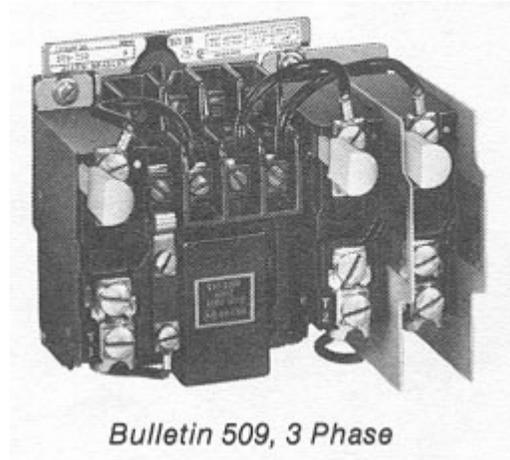


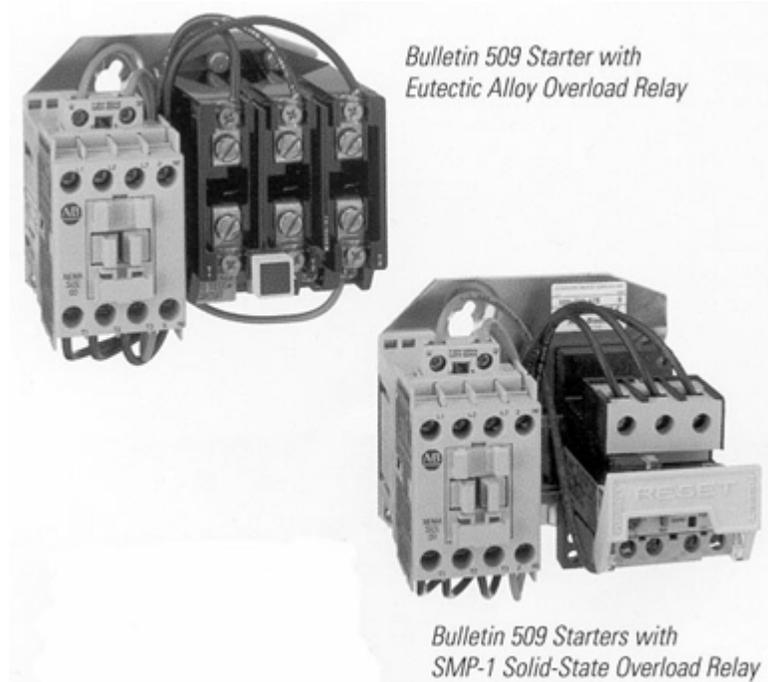
## Bulletin 509 Three Phase Full Voltage NEMA Starters Size 00 (all series)

### Renewal Parts

The 509 Three phase starter consists of three switching poles, a fourth pole to be used as a control circuit hold-in contact and overload protection is provided for all three phases.



