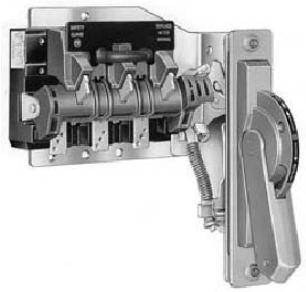
• Includes six clips and mounting hardware

Fuse Class	Fuse Clip Rating [A] 250V	Fuse Clip Rating [A] 600V	For Use With	Cat. No.
H	30	—	1494C, 1494F, 1494G, 1494M, 1494V Disconnect Switches	**1401-N41**
	60	30		**1401-N42**
	—	60		**1401-N43**
	100	100		**1401-N44**
	200	200		**1401-N45**
	400	400		**1401-N46**
	600	600		➢
J	30	30		**1401-N42**
	60	60		**1401-N43**
	100	100		**1401-N44**
	200	200		**1401-N45**
	400	400		**1401-N46**
	600	600		♠
R	30	—		**1401-N50**
	60	30		**1401-N51**
	—	60		**1401-N52**
	100	100		**1401-N53**
	200	200		**1401-N54**
	400	400		**1401-N55**
	600	600		➢

♠ Fuse clips not required: fuse bolts directly to terminal.
➢ 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, 60, 100, 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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Standards Compliance

UL 98
CSA C22.2, No. 4

Certifications

UL Listed (File No. E47426, Guide No. WHTY)
CSA Certified (File No. LR1234)
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 1-238.

Disconnect Switches for Type 1 and Type 12 Enclosures

Continuous Current Rating [A] 600V AC 250V DC	UL and CSA Applications Maximum Hp						DC∗	IEC Applications Maximum kW (AC23)			Fusible		Non-Fusible	
											Open Type without Enclosure		Open Type without Enclosure	
											Flange Construction		Flange Construction	
	3-Phase, 60 Hz				AC 1-Phase			3-Phase, 50 Hz			Right Hand	Left Hand	Right Hand	Left Hand
	200… 208V	230V	460V	575V	115V	230V	250V	220… 240V	380… 440V	500… 600V	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**

Visit our website: www.ab.com/catalogs
Preferred availability cat. nos. are printed in **bold**

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 enclosures up to 24 in. deep.

- 3-pole, 600V AC rating
- 150, 250, and 400 A circuit breaker frame sizes
- Complete kits with accessories
- Accessories — Field installed
- Can be used with enclosure Types 1, 3R, 4, 4X, and 12
- Can be field installed on a right-flanged or left-flanged enclosure
- Lockable handle

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UL 508
CSA C22.2, No. 14

Certifications

UL Recognized (File No. E3125, Guide No. NLDX2)
CSA Certified (File No. LR1234)

Circuit Breaker Kits

Circuit Breaker Kits include:

- Connecting rod
- Metal handle
- 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: **Cat. No. 1494V-C150-A-B-F**

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) EG, HMCPE	**1494V-C125**
Allen-Bradley Cutler-Hammer	150 150	140M-I (MPCB + MCP) EHD, FD, FDB, FDC, HFD, HMCP	**1494V-C150**
Allen-Bradley Cutler-Hammer	250 250	140U-J (MCCB), 140M-J (MPCB + MCP) JG	**1494V-C251**
Cutler-Hammer	250	JD, JDB, JDC, HJD, HMCP	**1494V-C250**
Allen-Bradley Cutler-Hammer	400 400	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	Circuit Breaker Frame Size [A]			
			125	150	250	400
Longer Connecting Rod (9-1/8…21-5/8 in.)		**A**	A	A	A	A
Disconnect Handle — Stainless Steel		**B**∗	A	A	A	A
Disconnect Handle — Non-Metallic		**C**∗	A	A	A	A
Auxiliary Contact — includes adapter kit	1 N.O.	**F**	A	A	A	A
	2 N.O.	**FF**	A	A	A	A
	1 N.C.	**G**	A	A	A	A
	2 N.C.	**GG**	A	A	A	A

∗ Metal handle provided as standard. For stainless steel handle, select suffix code **B**. For non-metallic handle, select suffix code **C**.

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) EG, 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) JG	**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		
	Minimum	Maximum	Cat. No.
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**

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 mechansim 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, 600V AC rating
- 150…1200 A 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 Compliance

UL 508
CSA C22.2, No. 14

Certifications

UL Recognized (File No. E3125, Guide No. NLDX2)
CSA Certified (File No. LR1234)

1

Circuit Breaker Operating Mechanism

The device is complete, and 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.

Remote Drive Operating Mechanism

Main Drive Dual Operating Mechanism (Includes Operating Handle)

Bulletin 1494V — Variable-Depth Flange-Mounted Operating Mechanisms

Operating mechanism for remote or dual operation of disconnect switches or circuit breakers.

- Remote: 30…600 A disconnect switches
- Fusible or non-fusible
- Remote: 150…400 A frame circuit breakers
- Dual: 30…100 A disconnect switches
- Dual: 150 A frame circuit breaker
- Can be used with enclosure Types 1, 3R, 4, 12
- Lockable handle

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UL 508
CSA C22.2, No. 14

Certifications

UL Recognized (File No. E3125, Guide No. NLDX2)
CSA Certified (File No. LR1234)

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, 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, 3R, 12	(2) 30 A, (2) 60 A, (2) 100 A, or any combination of (2) 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	(2) 30 A, (2) 60 A, (2) 100 A, or any combination of (2) 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 x 5/8 in. (6.35 x 15.8 mm) connecting bar between disconnecting means and connecting rod, to be supplied by user.

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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UL 508
CSA C22.2, No. 14

Certifications

UL Recognized (File No. E3125, Guide No. NLDX2)
CSA Certified (File No. LR1234)

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, see 1-238.

Complete Disconnect Switch Kit for Type 1 and Type 12∗															
Continuous Current Rating [A] 600V AC 250V DC	UL and CSA Applications Maximum Hp				AC 1-Phase		DC❄		IEC Applications Maximum kW (AC23)			Open Type without Enclosure Flange Construction			
	3-Phase, 60 Hz								3-Phase, 50 Hz			Fusible		Non-Fusible	
	200… 208V	230V	460V	575V	115V	230V	125V	250V	220… 240V	380… 440V	500… 600V	Right Hand Cat. No.	Left Hand Cat. No.	Right Hand Cat. No.	Left Hand 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 x 5/8 in. (6.35 x 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**

1

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…200 A)
1494GX	Enclosed disconnect safety switch in extra large-size enclosure (30…100 A)

b

Switch Ratings [A]	
Code	Description
B	30
C	60
D	100
E	200
F	400
G	600

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, 1-phase
3	3-pole, 3-phase
6	6-pole, 3-phase

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 accomodate (1) pilot device, 6 pole enclosed switches can accomodate (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 fuses
- 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-phase applications
- Disconnect switch linked to the handle at all times
- Visible blade construction for safety
- Non-metallic handle — standard (30…200 A)
- Metal or stainless steel handle — optional
- Lockable handle
- Options — factory installed
- Accessories — field installed

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UL 98
UL 508
CSA C22.2, No. 4

Certifications

cULus Listed (File No. E227497, Guide No. WIAX)

1

240V, Fusible with Class H Fuse Clips, (2-pole, 1-phase/3-pole, 3-phase), 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-Phase		240V AC, 3-Phase		250V DC	2-Pole, 1-Phase	3-Pole, 3-Phase	2-Pole, 1-Phase	3-Pole, 3-Phase	2-Pole, 1-Phase	3-Pole, 3-Phase
	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-phase/3-pole, 3-phase), 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-Phase		240V AC, 3-Phase		250V DC	2-Pole, 1-Phase	3-Pole, 3-Phase	2-Pole, 1-Phase	3-Pole, 3-Phase	2-Pole, 1-Phase	3-Pole, 3-Phase
	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-phase/3-pole, 3-phase), 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-Phase		240V AC, 3-Phase		250V DC	2-Pole, 1-Phase	3-Pole, 3-Phase	2-Pole, 1-Phase	3-Pole, 3-Phase	2-Pole, 1-Phase	3-Pole, 3-Phase
	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**	—	—	—	—
200	15	15	25	60	40	**1494GY-EF2H2**	1494GY-EF3H2	—	—	—	—

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-Phase		6-pole, 3-Phase❄	6-pole, 3-Phase
	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 Bul. 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 cat. no. with the letter **K**. Example: **Cat. No. 1494G-BK3H2**.

1

Cat. No. 1494G-BF3J6
Enclosed Disconnect Switch

Bulletin 1494G/1494GX/1494GY

- 30…600 A switch ratings
- 600V: 3-pole, 3-phase and 6-pole, 3-phase versions
- Can accommodate Class H, R, and J fuses
- 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-phase applications
- Disconnect switch linked to the handle at all times
- Visible blade construction for safety
- Non-metallic handle — standard (30…200 A)
- Metal or stainless steel handle — optional
- Lockable handle
- Options — factory installed
- Accessories — field installed

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UL 98
UL 508
CSA C22.2, No. 4

Certifications

cULus Listed (File No. E227497, Guide No. WIAX)

600V, Fusible with Class H Fuse Clips, (3-pole, 3-phase), 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-Phase	3-Pole, 3-Phase	3-Pole, 3-Phase
	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-phase), 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-Phase	3-Pole, 3-Phase	3-Pole, 3-Phase
	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-phase), 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-Phase	3-Pole, 3-Phase	3-Pole, 3-Phase
	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	—	—
200	50	125	60	150	40	1494GY-EF3H6	—	—

600V, Fusible with Class H Fuse Clips, (6-pole, 3-phase), 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-Phase	6-Pole, 3-Phase
	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 Bul. 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 cat. no. with the letter **K**. Example: **Cat. No. 1494G-BK3H2**.

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Cat. No. 1494GX-BF3N
Enclosed Disconnect Switch

Bulletin 1494G/1494GX1494GY

- 30…600 A switch ratings
- 600V: 3-pole, 3-phase and 6-pole, 3-phase 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-phase applications
- Disconnect switch linked to the handle at all times
- Visible blade construction for safety
- Non-metallic handle — standard (30…200 A)
- Metal or stainless steel handle — optional
- Lockable handle
- Options — factory installed
- Accessories — field installed

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UL 98
UL 508
CSA C22.2, No. 4

Certifications

cULus Listed (File No. E227497, Guide No. WIAX)

600V, Non-Fusible, (3-pole, 3-phase), 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-Phase	3-Pole, 3-Phase	3-Pole, 3-Phase
	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-phase), 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-Phase	3-Pole, 3-Phase	3-Pole, 3-Phase
	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-phase), 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-Phase	3-Pole, 3-Phase	3-Pole, 3-Phase
	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	—	—
200	50	125	60	150	40	1494G-EF3N	—	—

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-Phase	6-Pole, 3-Phase
	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 cat. no. with the letter **K**. Example: **Cat. No. 1494G-BK3N**.

1

Bulletin 1494G/1494GX1494GY Modifications — Factory-Installed

Description	Enclosure Type	Suffix Code	Switch Rating [A]					
			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
∗ Specify lens color by adding one of the following letters: **R** = Red, **G** = Green, **A** = Amber, **B** = Blue
❄ 3 pole enclosed switches can accomodate (1) pilot device, 6 pole enclosed switches can accomodate (5) pilot devices.
‡ Maximum of (2) auxiliary contacts.
§ Non-metallic handle provided as standard (30…200 A). For painted metal handle, select suffix code **-412**. For stainless steel handle, select suffix code **-413**.

Bulletin 1494G Safety Switch — Hazardous Locations

- 100 A switch rating for use in 30, 60, and 100 A applications
- Type 3R, 7 & 9 bolted enclosure with breather and drain
- For use in Class I, Div. 1 & 2, Groups C & D hazardous gas or vapor locations
- Non-fusible version only
- Viewing window provided as standard to readily see the blades of the disconnect switch
- Auxiliary contact provided as standard
- Lockable handle
- Provisions for a mechanical key interlock switch (trapped key, kirk key, etc.)
- Hinged cover for easy access

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Standards Compliance

UL 1203
CSA C22.2, No. 25 and 30

Certifications

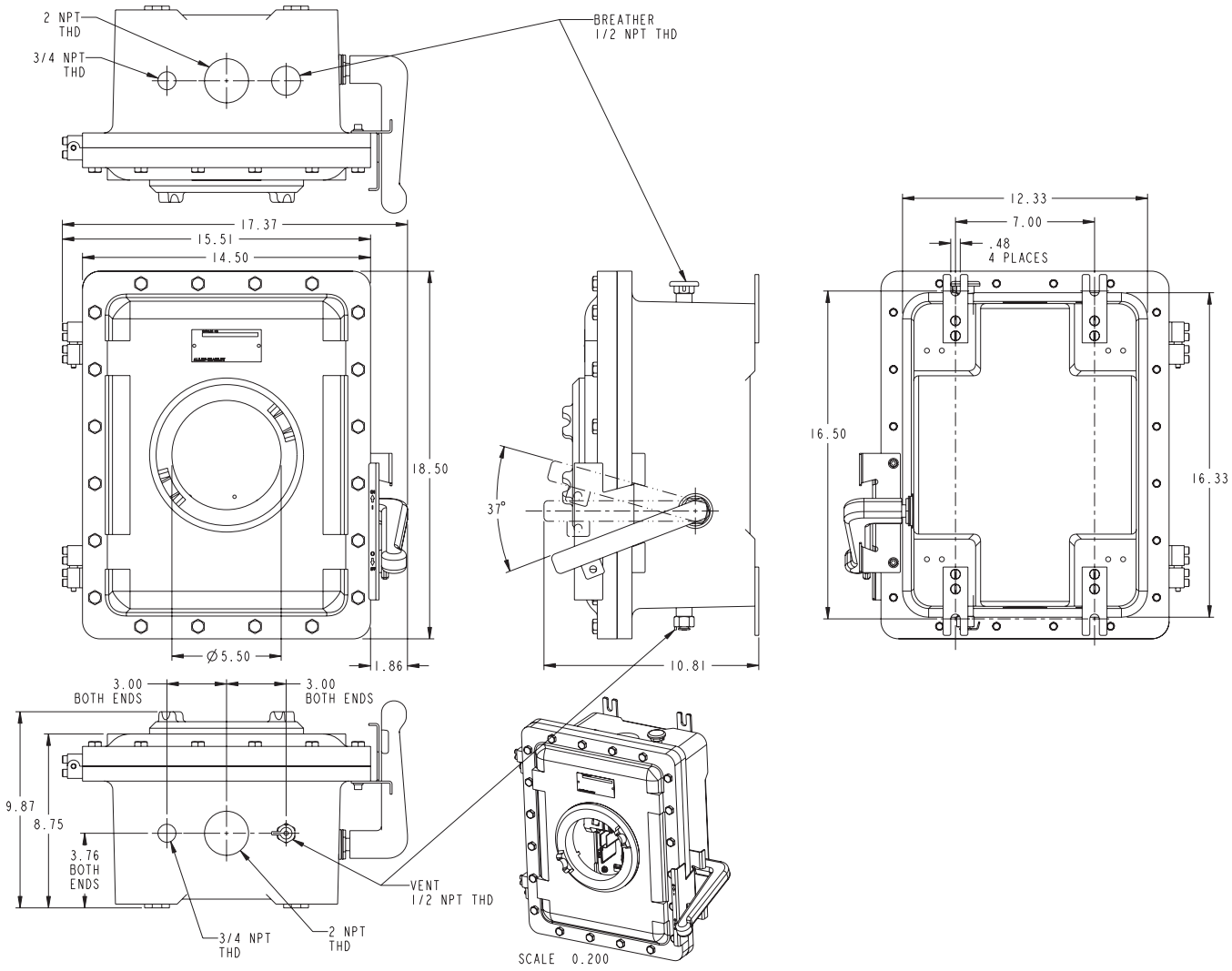
cULus Listed (File No. E239523, Guide No. WPRP)

