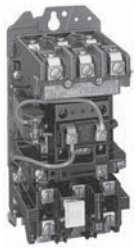


Bulletin 509, Size 1 with Eutectic Alloy Overload Relay Open Type without Enclosure

Bulletin 509 Open Type Full Voltage Starter

- Feed-through construction
- Starter can be field wired for single- or three-phase applications

NEMA sizes 0…4
- Available as components or as a modular kit for faster delivery
- Product selection can be done via two options:
  - – Ordering a complete kit
  - – Ordering individual components
- Starter includes a 120V AC coil and (1) N.O. auxiliary contact, as standard

NEMA sizes 00, 5…9
- Available as factory assembled

NEMA sizes 00…9 (Enclosed)
- Available as factory assembled

Table of Contents

Product Selection 1-46
Modifications 1-106
Accessories 1-111
Specifications 1-126
Approximate Dimensions 1-133
Heater Element Selection 1-167

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
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)

Catalog Number Explanation
Example Cat. No.

509 – B O D – A2E – 17
a b c d e f

a

Bulletin No.	
Bulletin No.	Description
509	Top-wired contactor
509DC	Top-wired contactor (DC voltage)

b

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

c

NEMA Enclosure Type	
Code	Type
A	Type 1
C	Type 4X (stainless steel)
H	Type 3R, 7 & 9 bolted
J	Type 3R/4/12
O	No enclosure

d

Nominal Coil Voltage		
Code	Voltage	Frequency
A	220V 240V	50 Hz 60 Hz
B	440V 480V	50 Hz 60 Hz
C	550V 600V	50 Hz 60 Hz
D	110V 120V	50 Hz 60 Hz
F	277V	60 Hz
H	200…208V	60 Hz
I	415V	50 Hz
J	24V	50/60 Hz
N	380V	50 Hz
VL	24V DC	—
VG	125…250V DC	—

e

Eutectic Overload Relay	
Code	Description
blank	Eutectic Alloy

E1 Plus Solid-State Overload Relay		
Code	NEMA Size	Full Load Current Adjustment Range [A]
3-Phase		
A2C	0,1	0.2…1.0
A2E	0,1	1.0…5.0
A2F	0,1	3.2…16
A2G	0,1,2	5.4…27
A2J	1,2,3	9…45
A2L	3	18…90
A2M	4	30…150
A2N	5	60…300
A2R	6	120…600
A2T	7	256…810
A2U	8	384…1215
A2V	9	800…2250
1-Phase		
S2E	0,1	1.0…5.0
S2F	0,1	3.2…16
S2G	0,1,2	5.4…27
S2J	1,2,3	9…45
S2L	3	18…90

f

Factory Installed Modifications/Options
For detailed information, see Modifications on page 1-106.

or

Options	
Code	Description
9	(1) N.O. Auxiliary Contact for use on Eutectic Overload Relay
9A	(1) N.C. Auxiliary Contact for use on Eutectic Overload Relay
17	Surge Suppressor for 120 or 240V AC Coil
90	(1) N.O. Auxiliary Contact for use on Contactor*
91	(1) N.C. Auxiliary Contact for use on Contactor*

* Up to (6) combinations of auxiliary contacts can be selected. Example: Code 90011 indicates (2) N.O. and (2) N.C. contacts.

Heater Elements — Starters with eutectic alloy overload relays require 3 heater elements. See page 1-167 for heater element selection tables.

Note: All enclosed non-combination starters are supplied with external reset as standard, except for starters with E3 overload relay.

Modifications — Factory Installed

NEMA Non-Combination Contactors/Starters

For Use on Bulletins 500, 500F, 500L, 500LP, 505, 505V, 509, 520, and 520V; **excluding Modular Kits**