Series 'A' Construction

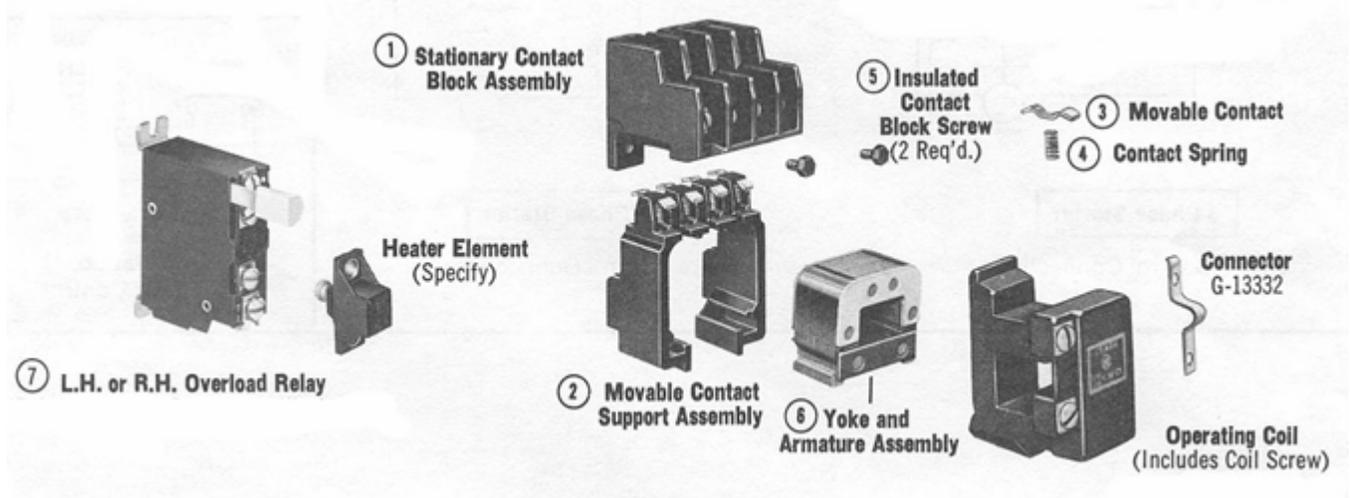


Series 'B' and Series 'D' Construction

Bulletin 509 Three Phase Full Voltage NEMA Starters  
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### Renewal Parts for Series 'A' Devices

Figure 1 is an exploded view of a 509 Size 00 starter – the Series A construction.



### Renewal Parts for Figure 1

Item	Part Description	AB Part Number
1	Contact Block with Stationary Contacts	X-241076
2	Movable Contact Support with Movable Contacts and Springs	X-241534
	Movable Contact Support less Contacts and Springs	F-20964
3-4	Complete Set of Movable Contacts and Springs	Z-21103
5	Insulated Contact Block Screw	M-7243
6	Yoke and Armature Assembly	Z-31857
7	Overload Relay – Left or Right Hand – Manual Reset (quantity three required)	815-BOV4
	Overload Relay – Left or Right Hand – Automatic Reset	Not Available
-	Main Panel Mounting Plate	Not Available
-	Complete Contactor	Not Available
-	Operating Coil	See coil table

### Operating Coils for Series 'A' Devices

Cat No. Coil Suffix Code	AC Volts	Hz	Coil Part Number
			Series 'A'
	6	60	69A21
	12	50	69A25
	12	60	69A24
	24	50	69A28
J, VJ	24	60	69A27
	32	50	69A31
	32	60	69A30
	64	50	69A34
	64	60	69A33
D	115-120	60	69A86
	110	50	69A86
S	110-115	50	69A86
WE	110	60	69A01
	120	50	69A31

Cat No. Coil Suffix Code	AC Volts	Hz	Coil Part Number
			Series 'A'
H	200-208	60	69A113
P	220-230	50	69A83
F	220	60	69A06
A	230-240	60	69A83
T	230-240	50	69A83
	260	50	69A112
	277	60	69A52
Q	440	50	69A288
	380	50	69A11
N	440	60	69A11
	480	60	69A288
B	480	60	69A288
R	550	60	69A16
C	550	50	69A81
	600	60	69A81

Bulletin 509 Three Phase Full Voltage NEMA Starters  
Size 00 (all series)

### Renewal Parts for Series 'B' Devices

Part Description	AB Part Number
Contactors	Not Available
Contacts for Contactor	Not Available
Power Wiring Kit	Not Available
Main Panel Mounting Plate	599-NAT
Eutectic Overload Relay	592-JOV16
Solid State Overload Relay	See page 4
Operating Coil	See coil table

### Renewal Parts for Series 'C' Devices

There was no bulletin 509 Three phase, size 00, series 'C' construction. The series letter was advanced from Series B to Series D.