1

Product Selection

Size [A]	Horsepower 480V AC Std.	Horsepower 480V AC Max.	Horsepower 600V AC Std.	Horsepower 600V AC Max.	Horsepower 250V AC	Type 3R, 7 & 9 Bolted Enclosure Class I, Div. 1 & 2, Groups C & D Cat. No.
30	5	15	7.5	20	5	1494G-NX8
60	15	30	15	50	10	
100	20	60	30	75	20	

Approximate Dimensions



1

Bulletin 1494H Safety Switches

- 30…200 A switch ratings
- Type 1, 3R, or 12 (painted metal) enclosures
- 600V: Non-fusible
- 240V: 1-phase, fusible
- 600V: 3-phase, fusible
- Visible blade construction for safety
- Side-mounted metal handle
- Lockable handle
- Can accomodate Class H, R, and J fuses
- Accessories — field installed

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Standards Compliance

UL 98
CSA C22.2, No. 4

Certifications

UL Listed (File No. E227497, Guide No. WIAX)
CSA Certified (File No. LR1234)

Non-Fusible Disconnect Switch (600V AC)

Continuous Current Rating [A]	UL & CSA Application Horsepower (Maximum)						Type 1	Type 3R	Type 12
	1-Phase (60 Hz)	3-Phase (60 Hz)							
	240V AC	240V AC	480V AC	600V AC	125V DC	250V DC	Cat. No.	Cat. No.	Cat. No.
30	3	10	20	30	3	5	1494H-BA3N	1494H-BN3N	1494H-BF3N
60	10	20	50	60	5	10	1494H-CA3N	1494H-CN3N	1494H-CF3N
100	20	40	75	100	—	20	1494H-DA3N	1494H-DN3N	1494H-DF3N
200	30	60	125	150	—	40	1494H-EA3N	1494H-EN3N	1494H-EF3N

Fusible Disconnect Switch (240V AC)∗

Continuous Current Rating [A]	UL & CSA Application Horsepower								Type 1	Type 3R	Type 12
	1-Phase (60 Hz)		3-Phase (60 Hz)								
	240V AC		240V AC								
	Std.	Max.	Std.	Max.	480V AC	600V AC	125V DC Std. & Max.	250V DC Std. & Max.	Cat. No.	Cat. No.	Cat. No.
30	1.5	3	3	7.5	—	—	3	5	1494H-BA3H2	1494H-BN3H2	1494H-BF3H2
60	3	10	7.5	15	—	—	5	10	1494H-CA3H2	1494H-CN3H2	1494H-CF3H2
100	7.5	15	15	30	—	—	—	20	1494H-DA3H2	1494H-DN3H2	1494H-DF3H2
200	15	—	25	60	—	—	—	40	1494H-EA3H2	1494H-EN3H2	1494H-EF3H2

∗ Includes a neutral lug for four wire applications.

Fusible Disconnect Switch (600V AC)

Continuous Current Rating [A]	UL & CSA Application Horsepower								Type 1	Type 3R	Type 12
	1-Phase (60 Hz)	3-Phase (60 Hz)									
			480V AC		600V AC						
	240V AC	240V AC	Std.	Max.	Std.	Max.	125V DC Std. & Max.	250V DC Std. & Max.	Cat. No.	Cat. No.	Cat. No.
30	—	—	—	20	—	30	3	5	1494H-BA3H6	1494H-BN3H6	1494H-BF3H6
60	—	—	50	—	—	—	5	10	1494H-CA3H6	1494H-CN3H6	1494H-CF3H6
100	—	—	75	—	—	—	—	20	1494H-DA3H6	1494H-DN3H6	1494H-DF3H6
200	—	—	125	—	—	—	—	40	1494H-EA3H6	1494H-EN3H6	1494H-EF3H6

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	Description		For Use With		Cat. No.
	**Auxiliary Contacts**	1 N.O. Contact	1494C, 1494F, 1494V, and 1494M (30…400 A), 1494G (30…400 A) Disconnect Switches 1494D, 1494V∗ (125…400 A Frame) Circuit Breakers		**1495-N8**
		1 N.C. Contact			**1495-N9**
 *Cat. No. 595-A*  *Cat. No. 595-B*	**Auxiliary Contacts**	1 N.O. Contact	1494C, 1494G, and 1494V Disconnect Switches 600 A		**595-A**
		1 N.C. Contact			**595-B**
 *Cat. No. 595-N1*	**Auxiliary Contact Adapter Kit For Disconnect Switches**	600 A only		❄	**595-N1**
 *Cat. No. 1495-N24*	**Auxiliary Contact Adapter Kit For Disconnect Switches with Left-Hand Mechanism**	30…100 A Disconnect Switch	1494V Disconnect Switch with Left-Hand Mechanism, 30…100 A	❄	**1495-N24**
	Auxiliary Contact Adapter Kit For Disconnect Switches with Left-Hand Mechanism	200 A Disconnect Switch	1494V Disconnect Switch with Left-Hand Mechanism, 200…400 A	❄	**1495-N25**
 *Cat. No. 1495-N21*  *Cat. No. 1495-N23*	**Auxiliary Contact Adapter Kit For Circuit Breakers**	125 A and 150 A Frame Allen-Bradley, Cutler-Hammer	1494D, 1494V Circuit Breakers	❄	**1495-N21**
		250 A, 400 A Frame Allen-Bradley, Cutler-Hammer	1494V Circuit Breaker	❄	**1495-N23**
		250 A Frame Allen-Bradley, Cutler-Hammer	1494D Circuit Breaker	❄	1495-N22
		400 A Frame Allen-Bradley, Cutler-Hammer	1494D Circuit Breaker	❄	**1495-N16**
		600 A, 800 A, 1200 A Frame Cutler-Hammer	1494D Circuit Breaker	❄	1495-N13
 *Cat. No. 1495-N34*	**Electrical Interlocks**	1 N.O. and 1 N.C. — early break	1494C, 1494G & 1494V Disconnect Switches with Left-/Right-Hand Mechanism, 30…100 & 600 A	‡	**1495-N34**
		2 N.O. and 2 N.C. — early break		‡	**1495-N35**
		1 N.O. and 1 N.C. — early break	1494C & 1494V Disconnect Switch with Right-Hand Mechanism, 200 A, 400 A		**1495-N43**
		2 N.O. and 2 N.C. — early break			1495-N44
		1 N.O. and 1 N.C. — early break	1494C and 1494V Disconnect Switch with Left-Hand Mechanism, 30…100 A		1495-N37
		2 N.O. and 2 N.C. — early break			1495-N38
 *Cat. No. 1495-N35*		1 N.O. and 1 N.C. — early break	1494V Disconnect Switch with Left-Hand Mechanism, 200 A		1495-N39
		2 N.O. and 2 N.C. — early break			1495-N40
		1 N.O. and 1 N.C. — early break	1494V Disconnect Switch with Left-Hand Mechanism, 400 A		1495-N41
		2 N.O. and 2 N.C. — early break			1495-N42
		10 A DPDT (for 30 A, Type 1 & 3R only)	1494H Safety Switch		1495-N77
		15 A DPDT (for 30 A, Type 12) 15 A DPDT (for 60 A, Type 1, 3R, and 12) 15 A DPDT (for 100 A, Type 1, 3R, and 12) 15 A DPDT (for 200 A, Type 1, 3R, and 12)			1495-N78
	Electrical Interlock Adapter Kit	600 A Disconnect Switch	1494G Disconnect Switch		**1495-N36**

∗ Requires an adapter kit on new installations.
❄ One adapter kit enables up to two auxiliary contacts to be installed.
‡ Additional adapter kit (Cat. No. 1495-N36) required for installation on 600 A switch.

1

	Description		For Use With	Cat. No.
 *Cat. No. 1494R-N3*	**Lug Connectors (3 per package)**		1494C, 1494F, 1494G, and 1494V Disconnect Switches	
	Disconnect Size [A]	**Wire Size**		
	30	#14…8 AWG Wire		✶
	60	#14…4 AWG Wire		§ **1494R-N1**
	100	#8…1/0 AWG Wire		§ **1494R-N2**
	200	#6…4/0 AWG Wire		§ **1494R-N3**
		#6…250 MCM Wire (oversized)		§ **199-LF1**
	400	(2) of #1/0…250 MCM Wire		§ **1494R-N14**
		#4…500 MCM Wire (oversized)		§ **1494R-N15**
	600	(2) of #1/0…350 MCM Wire		§ **1494R-N10**
		(2) of #1/0…350 MCM Wire	1491-N621 or 1491-R621 600 A fuse blocks	♣ **1494R-N11**
 *Cat. No. 599-GR1*	**Ground Connectors**			
	Ground Lug Kits	30…100 A	1494C, 1494F, 1494G, and 1494V Disconnect Switches	**599-GR1**
		200…400 A		599-GR2
		600 A		599-GR3
		30, 60 A	1494H Safety Switches	599-GR4
		100, 200 A		599-GR5
	Neutral Kits			
	30 A @ 250/600V AC Fusible (Type 1 & 3R)		1494H Safety Switches	599-NK1
	30 A @ 250/600V AC Non-Fusible (Type 1 & 3R)			599-NK2
	30 A @ 250/600V AC Fusible & Non-Fusible (Type 12)			599-NK3
	60 A @ 250/600V AC Fusible & Non-Fusible (Type 1 & 3R)			599-NK4
	60 A @ 250/600V AC Fusible (Type 12)			599-NK5
	60 A @ 250/600V AC Non-Fusible (Type 12)			599-NK6
	100 A @ 250/600V AC Fusible (Type 1 & 3R)			599-NK7
	100 A @ 250/600V AC Non-Fusible (Type 1, 3R, and 12)			599-NK8
	100 A @ 250/600V AC Fusible (Type 12)			599-NK9
	200 A @ 250/600V AC Fusible & Non-Fusible (Type 1 & 3R)			599-NK10
	200 A @ 250/600V AC Fusible & Non-Fusible (Type 12)			599-NK11
	**Fuse Clips (6 per package)**		1494C, 1494F, 1494G, and 1494V Disconnect Switches 1491 Fuse Blocks	
	Fuse Class	**Fuse Clip Rating [A]**		
		250V / **600V**		
	H	30 / —		**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**
		400 / 400		**1401-N55**
	H, R	600 / 600		‡
	Class R Fuse Clip Kits			
	30 A @ 250V AC (Type 1, 3R, 12)		1494H Safety Switches	1401-N70
	30 A @ 600V AC (Type 1, 3R)			1401-N71
	30 A @ 600V AC (Type 12)			1401-N72
	60 A @ 250V AC (Type 1, 3R, 12)			1401-N73
	60 A @ 600V AC (Type 1, 3R, and 12)			1401-N74
	100 A @ 250/600V AC (Type 1 & 3R)			1401-N75
	100 A @ 250/600V AC (Type 12)			1401-N76
	200 A @ 250/600V AC (Type 1, 3R, and 12)			1401-N77

✶ 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.

Switch Rating [A]	Fuse Class	Fuse Clip Rating [A]		Cat. No.
		250V	600V	
Protective Fuse Covers (for use with Bul. 1494C, 1494G, and 1494V disconnect switches)				
30 30 60 30 60 60 100	Non-Fusible H, R H, R J J Non-Fusible Non-Fusible	— 30 60 30 60 — —	— — — 30 60 — —	**1495-N64**
30 60 100	H, R H, R J	— — 100	30 60 100	**1495-N65**
100	H, R	100	100	**1495-N66**
200 200	Non-Fusible H, J, R	— 200	— 200	➢ **1495-N67**
200 200	Non-Fusible H, J, R	— 200	— 200	⌘ **1495-N62**
400 400	Non-Fusible H, J, R	— 400	— 400	➢ **1495-N68**
400 400	Non-Fusible H, J, R	— 400	— 400	⌘ **1495-N63**
600 600	Non-Fusible J	— 600	— 600	➢ **1495-N61**
Protective Line Covers (for use with Bul. 1494C, 1494G, and 1494V disconnect switches)				
30…100	—	—	—	**1495-N80**
200	—	—	—	**1495-N81**
400	—	—	—	**1495-N82**
600	—	—	—	**1495-N83**

➢ Switch with right-hand mechanism.
⌘ Switch with left-hand mechanism.