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** **1** **1**	1∗ 3R/4/12, 4/4X Bolted❄ Unilock‡	A NA NA NA	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A NA NA NA
ON-OFF Push Button	**1E** **1E** **1E** **1E**	1∗ 3R/12, 4/4X, 4X Bolted❄ Unilock‡	A NA NA NA	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A NA NA NA
HAND-OFF-AUTO Selector Switch	**3** **3** **3** **3**	1∗ 3R/12, 4/4X, 4X Bolted❄ Unilock‡	A NA NA NA	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A NA A	A A NA A	A NA NA NA
OFF-ON Selector Switch	**3E** **3E** **3E** **3E**	1∗ 3R/12, 4/4X, 4X Bolted❄ Unilock‡	A NA NA NA	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A NA NA NA	A NA NA NA	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** **4R** **4R**	1, 3R/12, 4/4X, 4X∗ § Bolted❄ Unilock‡	NA NA NA	A A A	A A A	A A A	A A A	A A A	A A A	A NA NA	A NA NA	A NA NA	A NA NA
PUSH-TO-TEST PILOT LIGHT (Red Lens)	**5R** **5R**	1, 3R/12, 4/4X, 4X Bolted❄	NA NA	A A	A A	A A	A A	A A	A A	NA NA	NA NA	NA NA	NA NA
Full Voltage Reversing and Multi-Speed Starters (Buls. 505, 505V, 520V, 520V)													
FOR-REV-STOP Push Button	**1** **1** **1**	1, 3R/12, 4/4X, 4X Bolted❄ Unilock‡	A NA NA	A A NA	A A NA	A A NA	A A NA	A A NA	A A NA	A A NA	A NA NA	A NA NA	A NA NA
FOR-OFF-REV Selector Switch	**3** **3** **3**	1, 3R/12, 4/4X, 4X Bolted❄ Unilock‡	A NA NA	A A A	A A A	A A NA	A A NA	A A NA	A A NA	A NA NA	A NA NA	A NA NA	A NA NA
HIGH-LOW-STOP Push Button	**1** **1**	1, 3R/12, 4/4X, 4X Bolted❄	A NA	A A	A A	A A	A A	A A	A A	A NA	A NA	A NA	A NA
HIGH-OFF-LOW Selector Switch	**3** **3**	1, 3R/12, 4/4X, 4X Bolted❄	A NA	A A	A A	A A	A A	A A	A A	A NA	A NA	A NA	A 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 1-111. 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 (up to 240V AC) are the only colors available on Type 1 non-combination starters (lift-off). On non-combination starters (hinged), 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**.

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	

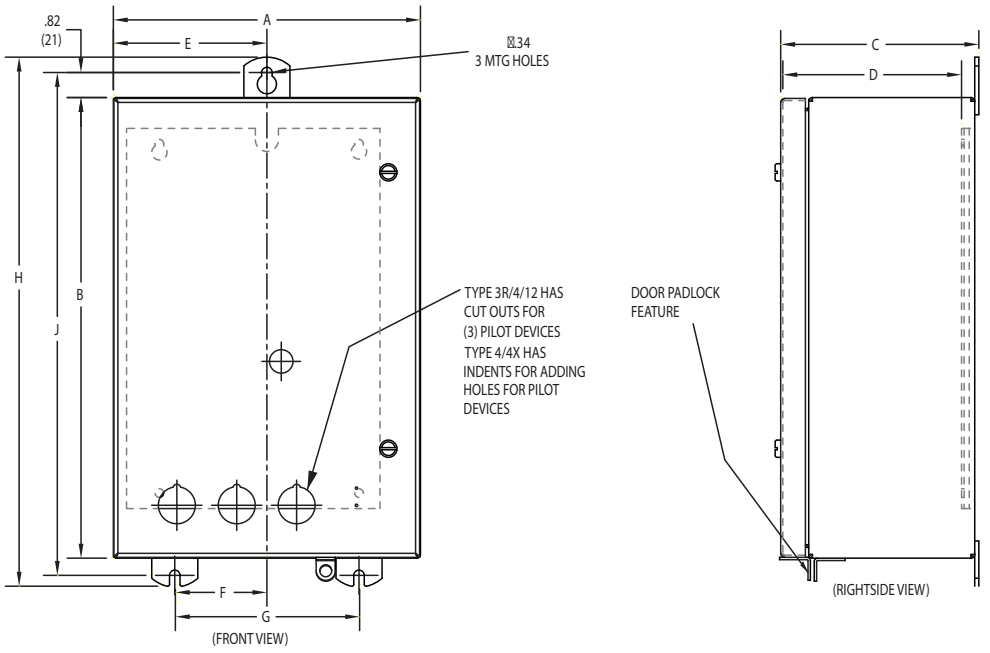
✶ **Service-Limit Current Ratings —** The service-limit current ratings shown represent the maximum rms current, in amperes, which the controller shall be permitted to carry for protracted periods in normal service. At service-limit current ratings, temperature rises shall be permitted to exceed those 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.

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

Type 3R/12, 4/4X Enclosure — with or without Control Transformer for Bulletins 500, 500L, 505, 509, 520E, 520F, & 520G Contactors & Starters 3-…5-Pole



NEMA Size/ Current Rating	Bulletin No.	Approximate Dimensions In Inches (Millimeters)								
		A Width	B Height	C Depth	D	E (Mounting)	F (Mounting)	G (Mounting)	H	J (Mounting)
00…1	500 & 509	10.00 (254)	15.00 (381)	6.45 (164)	5.82 (148)	5.00 (127)	3.00 (76)	6.00 (152)	17.23 (438)	16.38 (416)
15…30 A	500L & 500LP									
2	500 & 509	14.00 (356)	18.00 (457)	6.45 (164)	5.83 (148)	7.00 (178)	5.00 (127)	10.00 (254)	20.23 (514)	19.38 (492)
60 A	500L & 500LP									
0…1	505 & 509									
3	500 & 509	13.00 (330)	22.00 (559)	8.57 (218)	7.89 (201)	6.50 (165)	4.43 (113)	9.00 (229)	24.23 (615)	23.38 (594)
100 A	500L & 500LP									
2	505 & 520									