### Renewal Parts for Series 'D' Devices

Part Description	AB Part Number
Contactors	500-TO**930
Contacts for Contactor	Not Available
Power Wiring Kit	105-PW23
Main Panel Mounting Plate	599-NAT
Eutectic Overload Relay	592-JOV16
Solid-State Overload Relay	See page 5
Operating Coil	See coil table

\*\* = Coil Voltage Suffix Code

### Operating Coils for Series 'B' and 'D' Devices

Cat No. Coil Suffix Code	AC Volts	Hz	Coil Repair Part Number
			Series 'B'
J	24	60	GA013
K	24	50	GA407
D	115-120	60	GA473
	110	50	
S	110-115	50	GA473
H	200-208	60	GA049
P	220-230	50	GA474
A	230-240	60	GA474
T	230-240	50	GA442
F	277	60	GA060
N	380	50	GA454
KN	380-400	50	GA455
I	415	50	GA457
U	415	60	GA069
Q	440-460	50	GA475
B	480	60	GA475
M	500	50	GA464
R	550	50	GA476
C	575-600	60	GA476

Cat No. Coil Suffix Code	AC Volts	Hz	Coil Repair Part Number
			Series 'D'
J	24	60	TA013
K	24	50	TA407
D	115-120	60	TA473
	110	50	
S	110-115	50	TA473
H	200-208	60	TA049
P	220-230	50	TA474
A	230-240	60	TA474
T	230-240	50	TA442
F	277	60	TA480
N	380	50	TA071
KN	380-400	50	TA071
I	415	50	TA457
U	415	60	TA069
Q	440-460	50	TA475
B	480	60	TA475
M	500	50	TA479
R	550	50	TA476
C	575-600	60	TA476

Bulletin 509 Three Phase Full Voltage NEMA Starters  
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## Solid-State Overload Relay - For Series 'B' Construction

### E1 Plus Overload Relay with Automatic/Manual Reset, Field Selectable Trip Class 10, 15, 20, or 30, Phase Loss Protection

Order the replacement overload relay catalog number from the table below. For example, the E1 Plus Class 10 overload relay for a 509-TOD-A1A would be ordered as catalog number 592-EEAT.

To mount the E1 Plus overload relay, the overload relay panel adapter will need to be replaced. Order part number 193-EPB. The 193-EPB panel adapter is compatible with all of the E1 Plus overload listed in the table below.

To mount the E3 Plus overload relay, in place of the SMP-3, the overload relay panel adapter will need to be replaced. Order part number 193-ECPM1.

Size	Full Load Current Adjustment Range (A)	Class 10 Cat. No. Suffix Code	Class 10 Overload Cat. No.	Class 20 Cat. No. Suffix Code	Class 20 Overload Cat. No.	Class 30 Cat. No. Suffix Code	Class 30 Overload Cat. No.
<b>E1 Plus Overload Relay Manual Reset, Phase Loss Protection, Class 10, 20, or 30</b>							
00	0.1 to 0.32	-A1A	592-EEAT	-A2A	592-EEAT	-A3A	592-EEAT
00	0.32 to 1.0	-A1C	592-EEAT	-A2C	592-EEAT	-A3C	592-EEAT
00	1.0 to 2.9	-A1D	592-EECT	-A2D	592-EECT	-A3D	592-EECT
00	1.6 to 5.0	-A1E	592-EECT	-A2E	592-EECT	-A3E	592-EECT
00	3.7 to 12	-A1F	592-EEDT	-A2F	592-EEDT	-A3F	592-EEDT
<b>E1 Plus Overload Relay Automatic/Manual Reset, Phase Loss Protection, Class 10, 20, or 30</b>							
00	0.1 to 0.32	-A4A	592-EEAT	-A5A	592-EEAT	-A6A	592-EEAT
00	0.32 to 1.0	-A4C	592-EEAT	-A5C	592-EEAT	-A6C	592-EEAT
00	1.0 to 2.9	-A4D	592-EECT	-A5D	592-EECT	-A6D	592-EECT
00	1.6 to 5.0	-A4E	592-EECT	-A5E	592-EECT	-A6E	592-EECT
00	3.7 to 12	-A4F	592-EEDT	-A5F	592-EEDT	-A6F	592-EEDT

### E1 Plus Overload Relay with Automatic/Manual Reset, Field Selectable Trip Class 10, 15, 20, or 30, Phase Loss, Jam Protection, and Ground Fault Protection.