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	Description		For Use With	Cat. No.
	**Defeater 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.		All 1494F and 1494V Handles (except 1494V-R1 and 1494V-R2) For 400…600 A switches, defeater bracket is included with connecting rod kits.	1494V-H12
	**Alternate Mounting Kits** For use where the flange material thickness is greater than 3/16 in. (4.8 mm).		Operating Handles 1494V-H1 or 1494V-H11	1494V-H3
			Operating Handles 1494V-H2	1494V-H6
	**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.		30…200 A Switches Applies only to Operating Handle Cat. Nos. 1494V-P1, M1, and S1.	1494V-H15
	Conduit Hubs (for Type 3R enclosures)*		1494H Safety Switches	
	3/4 in. hub			1495-N71
	1 in. hub			1495-N72
	1-1/4 in. hub			1495-N73
	1-1/2 in. hub			1495-N74
	2 in. hub			1495-N75
	2-1/2 in. hub			1495-N76
	**Conduit Connectors** **Metallic Conduit Connectors**		1494G Disconnect Switches	
	1 in. (25.4 mm)	30 A		1232-N11
	1-1/4 in. (31.75 mm)	60 A		1232-N12
	1-1/2 in. (38.1 mm)	100 A		1232-N13
	2-1/2 in. (63.5 mm)	200 A		1232-N14
	3 in. (76.2 mm)	400…600 A		1232-N15
	**Non-Metallic Conduit Connectors**			
	1/2 in. (12.7 mm)	30 A		**1490-N1**
	3/4 in. (19 mm)	30 A		**1490-N9**
	1 in. (25.4 mm)	30 A		**1490-N10**
	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
	**Grounding Adapters**			
	#14…10 AWG, 1/2 in. (12.7 mm)	30 A		1490-N19
	#14…8 AWG, 3/4 in. (19 mm)	30 A		**1490-N20**
	#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

* Packaged in quantities of 10.

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Preferred availability cat. nos. are printed in **bold**

	Decription	For Use With	Cat. No.§
   *Cat. No. 1494V-L1* *Cat. No. 1494V-L2*  *Cat. No. 1494V-L3*	**Type 12 Door Hardware Kit Includes:** handle, cam, defeater actuator lever, rollers, and shims **Enclosure Height less than 40 in. (1016 mm)** Top and Side (Right Hand)	1494C, All 1494V	**1494V-L1**∗
	Top and Side (Left Hand)		**1494V-LL1**∗
	Enclosure Height 40…60 in. (1016…1524 mm) Top and Side (Right Hand) Bottom		**1494V-L1**∗ **and 1494V-L2**
	Top and Side (Left Hand) Bottom		**1494V-LL1**∗ **and 1494V-L2**
	Enclosure Height greater than 60 in. (1524 mm) Top, Side and Bottom (Right Hand)		**1494V-L3**∗
	Top, Side and Bottom (Left Hand)		**1494V-LL3**∗
  *Cat. No. 1494F-L2 and 1494F-L3*	**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 1494M, 1494D	**1494F-L1**∗
	Top and Side (Left Hand)		**1494F-LL1**∗
	Top and Bottom (Right Hand)		**1494F-L2**∗
	Top and Bottom (Left Hand)		**1494F-LL2**∗
	Enclosure Height 30…48 in. (762…1219 mm) Top and Bottom (Right Hand) Side		**1494F-L2**∗ **and 1494F-L3**
	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**❄
 *Cat. No. 1494F-N20*	**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.	1494C, 1494F, 1494M, 1494D, 1494V	**1494F-N20**‡
	Auxiliary Door Interlock Kit		**1494F-N21**

∗ Door hardware kit does not include rectangular connecting bars (1/4 x 1/2 in.). To be provided by customer.
❄ Door hardware kit does not include rectangular connecting bars (1/4 x 5/8 in.). To be provided by customer.
‡ Master door interlock kit does not include rectangular connecting bars (3/8 x 3/8 in.). To be provided by customer.
§ If the Rockwell Automation door hardware kits are to be installed in a commercially available enclosure, consult the enclosure manufacturer's application data for proper kit selection.

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Bulletin 1494C, 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 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
		250V DC	5	10	20	40	50	50
	Continuous Current	600V AC 250V DC	30	60	100	200	400	600
Auxiliary Contact Electical Ratings								
NEMA/EEMAC			B600, P300					
IEC Ratings			Ui 660V		I_{th} 10 A			
			AC II Ux		12…120V 220…240V 380…400V 500…600V		I_e	6 A 3 A 1.5 A 1.2 A
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, 60, 100, and 200 A sizes — 300 maximum				400 and 600 A size — 240 Maximum	
Environmental								
Temperature		Operating	-35…+40 °C (-31…+104 °F)					
		Storage	-40…+65 °C (-40…+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 60 A 100 A 200 A 400 A 600 A	#10 - 32 screw and self-lifting pressure plate 1/4 in. - 28 screw-lug, copper 5/16 in. - 24 screw-lug, copper 3/8 in. - 24 screw-lug, copper 3/8 in. - 13 screw-lug, copper 1/2 in. - 13 screw-lug, copper					
All wire rated 75 °C (167 °F) or higher must be sized per the local Electric Code for 75 °C (167 °F) wire.								
Conductor Size (mm²)		30 A 60 A 100 A 200 A 400 A 600 A	#14…8 AWG (1.5…10 mm²) #14…4 AWG (2.5…16 mm²) #8…1/0 AWG (10…50 mm²) #6…4/0 AWG (16…95 mm²) 2 of #1/0 AWG…250 MCM (2 per lug) 2 of 185 mm²…250 MCM 2 of #1/0 AWG…350 MCM (2 per lug) 2 of 185 mm²…350 MCM					
Recommended Torque		30 A 60 A 100 A 200 A 400 A 600 A	**Conductor into Lug** 20 lb•in 45 lb•in 150 lb•in 275 lb•in 325 lb•in 325 lb•in			**Lug to Terminal** 20 lb•in 50 lb•in 90 lb•in 175 lb•in 275 lb•in 275 lb•in		
Mechanisms			Zinc-plated steel, RoHS Compliant finish					

Bulletin 1494H Disconnect Switches

Disconnect Switch Electrical Ratings						
Switch Size			**30 A**	**60 A**	**100 A**	**200 A**
Rated insulation voltage Ui (UL) IEC			(600) 660V			
Ratings UL/CSA/NEMA	Hp	230V/60 Hz 460V/60 Hz 575V/60 Hz	10 20 30	20 50 60	40 75 100	60 125 150
		250V DC	5	10	20	40
	Continuous Current	600V AC 250V DC	30	60	100	200
Auxiliary Contact Electical Ratings						
Continuous Current			10 A	15 A		
Pole Configuration			DPDT	DPDT		
Mechanical						
Degree of protection		Operating handles	Painted Type 1, 3R, 12			
Mechanical life (Typical)			10 000 operations			
Switching frequency (operations/hr)			300 maximum			
Environmental						
Temperature		Operating	-35…+40 °C (-31…+104 °F)			
		Storage	-40…+65 °C (-40…+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 (30…100 A) 100 000 A: with Class J or Class R fuses (200 A)	
Construction						
Switch body material			Phenolic			
Contact material			Copper, tin-plated			
Terminals		30 A 60 A 100 A 200 A	#10 - 32 screw and self-lifting pressure plate 1/4 in. - 28 screw-lug, copper 5/16 in. - 24 screw-lug, copper 3/8 in. - 24 screw-lug, copper			
All wire rated 75 °C (167 °F) or higher must be sized per the local Electric Code for 75 °C (167 °F) wire.						
Conductor Size (mm^2)		30 A 60 A 100 A 200 A	#14…8 AWG #12…2 AWG #10…1/0 AWG #2…250 MCM AWG			
Recommended Torque		30 A 60 A 100 A 200 A	**Conductor into Lug** 36…40 lb•in 35…45 lb•in 35…50 lb•in 275 lb•in			
Mechanisms			Zinc-plated steel, Bronze chromate finish			

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Bulletin 1494D, 1494V Circuit Breakers

Electrical Ratings							
Frame Size	**125 A**	**150 A**	**250 A**	**400 A**	**600 A**	**800 A**	**1200 A**
Auxiliary Contacts							
1494V, 1494D							
NEMA/EEMAC	B600, P300						
IEC Ratings	ACII Ux			12…120V 220…240V 380…400V 500…600V		I_e	6 A 3 A 1.5 A 1.2 A
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)						
Ambient Temperature* 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 (68 °F), 50% @ 40 °C (104 °F)						

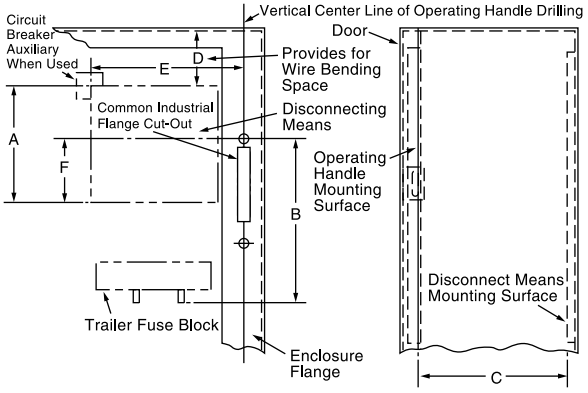
* Refer to circuit breaker specifications for other limitations.

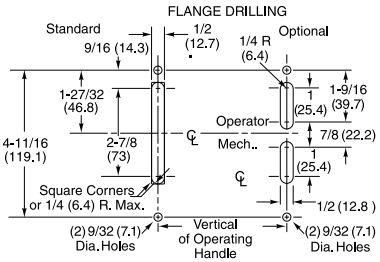
Bulletin 1491 Fuse Blocks

Electrical					
UL Fuse Type	Class H	Class J	Class R	Class C	Class CC
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
Maximum Voltage 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				
Terminals	Tin-plated copper				
Fuse Block Base	Phenolic or Porcelain				
Environmental					
Ambient Temperature Open	–20…+55 °C (–4…+131 °F)				
Ambient Temperature Enclosed	–20…+40 °C (–4…+104 °F)				
Ambient Temperature Storage	–40…+65 °C (–40…+149 °F)				
Altitude (per IEC 947-5)	2000 m				
Relative Humidity (per IEC 947-3)	90% at 20 °C (68 °F) and 50% at 40 °C (104 °F)				

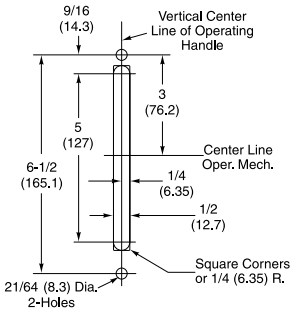
Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Bulletin 1494C, 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.			
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	11 (279.4)	11-5/8 (295.3)	9 (229)	21-5/8 (549)	8 (203.2)	10 (254)	5-1/2 (139.7)
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 (228.9)	7-7/8 (200.0)	22-9/16 (573.1)	12 (304.8)	7-1/8 (181.0)	9-21/32 (245.3)

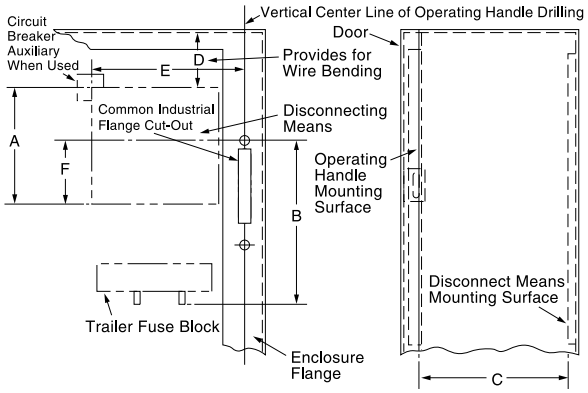
§ Approximate dimensions are for reference only.

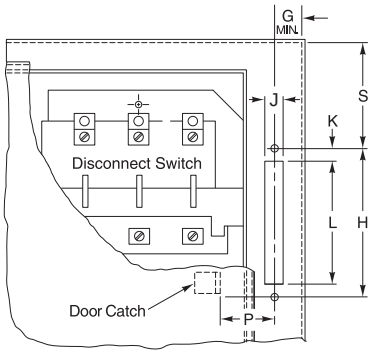
NEMA Disconnect Switches

Approximate Dimensions, Continued

Approximate 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 Min.	C Max.	D	E	F	G	H	J	K	L	P	S‡
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§

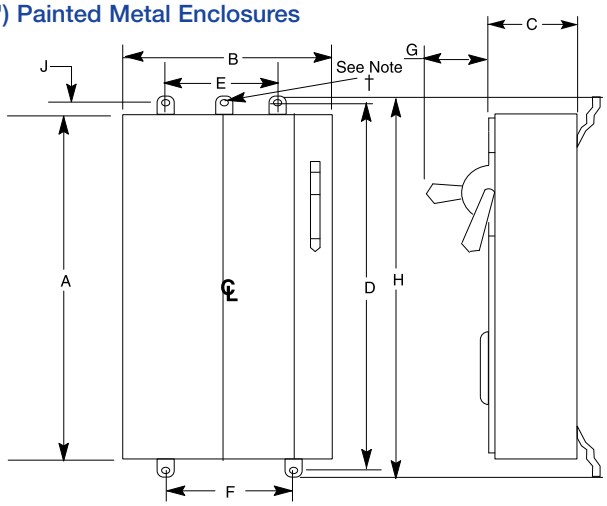
Cutler-Hammer Frame	A	C Min.	C Max.	D	E	F
150 A — EHD, FD, FDB, FDC, HFD, HMCP	7-13/16 (198.4)	6-3/8 (161.9)	—	6 (152.4)	5-5/8 (142.9)	6-7/16 (163.5)
250 A — JD, JDB, JDC, HJD, HMCP	11-1/2 (292.1)	8-3/8 (212.7)	—	8 (203.2)	5-13/16 (147.6)	9-7/16 (239.7)
400 A — KD, KDB, KDC, HKD, HMCP	11-1/2 (292.1)	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.

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

Bulletin 1494G, 1494GX, 1494GY Enclosed Disconnect Safety Switches

Type 3R/4/12 (Enclosure Code "F") Painted Metal Enclosures



Size [A]	Fuse Style*	Number of Poles	Bulletin No.	Approximate Dimensions in Inches (Millimeters) A Height	B Width	C Depth	D Mounting	E Mounting	F Mounting	G Handle Depth	H	J	Approx. Shipping Weight in lbs (kg)
30	A	2 or 3	1494G	13 5/16 (338)	10 1/2 (267)	8 1/4 (210)	14 11/16 (373)	❄	5 1/4 (133)	5 9/16 (141)	15 21/32 (398)	11/32 (9)	20 (9.07)
60													
30	B	2 or 3	1494G	20 (509)	10 1/2 (267)	10 3/16 (259)	21 7/16 (545)	❄	5 1/4 (133)	5 9/16 (141)	22 13/32 (569)	11/32 (9)	30 (13.6)
60													
100	A												
30	C	6	1494G	27 1/2 (698)	10 1/2 (267)	8 1/4 (210)	28 7/8 (733)	❄	5 1/4 (133)	5 9/16 (141)	29 7/8 (759)	13/16 (21)	60 (27.21)
	D												
60	C												
	D												
30	A	2 or 3	1494GY										
	B												
60	A												
	B												
30	A	2 or 3	1494GX	30 (762)	20 1/2 (521)	10 3/16 (259)	31 3/8 (797)	15 1/4 (387)	15 1/4 (387)	5 9/16 (141)	32 3/8 (822)	13/16 (21)	90 (40.82)
	B												
60	A												
	B												
100	D	6	1494G										
100	A	2 or 3	1494GY										
	B												
100	B	2 or 3	1494G	31 1/2 (800)	10 1/2 (267)	10 3/32 (257)	32 7/8 (835)	❄	5 1/4 (133)	5 9/16 (141)	33 27/32 (860)	11/32 (9)	70 (31.73)
	C	6											
200	A	2 or 3											
	B												
100	A	2 or 3	1494GX	50 (1270)	22 (559)	11 1/2 (292)	51 3/8 (1305)	15 1/4 (387)	15 1/4 (387)	5 9/16 (141)	52 11/32 (1330)	11/32 (9)	200 (90.7)
	B												
200	C	6	1494G										
	D												
200	A	2 or 3	1494GY										
	B												
400	A	2 or 3	1494G	50 (1270)	22 (559)	11 1/2 (292)	51 3/8 (1305)	15 1/4 (387)	15 1/4 (387)	7 5/8 (194)	52 11/32 (1330)	11/32 (9)	200 (90.7)
600	A												
400	B	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)	62 5/8 (1590)	1 (25.4)	300 (136.05)
600	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.

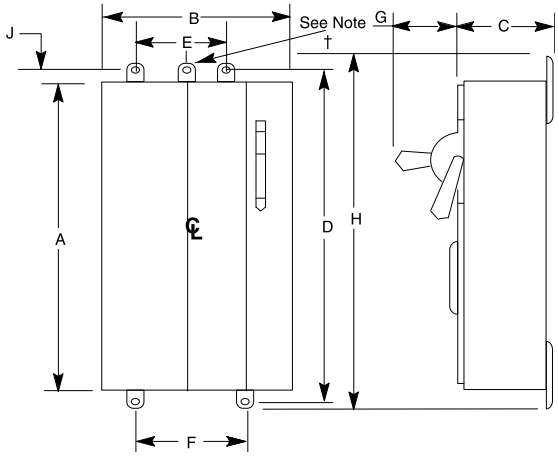
NEMA Disconnect Switches

Approximate Dimensions, Continued

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

Bulletin 1494G, 1494GX, 1494GY Enclosed Disconnect Safety Switches

Type 4/4X (Enclosure Code "C") Stainless Steel Enclosure



Size [A]	Fuse Style*	Number of Poles	Bulletin No.	Approximate Dimensions in Inches (Millimeters) A Height	B Width	C Depth	D Mounting	E Mounting	F Mounting	G Handle Depth	H	J	Approx. Shipping Weight in lbs (kg)
30	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)
60													
30	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												
60	B	2 or 3											
	C	6											
	D												
30	A	2 or 3	1494GY										
	B												
60	A												
	B												
30	A	2 or 3	1494GX	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)
	B												
60	A												
	B												
100	A	2 or 3	1494G										
	B												
	C	6											
	D												
100	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												
200	A	2 or 3	1494G										
	B												
	C	6											
	D												
400	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												
600	A												
	B												

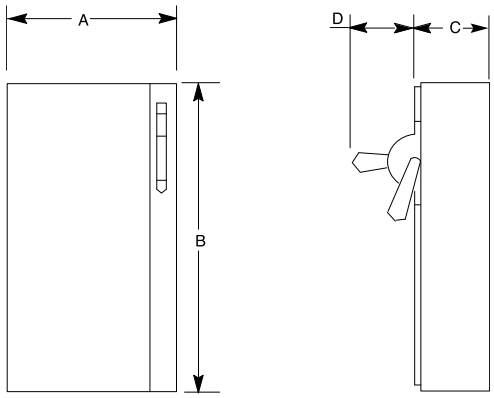
* A = Non-Fusible, Fusible 250V - Class H/R, Fusible 600V - Class J
B = Fusible 600V - Class H/R
C = Non-fusible
D = Fusible 250V - Class H/R, Fusible 600V - Class J

❄ These enclosures have one top mounting hole located on the center line. All other enclosures have two top mounting holes located as shown.

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

Bulletin 1494G, 1494GX, 1494GY Enclosed Disconnect Safety Switches

Type 4/4X (Enclosure Code "S") Non-metallic, Corrosion-resistant Enclosure



Size [A]	Fuse Style*	Number of Poles	Bulletin No.	Approximate Dimensions in Inches (Millimeters) A Height	B Width	C Depth	D Handle Depth	Approx. Shipping Weight in lbs (kg)
30	A	2 or 3	1494G	24 (610)	10 (254)	6 7/8 (175)	4 7/8 (124)	28 (12.7)
	B							
60	A							
	B							
30	A	2 or 3	1494GX	24 (610)	21 (533)	9 1/4 (235)	4 7/8 (124)	60 (27.2)
	B							
60	A							
	B							
100	A		1494G					
	B							

* A = Non-fusible, Fusible 250V - Class H/R, Fusible 600V - Class J/H/R
B = Fusible 600V - Class H/R

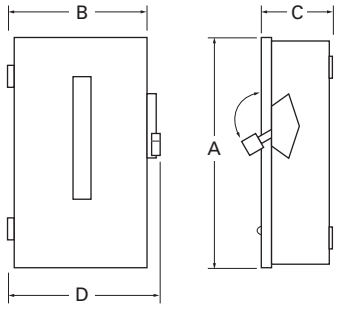
NEMA Disconnect Switches

Approximate Dimensions, Continued

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

Bulletin 1494H Safety Switches

Type 1 (Enclosure Code "A") Painted Metal Enclosures



Switch Size [A]	Fuse Style	A Height	B Width	C Depth	D Width (with handle)	Knockout Fig. #
30	240V	10-3/8 (263.5)	6-1/2 (165.1)	3-3/8 (85.7)	7-1/8 (181)	1
	600V	12-5/8 (320.7)	8-5/8 (219.1)	4 (101.6)	9-1/2 (241.3)	2
	Non-fusible	10-9/16 (268.3)	8-1/2 (215.9)	4 (101.6)	9-1/4 (235)	2
60	240V	17-5/8 (447.7)	9-1/2 (241.3)	5 (127)	10-1/8 (257.2)	3
	600V	21-3/8 (542.9)				
	Non-fusible	17-5/8 (447.7)				
100	240V	21-3/8 (543)	9-1/2 (241.3)	5 (127)	10-1/8 (257.2)	3
	600V	22-3/4 (577.9)				4
	Non-fusible	17-5/8 (447.7)				3
200	240V	31-5/8 (803.3)	13-5/8 (346.1)	5-1/4 (133.4)	14-1/2 (368.3)	5
	600V					
	Non-fusible					

Knockouts — Conduit Size

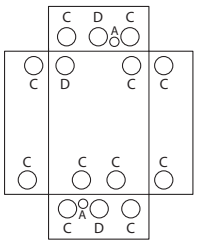


Fig. 1

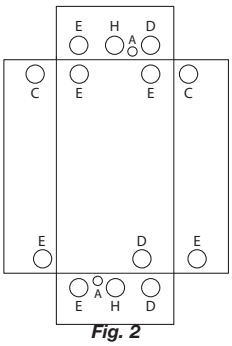


Fig. 2

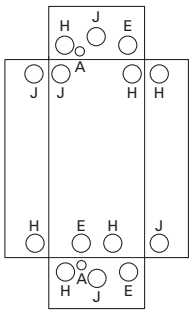


Fig. 3

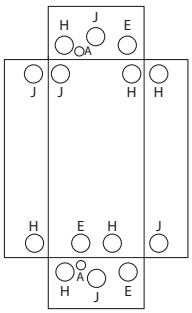


Fig. 4

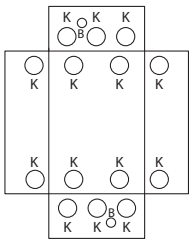


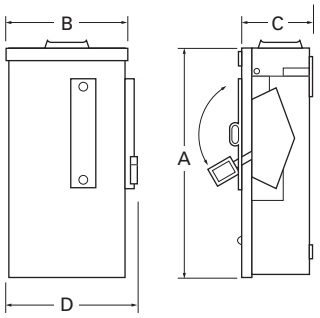
Fig. 5

Switch Size [A]	Knockouts								
	A	B	C	D	F	G	H	J	K
30	9/32 (7.1)	1/4 (6.4)	1/2 (12.7)	1/2 (12.7)	—	—	3/4 (19.1)	1 (25.4)	1 (25.4)
60	—	—	3/4 (19.1)	3/4 (19.1)	—	—	1 (25.4)	1-1/4 (31.8)	1-1/2 (38.1)
100	—	—	—	—	—	—	1-1/4 (31.8)	1-1/2 (38.1)	2 (50.8)
200	—	—	—	—	—	—	1-1/2 (38.1)	2 (50.8)	2-1/2 (63.5)

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

Bulletin 1494H Safety Switches

Type 3R (Enclosure Code "N") Painted Metal Enclosures



Switch Size [A]	Fuse Style	A Height	B Width	C Depth	D Width (with handle)	Knockout Fig. #
30	240V	10-5/8 (269.9)	6-7/8 (174.6)	3-5/16 (84.1)	7-1/8 (181)	6
	600V	13-1/4 (336.6)	8-7/8 (225.4)	4 (101.6)	9-1/2 (241.3)	7
	Non-fusible	13-1/4 (336.6)	8-7/8 (225.4)	4 (101.6)	9-1/2 (241.3)	7
60	240V	17-1/2 (444.5)	9-7/8 (250.8)	5 (127)	10-1/8 (257.2)	8
	600V	22-1/4 (565.2)			10-5/8 (269.9)	
	Non-fusible	17-1/2 (444.5)			10-1/8 (257.2)	
100	240V	22-1/4 (565.2)	9-7/8 (250.8)	5 (127)	10-5/8 (269.9)	8
	600V	22-1/4 (565.2)				
	Non-fusible	17-1/2 (444.5)			10-1/8 (257.2)	
200	240V	31-1/2 (800.1)	14 (355.6)	5-5/16 (134.9)	14-1/8 (361.9)	9
	600V					
	Non-fusible					

Knockouts — Conduit Size

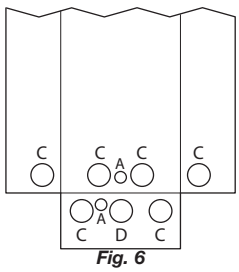


Fig. 6

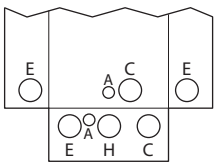


Fig. 7

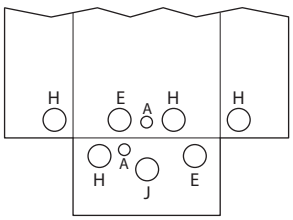


Fig. 8

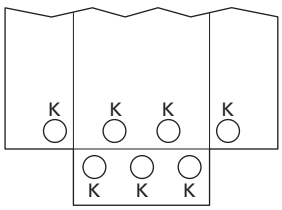


Fig. 9

Switch Size [A]	Knockouts								
	A	B	C	D	F	G	H	J	K
30	9/32 (7.1)	1/4 (6.4)	1/2 (12.7)	1/2 (12.7)	—	—	3/4 (19.1)	1 (25.4)	1 (25.4)
60	—	—	3/4 (19.1)	3/4 (19.1)	—	—	1 (25.4)	1-1/4 (31.8)	1-1/2 (38.1)
100	—	—	—	—	—	—	1-1/4 (31.8)	1-1/2 (38.1)	2 (50.8)
200	—	—	—	—	—	—	1-1/2 (38.1)	2 (50.8)	2-1/2 (63.5)

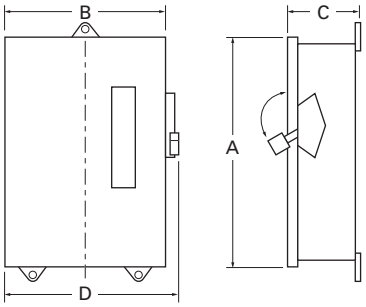
NEMA Disconnect Switches

Approximate Dimensions, Continued

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

Bulletin 1494H Safety Switches

Type 12 (Enclosure Code "F") Painted Metal Enclosures



Switch Size [A]	Fuse Style	A Height	B Width	C Depth	D Width (with handle)
30	240V	11-3/8 (288.9)	7-3/8 (187.3)	5-1/16 (128.6)	8-1/8 (206.4)
	600V	13-3/8 (339.7)	9-3/8 (238.1)	5-5/16 (134.9)	10-1/4 (260.4)
	Non-fusible			5-1/16 (128.6)	
60	240V	19-3/8 (492.1)	9-3/8 (238.1)	5-1/16 (128.6)	10-1/4 (260.4)
	600V			5-5/16 (134.9)	
	Non-fusible			5-1/16 (128.6)	
100	240V	25-3/8 (644.5)	13-1/2 (342.9)	5-5/16 (134.9)	14-1/4 (362)
	600V				
	Non-fusible				
200	240V	35-1/8 (892.2)	13-1/2 (342.9)	5-5/16 (134.9)	15-1/4 (387.4)
	600V		14-1/2 (368.3)		
	Non-fusible				

Definite-Purpose Style Enclosures

			
Bulletin	598	598	598, 800H
Description	**General-Purpose Enclosure**	**Junction Box**	**Push Button Enclosure**
Features	Designed for use as an automation control box, electrical control housing, and terminal wiring box in industrial and commercial applications	Designed for use as a junction box, terminal wiring box, and small automation control box in industrial and commercial applications	Designed to house 22.5 mm (Bul. 598) and 30.5 mm (Bul. 800H) push buttons (available in grey or yellow colors)
Dimensions (in mm)	Available in 11 sizes (Height x Width x Depth) 130 x 80 x 85 180 x 80 x 85 250 x 80 x 85 190 x 190 x 130 280 x 190 x 130 280 x 280 x 130 340 x 280 x 130 380 x 190 x 180 380 x 280 x 180 560 x 280 x 130 560 x 380 x 180	Available in 6 sizes (Height x Width x Depth) 90 x 70 x 50 165 x 85 x 50 130 x 80 x 85 180 x 80 x 85 250 x 80 x 85 190 x 190 x 130	Available in 4 sizes (Height x Width x Depth) 1-Hole (22.5 mm): 110 x 80 x 85 1-Hole (30.5 mm): 110 x 80 x 70 2-Hole: 130 x 80 x 85 3-Hole: 180 x 80 x 85 4-Hole: 250 x 80 x 85
Degree of Protection	Type 1, 3R, 4, 4X, 12, 13 IP66 Indoor/Outdoor	Type 1, 3R, 4, 4X, 12, 13 IP66 Indoor/Outdoor	Type 1, 4, 4X, 12, 13 IP66 Indoor/Outdoor
Storage Temperature Range	-40…+75 °C (-40…+158 °F)	-40…+75 °C (-40…+158 °F)	-40…+75 °C (-40…+158 °F)
Operating Temperature Range	-40…+55 °C (-40…+131 °F)	-40…+55 °C (-40…+131 °F)	-40…+55 °C (-40…+131 °F)
Material			
Enclosure	Thermoplastic polyester blend, UL94-5VA	Thermoplastic polyester blend, UL94-5VA	Thermoplastic polyester blend, UL94-5VA
Gasket	Foam-in place polyutherane	Foam-in place polyutherane	Foam-in place polyutherane
Plastic Mounting Panel	ABS	ABS	—
Metal Mounting Panel	Steel plus zinc with chromate plating	Steel plus zinc with chromate plating	—
Standards	UL 508A and CSA C22.2, No. 14		
Certifications	cULus, CE		
Product Selection	**Page 1-254**	**Page 1-259**	**Page 1-263 (22.5 mm)** **Page 1-265 (30.5 mm)**

Bulletin 598 — General Purpose Enclosure

- Type 3R, 4, 4X, 12, and 13 rainproof, watertight, corrosion resistant, and dusttight, IP66 protection
- Designed for use as automation control box, electrical control housing, and terminal wiring box in industrial and commercial applications
- Available with optional plastic or metal mounting plates
- Provision for mounting using either AB or DIN Rail
- Enclosure can accommodate both panel mount and rail mount terminal blocks
- Designed for use in both indoor and outdoor applications

Table of Contents

Standards Compliance

UL 508A
CSA C22.2, No. 14

Certifications

cULus Listed (File No. E54866, Guide No. NITW, NITW7)
CE Marked

Technical Specifications

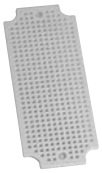
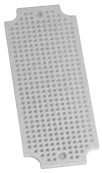
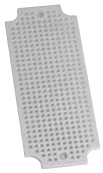
Product Certification	
Approvals/Certifications	cULus, CE
Degree of Protection	Type 3R, 4, 4X, 12, and 13, IP66
Environmental	
Storage Temperature Range	-40…+75 °C (-40…+158 °F)
Operating Temperature Range	-40…+55 °C (-40…+131 °F)
Material	
Enclosure — Solid Base & Cover	Thermoplastic polyester blend, UL 94 5VA
Enclosure — Clear Cover	Polycarbonate, UL 94 5VA
Gasket	Foam-in-place polyurethane
Plastic Mounting Plate	ABS
Metal Mounting Plate	Steel plus zinc with chromate plating
Mounting Plate Hardware (included with enclosure)	Stainless Steel
Mounting Provision	Brass
External Mounting Bracket	Stainless Steel
Hinges & Latches	Stainless Steel

Note: In applications where there is shock and vibration, use of metal mounting plate is recommended.

Cat. No. 598-BS533

Cat. No. 598-BS733

Cat. No. 598-BS933

Enclosure	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity
	598-BS533	1	**598-BS733**	1	**598-BS933**	1
Outside Dimensions* (H x W x D)	130 x 80 x 85 mm (5.12 x 3.15 x 3.35 in.)		180 x 80 x 85 mm (7.09 x 3.15 x 3.35 in.)		250 x 80 x 85 mm (9.84 x 3.15 x 3.35 in.)	
Base Depth	50 mm (1.97 in.)		50 mm (1.97 in.)		50 mm (1.97 in.)	
Cover Depth	35 mm (1.38 in.)		35 mm (1.38 in.)		35 mm (1.38 in.)	
Cover Screw Material	Glass-reinforced nylon		Glass-reinforced nylon		Glass-reinforced nylon	
Recommended Tightening Torque	1.0…1.2 N•m (9…11 lb-in.)		1.0…1.2 N•m (9…11 lb-in.)		1.0…1.2 N•m (9…11 lb-in.)	
Approx. Ship Weight	271 g (0.60 lb)		357 g (0.79 lb)		435 g (0.96 lb)	
						
Plastic Mounting Plate	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**
	598-PP53	1	**598-PP73**	1	**598-PP93**	1
Outside Dimension* (H x W x Thickness)	116 x 68 x 3.5 mm (4.57 x 2.68 x 0.14 in.)		165.5 x 68 x 3.5 mm (6.52 x 2.68 x 0.14 in.)		235 x 68 x 3.5 mm (9.25 x 2.68 x 0.14 in.)	
Recommended hardware for installing components	M4 (#8)		M4 (#8)		M4 (#8)	
Approx. Ship Weight	22.4 g (0.05 lb)		32.0 g (0.07 lb)		45.9 g (0.10 lb)	
						
Metal Mounting Plate	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity
	598-PM53	1	598-PM73	1	**598-PM93**	1
Outside Dimension (H x W x Thickness)	116 x 68 x 1.6 mm (4.57 x 2.68 x 0.06 in.)		165.5 x 68 x 1.6 mm (6.52 x 2.68 x 0.06 in.)		235 x 68 x 1.6 mm (9.25 x 2.68 x 0.06 in.)	
Approx. Ship Weight	85.8 g (0.19 lb)		124.8 g (0.28 lb)		181 g (0.40 lb)	

Note: In applications where there is shock and vibration, use of metal mounting plate is recommended.

* Dimensions are not intended to be used for manufacturing purposes.

General Purpose Enclosure

Product Selection, Continued

Cat. No. 598-BS885

Cat. No. 598-DS885M

Cat. No. 598-BS1187

Cat. No. 598-BS11115

Cat. No. 598-DS11115M

Enclosure	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity
Lift-Off Solid Cover	**598-BS885**	1	**598-BS1187**	1	**598-BS11115**	1
Lift-Off Clear Cover∗	**598-BS885C**		598-BS1187C		**598-BS11115C**	
Hinged Solid Cover	598-DS885M		598-DS1187M		**598-DS11115M**	
Hinged Clear Cover∗	598-DS885CM		598-DS1187CM		598-DS11115CM	
Outside Dimensions❄ (H x W x D)	190 x 190 x 130 mm (7.48 x 7.48 x 5.12 in.)		280 x 190 x 130 mm (11.02 x 7.48 x 5.12 in.)		280 x 280 x 130 mm (11.02 x 11.02 x 5.12 in.)	
Base Depth	98 mm (3.86 in.)		98 mm (3.86 in.)		98 mm (3.86 in.)	
Cover Depth	30 mm (1.18 in.)		80 mm (3.15 in.)		30 mm (1.18 in.)	
Cover Screw Material	Glass-reinforced nylon		Glass-reinforced nylon		Glass-reinforced nylon	
Cover Plug Material (for hinged enclosures only)	Polypropylene		Polypropylene		Polypropylene	
Recommended Tightening Torque	1.2…1.7 N•m (11…15 lb•in)		1.2…1.7 N•m (11…15 lb•in)		1.2…1.7 N•m (11…15 lb•in)	
Approx. Ship Weight	801.6 g (1.77 lb)		1261 g (2.78 lb)		1308 g (2.88 lb)	
						
Plastic Mounting Plate	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**
	598-PP88	1	**598-PP118**	1	**598-PP1111**	1
Outside Dimension❄ (H x W x Thickness)	160 x 160 x 4 mm (6.3 x 6.3 x 0.16 in.)		252 x 161 x 3.4 mm (9.92 x 6.34 x 0.13 in.)		267 x 267 x 3.4 mm (10.51 x 10.51 x 0.13 in.)	
Thickness at support bracket	12 mm (0.47 in.)		12 mm (0.47 in.)		12 mm (0.47 in.)	
Recommended hardware for installing components	M4 (#8)		M5 (#10)		M5 (#10)	
Approx. Ship Weight	98.5 g (0.22 lb)		124.4 g (0.27 lb)		206.4 g (0.46 lb)	
						
Metal Mounting Plate	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**
	598-PM88	1	**598-PM118**	1	**598-PM1111**	1
Outside Dimension❄ (H x W x Thickness)	161 x 161 x 1.6 mm (6.34 x 6.34 x 0.06 in.)		251.5 x 161 x 1.6 mm (9.9 x 6.34 x 0.06 in.)		251 x 251 x 1.6 mm (9.88 x 9.88 x 0.06 in.)	
Approx. Ship Weight	319.3 g (0.70 lb)		500.9 g (1.10 lb)		748.5 g (1.65 lb)	
Stainless Steel External Mounting Bracket (including mounting hardware)	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**
	598-N13	4	**598-N13**	4	**598-N13**	4
Approx. Ship Weight	92.5 g (0.20 lb)		92.5 g (0.20 lb)		92.5 g (0.20 lb)	
Stainless Steel Hinge & Latch Kit	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**
	598-NHL22M	1	**598-NHL22M**	1	**598-NHL22M**	1
Number of Kits to Convert Lift-Off to Hinged	1		1		1	
Approx. Ship Weight	165 g (0.36 lb)		165 g (0.36 lb)		165 g (0.36 lb)	

Note: In applications where there is shock and vibration, use of metal mounting plate is recommended.

∗ Clear cover material: polycarbonate.

❄ Dimensions are not intended to be used for manufacturing purposes.

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Preferred availability cat. nos. are printed in **bold**

Cat. No. 598-BS13115

Cat. No. 598-DS13115CM

Cat. No. 598-BS1587

Cat. No. 598-BS15117

Cat. No. 598-DS15117CM

Enclosure	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity
Lift-Off Solid Cover	**598-BS13115**	1	**598-BS1587**	1	**598-BS15117**	1
Lift-Off Clear Cover∗	598-BS13115C		598-BS1587C		**598-BS15117C**	
Hinged Solid Cover	598-DS13115M		598-DS1587M		598-DS15117M	
Hinged Clear Cover∗	598-DS13115CM		598-DS1587CM		598-DS15117CM	
Outside Dimensions❄ (H x W x D)	341x 280 x 130 mm (13.43 x 11.02 x 5.12 in.)		382 x 192 x 180 mm (15.04 x 7.56 x 7.09 in.)		380 x 280 x 180 mm (14.96 x 11.02 x 7.09 in.)	
Base Depth	100 mm (3.94 in.)		98 mm (3.86 in.)		98 mm (3.86 in.)	
Cover Depth	30 mm (1.18 in.)		80 mm (3.15 in.)		80 mm (3.15 in.)	
Cover Screw Material	Glass-reinforced nylon		Glass-reinforced nylon		Glass-reinforced nylon	
Cover Plug Material (for hinged enclosures only)	Polypropylene		Polypropylene		Polypropylene	
Recommended Tightening Torque	1.2…1.7 N•m (11…15 lb•in)		1.2…1.7 N•m (11…15 lb•in)		1.2…1.7 N•m (11…15 lb•in)	
Approx. Ship Weight	1643 g (3.62 lb)		1685 g (3.71 lb)		2069 g (4.56 lb)	
						
Plastic Mounting Plate	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**
	598-PP1311	1	**598-PP158**	1	**598-PP1511**	1
Outside Dimension❄ (H x W x Thickness)	300 x 240 x 4 mm (11.81 x 9.45 x 0.16 in.)		335 x 155 x 4 mm (13.19 x 6.10 x 0.16 in.)		351 x 251x 4.3 mm (13.82 x 9.88 x 0.17 in.)	
Thickness at support bracket	12 mm (0.47 in.)		12 mm (0.47 in.)		12 mm (0.47 in.)	
Recommended hardware for installing components	M4 (#8)		M4 (#8)		M4 (#8)	
Approx. Ship Weight	268.8 g (0.59 lb)		194.2 g (0.43 lb)		333.1 g (0.73 lb)	
						
Metal Mounting Plate	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**
	598-PM1311	1	598-PM158	1	**598-PM1511**	1
Outside Dimension❄ (H x W x Thickness)	312 x 251 x 1.6 mm (12.28 x 9.88 x 0.06 in.)		352.5 x 161 x 1.6 mm (13.88 x 6.34 x 0.06 in.)		351 x 251 x 1.6 mm (13.82 x 9.88 x 0.06 in.)	
Approx. Ship Weight	955.5 g (2.11 lb)		710.1 g (1.57 lb)		1089.8 g (2.40 lb)	
Stainless Steel External Mounting Bracket (including mounting hardware)	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**
	598-N13	4	**598-N13**	4	**598-N13**	4
Approx. Ship Weight	92.5 g (0.20 lb)		92.5 g (0.20 lb)		92.5 g (0.20 lb)	
Stainless Steel Hinge & Latch Kit	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**
	598-NHL22M	1	**598-NHL22M**	1	**598-NHL22M**	1
Number of Kits to Convert Lift-Off to Hinged	1		1		1	
Approx. Ship Weight	165 g (0.36 lb)		165 g (0.36 lb)		165 g (0.36 lb)	

Note: In applications where there is shock and vibration, use of metal mounting plate is recommended.

∗ Clear cover material: polycarbonate.

❄ Dimensions are not intended to be used for manufacturing purposes.

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Cat. No. 598-BS22115

Cat. No. 598-BS22157

Cat. No. 598-DS22157CM

Enclosure	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity
Lift-Off Solid Cover	598-BS22115	1	**598-BS22157**	1
Lift-Off Clear Cover∗	598-BS22115C		598-BS22157C	
Hinged Solid Cover	598-DS22115M		598-DS22157M	
Hinged Clear Cover∗	598-DS22115CM		598-DS22157CM	
Outside Dimensions‡ (H x W x D)	560 mm x 280 mm x 130 mm (22.05 in. x 11.02 in. x 5.12 in.)		560 mm x 380 mm x 180 mm (22.05 in. x 14.96 in. x 7.09 in.)	
Base Depth	98 mm (3.86 in.)		148 mm (5.83 in.)	
Cover Depth	30 mm (1.18 in.)		80 mm (3.15 in.)	
Cover Screw Material	Glass-reinforced nylon		Glass-reinforced nylon	
Cover Plug Material (for hinged enclosures only)	Polypropylene		Polypropylene	
Recommended Tightening Torque	1.2…1.7 N•m (11…15 lb•in)		1.2…1.7 N•m (11…15 lb•in)	
Approx. Ship Weight	2622 g (5.78 lb)		4327 g (9.54 lb)	
				
Plastic Mounting Plate	**Cat. No.**	**Pkg. Quantity**	**Cat. No.❄**	**Pkg. Quantity**
	—	—	**598-PP1511**	1
Outside Dimension‡ (H x W x Thickness)	—		351 x 251x 4.3 mm (13.82 x 9.88 x 0.17 in.)	
Thickness at support bracket	—		12 mm (0.47 in.)	
Recommended hardware for installing components	—		M4 (#8)	
Approx. Ship Weight	—		333.1 g (0.73 lb)	
				
Metal Mounting Plate	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**
	598-PM2211	1	**598-PM2215**	1
Outside Dimension‡ (H x W x Thickness)	532 mm x 254.5 mm x 1.6 mm (20.94 in. x 10.02 in. x 0.06 in.)		532 mm x 354.5 mm x 1.6 mm (20.94 in. x 13.6 in. x 0.06 in.)	
Approx. Ship Weight	1712 g (3.77 lb)		2332 g (5.14 lb)	
Stainless Steel External Mounting Bracket (including mounting hardware)	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**
	598-N13	4	**598-N13**	4
Approx. Shipping Weight	92.5 g (0.20 lb)		92.5 g (0.20 lb)	
Stainless Steel Hinge & Latch Kit	**Cat. No.**	**Pkg. Quantity**	**Cat. No.**	**Pkg. Quantity**
	598-NHL22M	1	**598-NHL22M**	1
Number of Kits to Convert Lift-Off to Hinged	2		2	
Approx. Ship Weight	165 g (0.36 lb)		165 g (0.36 lb)	

∗ Clear cover material: polycarbonate.

❄ Must order two pieces for this enclosure.

‡ Dimensions are not intended to be used for manufacturing purposes.

Bulletin 598 — Junction Box

- Type 3R, 4, 4X, 12, and 13 rainproof, watertight, corrosion resistant, and dusttight, IP66 protection
- Designed for use as a junction box, terminal wiring box, and small automation control box in industrial and commercial applications
- Available with optional plastic or metal mounting plates
- Provision for mounting using either AB or DIN Rail
- Enclosure can accommodate panel mount or rail mount terminal blocks
- Designed for use in both indoor and outdoor applications

Table of Contents

Standards Compliance

UL 508A
CSA C22.2, No. 14

Certifications

cULus Listed (File No. E54866, Guide No. NITW, NITW7)
CE Marked

Technical Specifications

Product Certification	
Approvals/Certifications	cULus, CE
Degree of Protection	Type 3R, 4, 4X, 12, and 13, IP66
Environmental	
Storage Temperature Range	-40…+75 °C (-40…+158 °F)
Operating Temperature Range	-40…+55 °C (-40…+131 °F)
Material	
Enclosure	Thermoplastic polyester blend, UL 94, 5VA
Gasket	Foam-in-place polyurethane
Plastic Mounting Plate	ABS
Metal Mounting Plate	Steel plus zinc with chromate plating
Mounting Plate Hardware (included with enclosure)	Stainless steel
Mounting Provision	Brass
External Mounting Bracket	Stainless steel

Note: In applications where there is shock and vibration, use of metal mounting plate is recommended.

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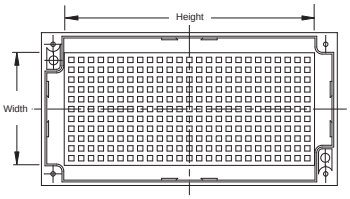
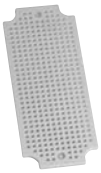
Cat. No. 598-BS332

Cat. No. 598-BS632

Cat. No. 598-BS533

	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity
Enclosure	**598-BS332**	1	**598-BS632**	1	**598-BS533**	1
Outside Dimensions∗ (H x W x D)	90 x 70 x 51.5 mm (3.54 x 2.76 x 2.03 in.)		165 x 85 x 51.5 mm (6.5 x 3.35 x 2.03 in.)		130 x 80 x 85 mm (5.12 x 3.15 x 3.35 in.)	
Base Depth	45 mm (1.77 in.)		45 mm (1.77 in.)		50 mm (1.97 in.)	
Cover Depth	6.5 mm (0.26 in.)		6.5 mm (0.26 in.)		35 mm (1.38 in.)	
Cover Screw Material	Stainless steel		Stainless steel		Glass-reinforced nylon	
Recommended Tightening Torque	0.8…1.0 N•m (7…9 lb•in)		0.8…1.0 N•m (7…9 lb•in)		1.0…1.2 N•m (9…11 lb•in)	
Approx. Ship Weight	103 g (0.23 lb)		189 g (0.42 lb)		271 g (0.60 lb)	
						
					Cat. No.	Pkg. Quantity
Plastic Mounting Plate	**Molded-In**		**Molded-In**		**598-PP53**	1
Outside Dimension∗ (H x W x Thickness)	64.5 mm x 51.5 mm x 4.9 mm (2.54 in. x 2.03 in. x 0.19 in.)		139.5 mm x 62.5 mm x 4.9 mm (5.49 in. x 2.46 in. x 0.19 in.)		116 x 68 x 3.5 mm (4.57 x 2.68 x 0.14 in.)	
Recommended hardware for installing components	M4 (#8)		M4 (#8)		M4 (#8)	
Approx. Ship Weight	—		—		22.4 g (0.05 lb)	
	Not Available		**Not Available**			
	—		—		Cat. No.	Pkg. Quantity
Metal Mounting Plate	—		—		**598-PM53**	1
Outside Dimension (H x W x Thickness)	—		—		116 x 68 x 1.6 mm (4.57 x 2.68 x 0.06 in.)	
Approx. Ship Weight	—		—		85.8 g (0.19 lb)	

Note: In applications where there is shock and vibration, use of metal mounting plate is recommended.
∗ Dimensions are not intended to be used for manufacturing purposes.

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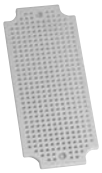
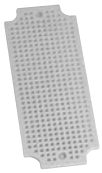
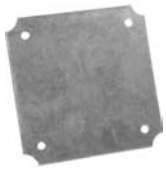
Preferred availability cat. nos. are printed in **bold**

Cat. No. 598-BS733

Cat. No. 598-BS933

Cat. No. 598-BS885

	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity	Cat. No.❄	Pkg. Quantity
Enclosure	**598-BS733**	1	**598-BS933**	1	**598-BS885**	1
Outside Dimensions∗ (H x W x D)	180 x 80 x 85 mm (7.09 x 3.15 x 3.35 in.)		250 x 80 x 85 mm (9.84 x 3.15 x 3.35 in.)		190 x 190 x 130 mm (7.48 x 7.48 x 5.12 in.)	
Base Depth	50 mm (1.97 in.)		50 mm (1.97 in.)		98 mm (3.86 in.)	
Cover Depth	35 mm (1.38 in.)		35 mm (1.38 in.)		30 mm (1.18 in.)	
Cover Screw Material	Glass-reinforced nylon		Glass-reinforced nylon		Glass-reinforced nylon	
Recommended Tightening Torque	1.0…1.2 N•m (9…11 lb•in)		1.0…1.2 N•m (9…11 lb•in)		1.2…1.7 N•m (11…15 lb•in)	
Approx. Ship Weight	357 g (0.79 lb)		435 g (0.96 lb)		801.6 g (1.77 lb)	
						
	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity
Plastic Mounting Plate	**598-PP73**	1	**598-PP93**	1	**598-PP88**	1
Outside Dimension∗ (H x W x Thickness)	165.5 x 68 x 3.5 mm (6.52 x 2.68 x 0.14 in.)		235 x 68 x 3.5 mm (9.25 x 2.68 x 0.14 in.)		160 x 160 x 4 mm (6.3 x 6.3 x 0.16 in.)	
Recommended hardware for installing components	M4 (#8)		M4 (#8)		M4 (#8)	
Approx. Ship Weight	32.0 g (0.07 lb)		45.9 g (0.10 lb)		98.5 g (0.22 lb)	
						
	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity
Metal Mounting Plate	598-PM73	1	**598-PM93**	1	**598-PM88**	1
Outside Dimension∗ (H x W x Thickness)	165.5 x 68 x 1.6 mm (6.52 x 2.68 x 0.06 in.)		235 x 68 x 1.6 mm (9.25 x 2.68 x 0.06 in.)		161 x 161 x 1.6 mm (6.34 x 6.34 x 0.06 in.)	
Approx. Ship Weight	124.8 g (0.28 lb)		181 g (0.40 lb)		319.3 g (0.70 lb)	

Note: In applications where there is shock and vibration, use of metal mounting plate is recommended.

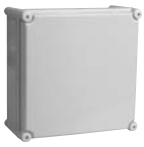
∗ Dimensions are not intended to be used for manufacturing purposes.

❄ For Cat. No. 598-BS885 clear & hinged covers, see page 1-256.

Terminal Block Compatibility

Accessories

Note: The table below lists suggested types of terminal blocks suitable for mounting on the plastic grid in the junction box. Items in table are not pre-assembled and are sold separately.

		598-BS332	598-BS632	598-BS533	598-BS733	598-BS933	598-BS885
	Junction Box						
	Mounting Options for use with Panel Mount Terminal Blocks	Molded-In	Molded-In	598-PP53	598-PP73	598-PP93	598-PP88
		—	—				
Types of Terminal Blocks Suitable for Mounting on Plastic Grid in Junction Box		Maximum Number of Poles (Approximation)					
Panel Mount Blocks with predefined set of poles	 ***Barrier Strips*** ❄	2	8	4	8	12	12
	 ***1492-EC85 & 1492-ED103***	—	—	5	5	5	5
	 ***1492-HC6***	—	—	6	6	6	6
	 ***1492-HJ86 & 1492-HJ812***	—	12	6	12	12	12
Panel Mount Interlocking Blocks	 ***1492-15T & 1492-25T***	2	6	4	7	12	7
		—	5	3	5	8	6
Rail Mount Terminal Blocks✶	1492-C…	—	—	7	12	18	14
	1492-F…	—	—	7	12	18	14
	1492-H…	—	—	14	24	36	28
	1492-W…	—	—	14	24	36	28
	1492-J…	—	—	14	24	36	28
	1492-L…	—	—	14	24	36	28

✶ Requires AB or DIN Rail for mounting

❄ For barrier strip with typical 0.563 in. pitch spacings.

Bulletin 598 — 22.5 mm Push Button Enclosure

- Pre-molded 22.5 mm mounting hole
- Available in two colors:
  - Grey enclosures: Type 4, 4X, 12, and 13 watertight, corrosion resistant, and dusttight, IP66 protection
  - Yellow enclosures: Type 4, 4X, 12, and 13 watertight, corrosion resistant, and dusttight, IP66 protection
- Available in these configurations:
  - 1-hole
  - 2-hole
  - 3-hole
  - 4-hole
- Designed for both indoor and outdoor applications

Table of Contents

Standards Compliance

UL 508A
CSA C22.2, No. 14

Certifications

cULus Listed (File No. E54866, Guide No. NITW, NITW7)
CE Marked

Technical Specifications

Product Certification	
Approvals/Certifications	cULus, CE
Degree of Protection	Type 4, 4X, 12, and 13, IP66
Environmental	
Storage Temperature Range	-40…+75 °C (-40…+158 °F)
Operating Temperature Range	-40…+55 °C (-40…+131 °F)
Material	
Enclosure	Thermoplastic polyester blend, UL94 5VA
Gasket	Foam-in-place polyurethane

22.5 mm Push Button Enclosure

Product Selection

Cat. No. 598-1PB22__

Cat. No. 598-2PB22__

Enclosure	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity
Gray Enclosure	**598-1PB22G**	1	**598-2PB22G**	1
Yellow Enclosure	**598-1PB22Y**		**598-2PB22Y**	
Outside Dimensions∗ (H x W x D)	110 mm x 80 mm x 85 mm (4.33 in. x 3.15 in. x 3.35 in.)		130 mm x 80 mm x 85 mm (5.12 in. x 3.15 in. x 3.35 in.)	
Base Depth	50 mm (1.97 in.)		50 mm (1.97 in.)	
Cover Depth	35 mm (1.38 in.)		35 mm (1.38 in.)	
Cover Screw Material	Glass-reinforced nylon		Glass-reinforced nylon	
Recommended Tightening Torque	1.0…1.2 N•m (9…11 lb•in)		1.0…1.2 N•m (9…11 lb•in)	
Approx. Ship Weight	232 g (0.51 lb)		271 g (0.60 lb)	

Cat. No. 598-3PB22__

Cat. No. 598-4PB22__

Enclosure	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity
Gray Enclosure	**598-3PB22G**	1	**598-4PB22G**	1
Yellow Enclosure	**598-3PB22Y**		**598-4PB22Y**	
Outside Dimensions∗ (H x W x D)	180 mm x 80 mm x 85 mm (7.09 in. x 3.15 in. x 3.35 in.)		250 mm x 80 mm x 85 mm (9.84 in. x 3.15 in. x 3.35 in.)	
Base Depth	50 mm (1.97 in.)		50 mm (1.97 in.)	
Cover Depth	35 mm (1.38 in.)		35 mm (1.38 in.)	
Cover Screw Material	Glass-reinforced nylon		Glass-reinforced nylon	
Recommended Tightening Torque	1.0…1.2 N•m (9…11 lb•in)		1.0…1.2 N•m (9…11 lb•in)	
Approx. Ship Weight	357 g (0.79 lb)		435 g (0.96 lb)	

Note: Holes are pre-molded to fit 22.5 mm push buttons, such as the Allen-Bradley Bulletin 800F.

∗ Dimensions are not intended to be used for manufacturing purposes.

For information on legend plates and contact blocks, see Legend Plate Compatibility/Options and Contact Block Compatibility/Options on page 1-267.

Bulletin 800H — 30.5 mm Push Button Enclosure

- Pre-molded 30.5 mm mounting hole
- Available in two colors:
  - Grey enclosures: Type 4, 4X, 12, and 13 watertight, corrosion resistant, and dusttight, IP66 protection
  - Yellow enclosures: Type 4, 4X, 12, and 13 watertight, corrosion resistant, and dusttight, IP66 protection
- Available in these configurations:
  - 1-hole
  - 2-hole
  - 3-hole
  - 4-hole
- Designed for both indoor and outdoor applications.

Table of Contents

Standards Compliance

UL 508A
CSA C22.2, No. 14

Certifications

cULus Listed (File No. E54866, Guide No. NITW, NITW7)
CE Marked

Technical Specifications

Product Certification	
Approvals/Certifications	cULus, CE
Degree of Protection	Type 4, 4X, 12, and 13, IP66
Environmental	
Storage Temperature Range	-40…+75 °C (-40…+158 °F)
Operating Temperature Range	-40…+55 °C (-40…+131 °F)
Material	
Enclosure	Thermoplastic polyester blend, UL 94, 5VA
Gasket	Foam-in-place polyurethane

30.5 mm Push Button Enclosure

Product Selection

Cat. No. 800H-1HZ4__

Cat. No. 800H-2HZ4__

Enclosure	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity
Gray Enclosure	**800H-1HZ4C**	1	**800H-2HZ4C**	1
Yellow Enclosure	**800H-1HZ4CY**		**800H-2HZ4CY**	
Outside Dimensions∗ (H x W x D)	110 mm x 80 mm x 70 mm (4.33 in. x 3.15 in. x 2.76 in.)		130 mm x 80 mm x 85 mm (5.12 in. x 3.15 in. x 3.35 in.)	
Base Depth	50 mm (1.97 in.)		50 mm (1.97 in.)	
Cover Depth	20 mm (0.79 in.)		35 mm (1.38 in.)	
Cover Screw Material	Glass-reinforced nylon		Glass-reinforced nylon	
Recommended Tightening Torque	1.0…1.2 N•m (9…11 lb•in)		1.0…1.2 N•m (9…11 lb•in)	
Approx. Ship Weight	213 g (0.47 lb)		271 g (0.60 lb)	

Cat. No. 800H-3HZ4__

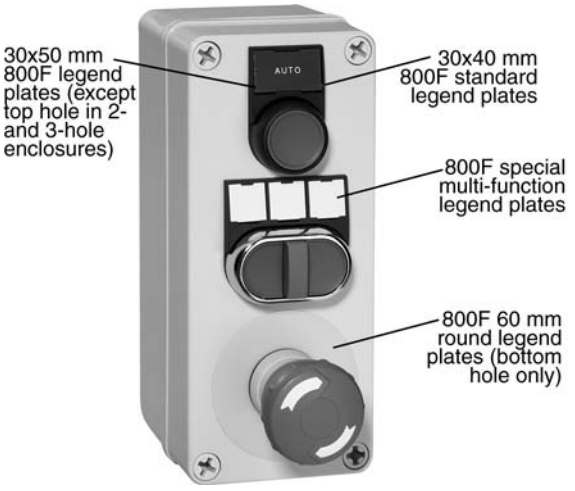
Cat. No. 800H-4HZ4__

Enclosure	Cat. No.	Pkg. Quantity	Cat. No.	Pkg. Quantity
Gray Enclosure	**800H-3HZ4C**	1	**800H-4HZ4C**	1
Yellow Enclosure	**800H-3HZ4CY**		800H-4HZ4CY	
Outside Dimensions∗ (H x W x D)	180 mm x 80 mm x 85 mm (7.09 in. x 3.15 in. x 3.35 in.)		250 mm x 80 mm x 85 mm (9.84 in. x 3.15 in. x 3.35 in.)	
Base Depth	50 mm (1.97 in.)		50 mm (1.97 in.)	
Cover Depth	35 mm (1.38 in.)		35 mm (1.38 in.)	
Cover Screw Material	Glass-reinforced nylon		Glass-reinforced nylon	
Recommended Tightening Torque	1.0…1.2 N•m (9…11 lb•in)		1.0…1.2 N•m (9…11 lb•in)	
Approx. Ship Weight	357 g (0.79 lb)		435 g (0.96 lb)	

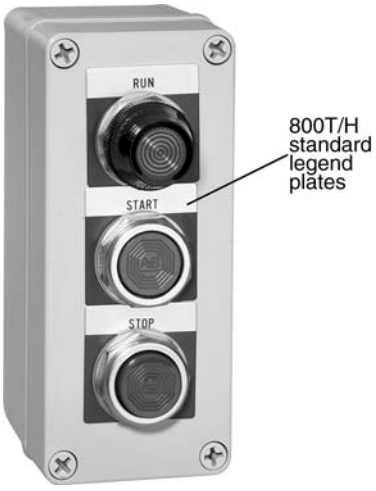
Note: Holes are pre-molded to fit 30.5 mm push buttons, such as the Allen-Bradley Bulletin 800T and 800H.
∗ Dimensions are not intended to be used for manufacturing purposes.

For information on legend plates and contact blocks, see Legend Plate Compatibility/Options and Contact Block Compatibility/Options on page 1-267.

Legend Plate Compatibility/Options

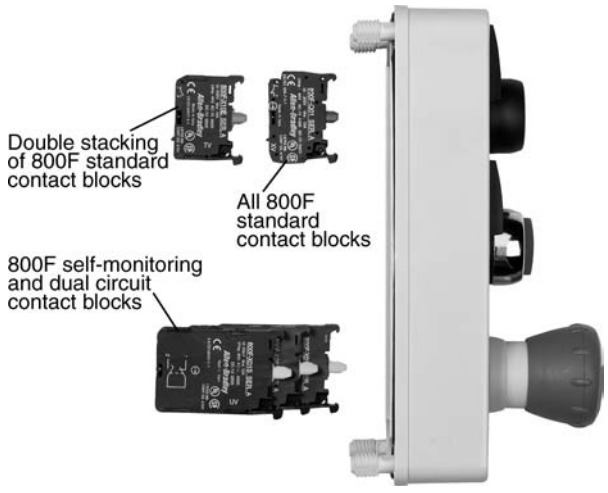


22.5 mm Push Button Enclosure

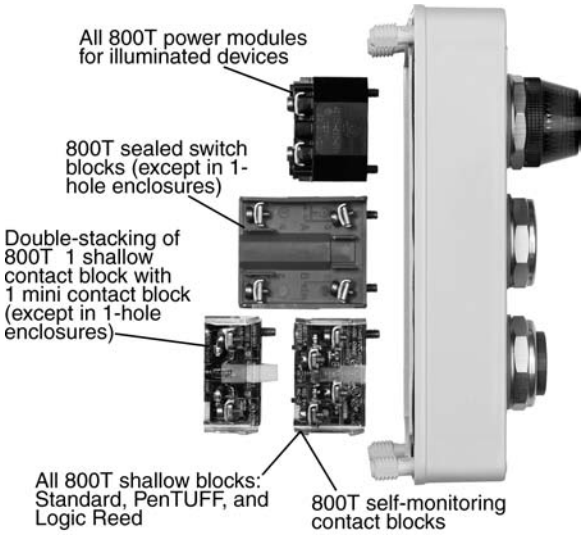


30.5 mm Push Button Enclosure

Contact Block Compatibility/Options



22.5 mm Push Button Enclosure



30.5 mm Push Button Enclosure

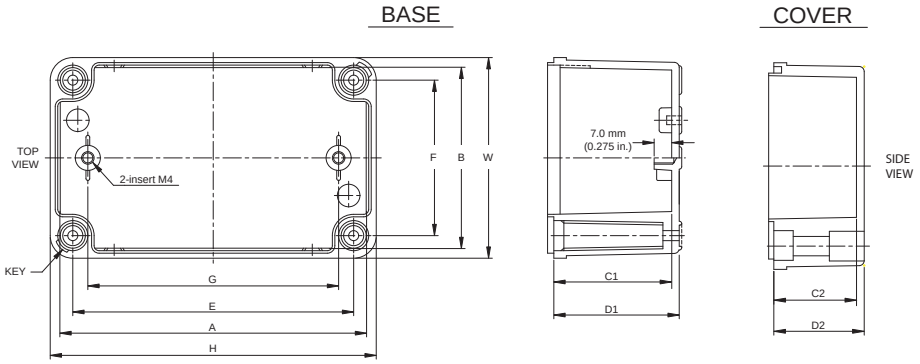
Note: Pictures are for illustrative purposes only, depicting suitable legend plates and contact blocks that would fit in and on the Bul. 598/800H push button plastic enclosure. Please reference the appropriate selection guides for more dimensional information.

Enclosure Approximate Dimensions

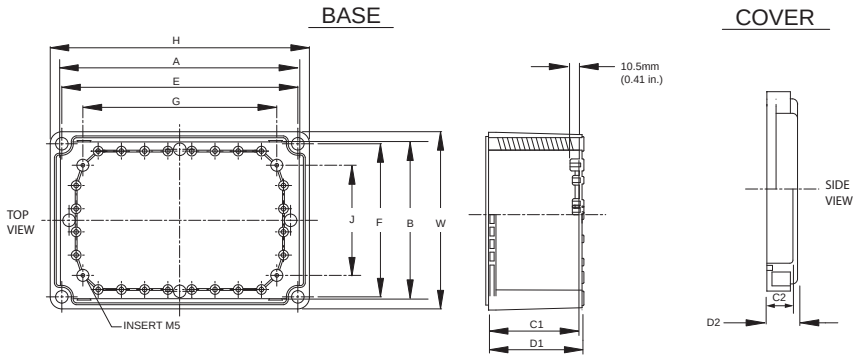
Approximate Dimensions

General Purpose Enclosures

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



Cat. No.	Overall Dimension				Inside Dimension				Enclosure Mounting Dimension		Mounting Plate Mounting Dim.
	H	W	D1	D2	A	B	C1	C2	E	F	G
598-BS533	130 (5.12)	80 (3.15)	50 (1.97)	35 (1.38)	120 (4.72)	70 (2.76)	46.5 (1.83)	31.5 (1.24)	112 (4.41)	62 (2.44)	100 (3.94)
598-BS733	180 (7.09)	80 (3.15)	50 (1.97)	35 (1.38)	170 (6.69)	70 (2.76)	46.5 (1.83)	31.5 (1.24)	162 (6.38)	62 (2.44)	150 (5.91)
598-BS933	250 (9.84)	80 (3.15)	50 (1.97)	35 (1.38)	240 (9.45)	70 (2.76)	46.5 (1.83)	31.5 (1.24)	232 (9.13)	62 (2.44)	220 (8.66)



Cat. No.	Overall Dimension				Inside Dimension				Enclosure Mounting Dimension		Mounting Plate Mounting Dim.	
	H	W	D1	D2	A	B	C1	C2	E	F	G	J
598-BS885__	190 (7.48)	190 (7.48)	98 (3.86)	30 (1.18)	174 (6.85)	174 (6.85)	94 (3.70)	26 (1.02)	165 (6.50)	165 (6.50)	120 (4.72)	120 (4.72)
598-DS885__												
598-BS1187__	280 (11.02)	190 (7.48)	98 (3.86)	80 (3.15)	266 (10.47)	170 (6.69)	94 (3.70)	76 (2.99)	255 (10.04)	165 (6.50)	210 (8.27)	120 (4.72)
598-DS1187__												
598-BS1587__	382 (15.04)	192 (7.56)	98 (3.86)	80 (3.15)	366 (14.41)	172 (6.77)	94 (3.70)	76 (2.99)	355 (13.98)	165 (6.50)	310 (12.20)	120 (4.72)
598-DS1587__												
598-BS11115__	280 (11.02)	280 (11.02)	98 (3.86)	30 (1.18)	260 (10.24)	260 (10.24)	94 (3.70)	26 (1.02)	255 (10.04)	255 (10.04)	210 (8.27)	210 (8.27)
598-DS11115__												
598-BS13115__	341 (13.43)	280 (11.02)	100 (3.94)	30 (1.18)	320 (12.60)	260 (10.24)	96 (3.78)	26 (1.02)	316 (12.44)	256 (10.08)	270 (10.63)	210 (8.27)
598-DS13115__												
598-BS15117__	380 (14.96)	280 (11.02)	98 (3.86)	80 (3.15)	359 (14.13)	259 (10.20)	94 (3.70)	76 (2.99)	355 (13.98)	255 (10.04)	310 (12.20)	210 (8.27)
598-DS15117__												
598-BS22115__	560 (22.05)	280 (11.02)	98 (3.86)	30 (1.18)	540 (21.26)	260 (10.24)	94 (3.70)	26 (1.02)	535 (21.06)	255 (10.04)	490 (19.29)	220 (8.66)
598-DS22115__												
598-BS22157__	560 (22.05)	380 (14.96)	148 (5.83)	30 (1.18)	540 (21.26)	360 (14.17)	144 (5.67)	26 (1.02)	535 (21.06)	355 (13.98)	490 (19.29)	311 (12.24)
598-DS22157__												

1

General Purpose External Mounting Dimensions for use with External Mounting Bracket

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

Mounting Bracket

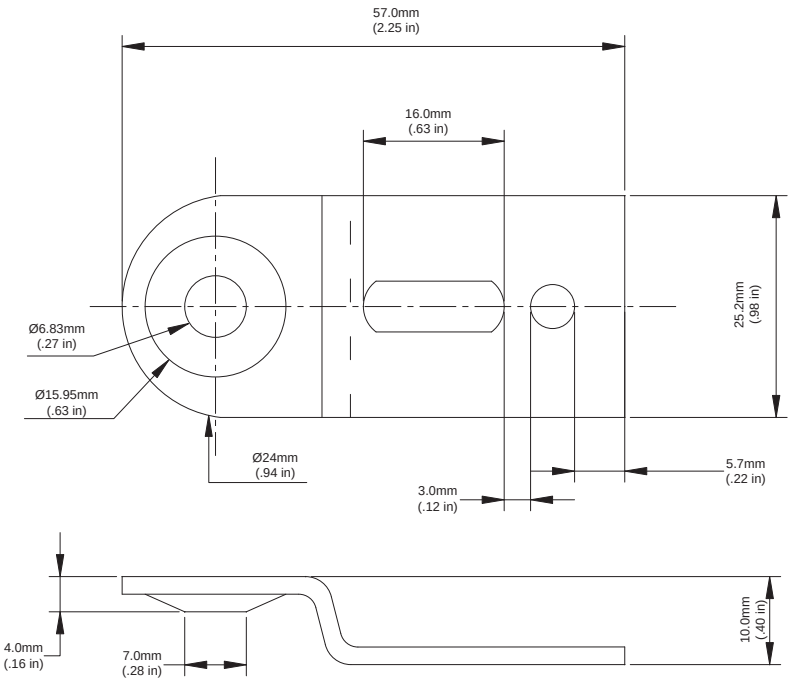


Fig. 1 – Base (Bottom View)

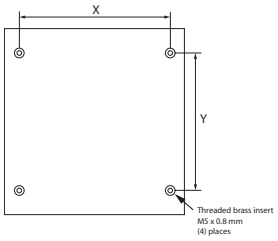


Fig. 2 – Base (Bottom View)

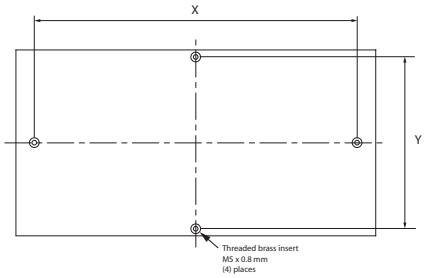


Fig. 3 – Base (Bottom View)

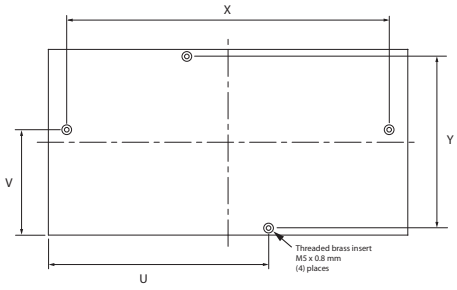
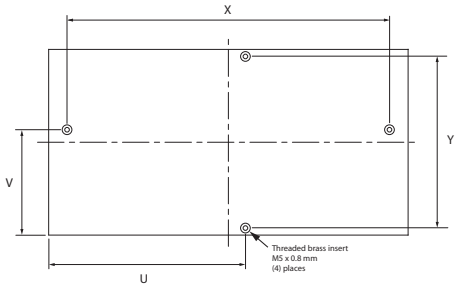


Fig. 4 – Base (Bottom View)



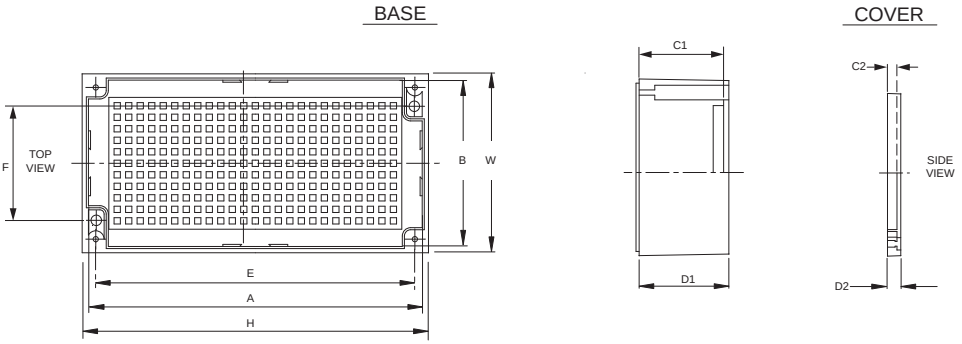
Cat. No.		Figure No.	U	V	X	Y
598-BS885__	598-DS885__	1	—	—	156 (6.13)	98 (3.88)
598-BS1187__	598-DS1187__	2	—	—	251 (9.88)	152 (6.00)
598-BS11115__	598-DS11115__		—	—	238 (9.38)	238 (9.38)
598-BS13115__	598-DS13115__		—	—	295 (11.63)	235 (9.25)
598-BS1587__	598-DS1587__		—	—	349 (13.78)	152 (6.00)
598-BS15117__	598-DS15117__		—	—	340 (13.38)	241 (9.50)
598-BS22115__	598-DS22115__	3	329 (12.94)	148 (5.81)	519 (20.44)	267 (10.50)
598-BS22157__	598-DS22157__	4	292 (11.50)	195 (7.69)	519 (20.44)	340 (13.38)

Enclosure Approximate Dimensions

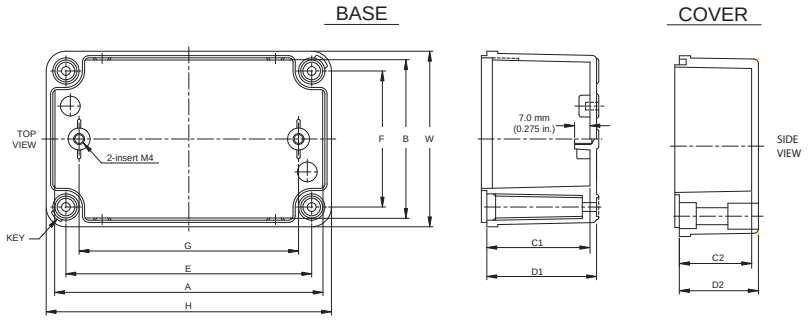
Approximate Dimensions, Continued

Junction Boxes

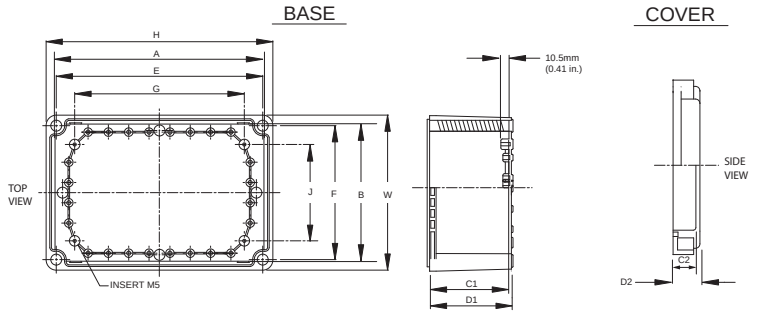
Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.



Cat. No.	Overall Dimension				Inside Dimension				Enclosure Mounting Dimension	
	H	W	D1	D2	A	B	C1	C2	E	F
598-BS332	90 (3.54)	70 (2.76)	45 (1.77)	6.5 (0.26)	84 (3.31)	64 (2.52)	42 (1.79)	3.5 (0.14)	78 (3.07)	39 (1.54)
598-BS632	165 (6.50)	85 (3.35)	45 (1.77)	6.5 (0.26)	159 (6.26)	79 (3.11)	42 (1.79)	3.5 (0.14)	153 (6.02)	55 (2.17)



Cat. No.	Overall Dimension				Inside Dimension				Enclosure Mounting Dimension		Mounting Plate Mounting Dim.
	H	W	D1	D2	A	B	C1	C2	E	F	G
598-BS533	130 (5.12)	80 (3.15)	50 (1.97)	35 (1.38)	120 (4.72)	70 (2.76)	46.5 (1.83)	31.5 (1.24)	112 (4.41)	62 (2.44)	100 (3.94)
598-BS733	180 (7.09)	80 (3.15)	50 (1.97)	35 (1.38)	170 (6.69)	70 (2.76)	46.5 (1.83)	31.5 (1.24)	162 (6.38)	62 (2.44)	150 (5.91)
598-BS933	250 (9.84)	80 (3.15)	50 (1.97)	35 (1.38)	240 (9.45)	70 (2.76)	46.5 (1.83)	31.5 (1.24)	232 (9.13)	62 (2.44)	220 (8.66)



Cat. No.	Overall Dimension				Inside Dimension				Enclosure Mounting Dimension		Mounting Plate Mounting Dim.	
	H	W	D1	D2	A	B	C1	C2	E	F	G	J
598-BS885	190 (7.48)	190 (7.48)	98 (3.86)	30 (1.18)	174 (6.85)	174 (6.85)	94 (3.70)	26 (1.02)	165 (6.50)	165 (6.50)	120 (4.72)	120 (4.72)

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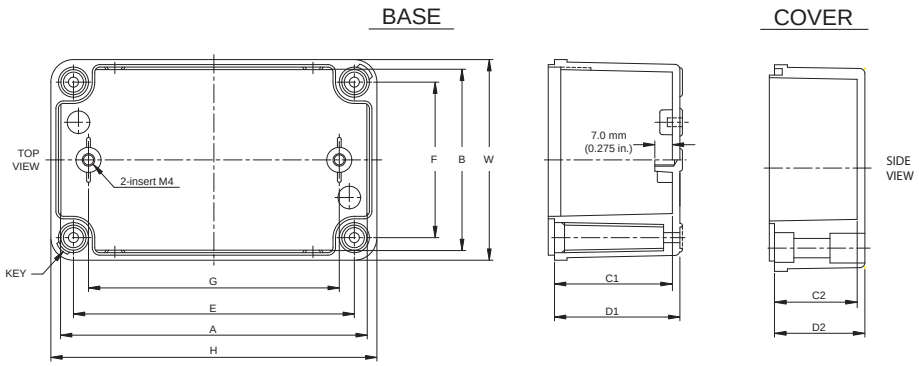
Push Button Enclosures

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



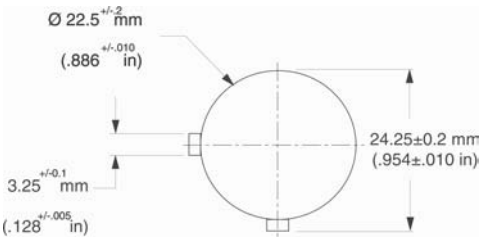
Cat. No.	Overall Dimension				Inside Dimension				Enclosure Mounting Dimension		Mounting Plate Mounting Dim.
	H	W	D1	D2	A	B	C1	C2	E	F	G
22.5 mm Push Button Enclosures											
598-1PB22__	110 (4.33)	80 (3.15)	50 (1.97)	35 (1.38)	104 (4.09)	74 (2.91)	46.5 (1.83)	31.5 (1.24)	92 (3.62)	62 (2.44)	80 (3.15)
598-2PB22__	130 (5.12)	80 (3.15)	50 (1.97)	35 (1.38)	120 (4.72)	70 (2.76)	46.5 (1.83)	31.5 (1.24)	112 (4.41)	62 (2.44)	100 (3.94)
598-3PB22__	180 (7.09)	80 (3.15)	50 (1.97)	35 (1.38)	170 (6.69)	70 (2.76)	46.5 (1.83)	31.5 (1.24)	162 (6.38)	62 (2.44)	150 (5.91)
598-4PB22__	250 (9.84)	80 (3.15)	50 (1.97)	35 (1.38)	240 (9.45)	70 (2.76)	46.5 (1.83)	31.5 (1.24)	232 (9.13)	62 (2.44)	220 (8.66)
30.5 mm Push Button Enclosures											
800H-1HZ4__	110 (4.33)	80 (3.15)	50 (1.97)	20 (0.79)	104 (4.09)	74 (2.91)	46.5 (1.83)	16.5 (0.65)	92 (3.62)	62 (2.44)	80 (3.15)
800H-2HZ4__	130 (5.12)	80 (3.15)	50 (1.97)	35 (1.38)	120 (4.72)	70 (2.76)	46.5 (1.83)	31.5 (1.24)	112 (4.41)	62 (2.44)	100 (3.94)
800H-3HZ4__	180 (7.09)	80 (3.15)	50 (1.97)	35 (1.38)	170 (6.69)	70 (2.76)	46.5 (1.83)	31.5 (1.24)	162 (6.38)	62 (2.44)	150 (5.91)
800H-4HZ4__	250 (9.84)	80 (3.15)	50 (1.97)	35 (1.38)	240 (9.45)	70 (2.76)	46.5 (1.83)	31.5 (1.24)	232 (9.13)	62 (2.44)	220 (8.66)

Enclosure Approximate Dimensions

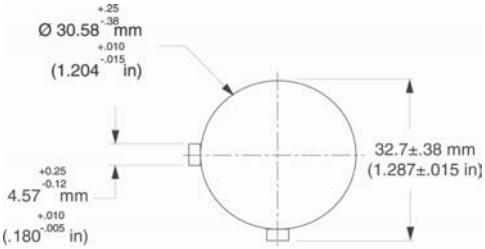
Approximate Dimensions, Continued

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

Push Button Hole

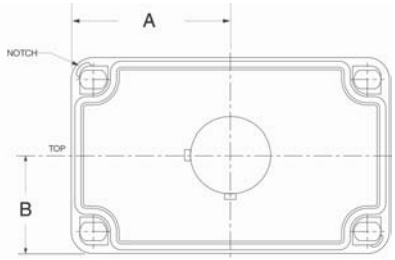


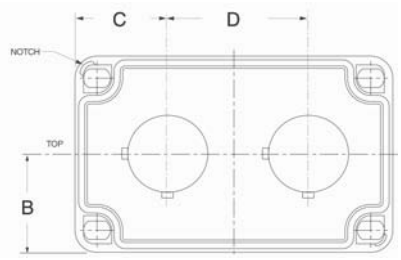
22.5 mm Push Button Hole

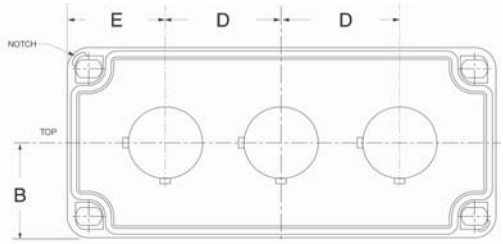


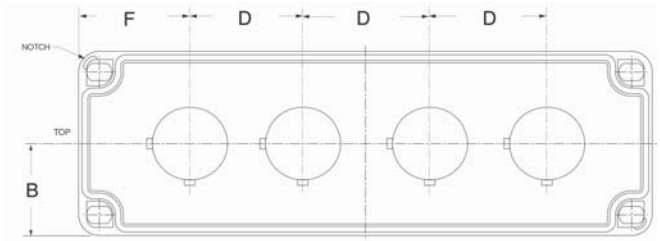
30.5 mm Push Button Hole

Push Button Hole Spacing









Cat. No.	Type	A	B	C	D	E	F
22.5 mm Push Button Enclosure							
598-1PB22G	1-Hole	55±0.216 (2.165±0.0085)	40±0.5 (1.57±0.020)	—	50.0±0.191 (1.968±0.0075)	—	—
598-2PB22G	2-Hole	—		40±0.175 (1.57±0.0069)		—	—
598-3PB22G	3-Hole	—		—		40 +0.32/-0.18 (1.57 +0.0126/-0.0071)	—
598-4PB22G	4-Hole	—		—		—	50±0.216 (1.968±0.0085)
30.5 mm Push Button Enclosure							
800H-1HZ4C	1-Hole	55±.216 (2.165±0.0085)	40±0.5 (1.57±0.020)	—	46.8±0.191 (1.843±0.0075)	—	—
800H-2HZ4C	2-Hole	—		41.6±0.175 (1.64±0.0069)		—	—
800H-3HZ4C	3-Hole	—		—		43.2 +0.32/-0.18 (1.7 +0.0126/-0.0071)	—
800H-4HZ4C	4-Hole	—		—		—	54.8±0.216 (2.16±0.0085)