To mount the E1 Plus overload relay, the overload relay panel adapter will need to be replaced. Order part number 193-EPB. The 193-EPB panel adapter is compatible with all of the E1 Plus overload listed in the table below.

To mount the E3 Plus overload relay, in place of the SMP-3, the overload relay panel adapter will need to be replaced. Order part number 193-ECPM1.

Add catalog numbers 193-EGM or 193-EJM to the E1 Plus catalog number if Ground Fault or Jam Protection is required.

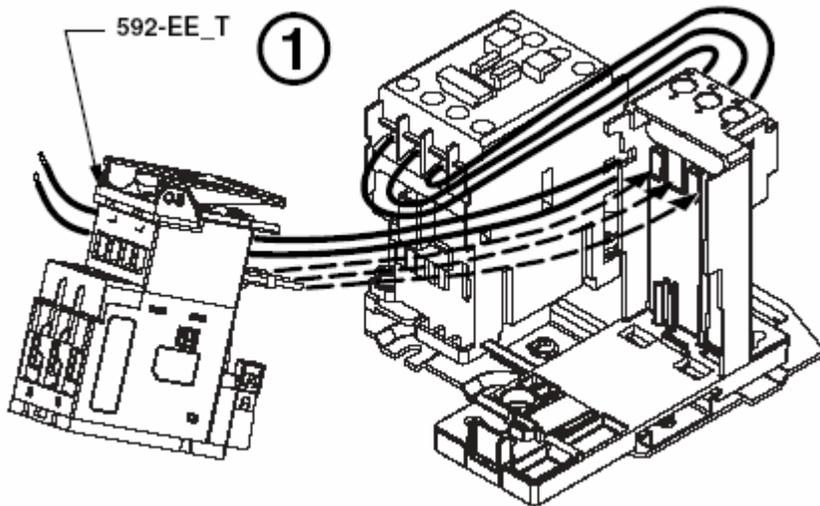
The E3 Plus overloads include Ground Fault and Jam Protection, as standard, but must be configured via a DeviceNet network or a hand held programming terminal with a continuous power source of 24V DC from a DeviceNet network or a power supply.

To mount the E3 Plus overload relay, in place of the SMP-3, the overload relay panel adapter will need to be replaced. Order part number 193-ECPM1.

<b>E1 Plus Overload Relay with Automatic/Manual Reset, Field Selectable Trip Class 10, 15, 20, or 30, Phase Loss, Jam Protection, and Ground Fault Protection</b>				
Starter Size	Full Load Current Adjustment Range (A)	Catalog No. Suffix Code	Overload Relay Catalog No.	E1 Plus Ground Fault or Jam Module
00	0.1 to 0.32	-B1A	592-EEAT	193-EGM or 193-EJM
00	0.32 to 1.0	-B1C	592-EEAT	193-EGM or 193-EJM
00	1.0 to 2.9	-B1D	592-EECT	193-EGM or 193-EJM
00	1.6 to 5.0	-B1E	592-EECT	193-EGM or 193-EJM
00	3.7 to 12	-B1F	592-EEDT	193-EGM or 193-EJM
<b>E3 Plus DeviceNet Overload Relay with Automatic/Manual Reset, Field Selectable Trip Class 10, 15, 20, or 30, Phase Loss, Jam Protection, with DeviceNet Communication Capability</b>				
00	0.7 to 2.5	-C1D	592-EC2PT (0.4-2.0A) or 592-EC2AT (1-5A)	Included as standard
00	2 to 10	-C1F	592-EC2AT (1-5A) or 592-EC2BT (3-15A)	Included as standard
00	7 to 37	-C1H	592-EC2BT (3-15A)	Included as standard

Bulletin 509 Three Phase Full Voltage NEMA Starters  
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### Solid-State Overload Relay - For Series 'D' Construction (E1 Plus overload shown below)



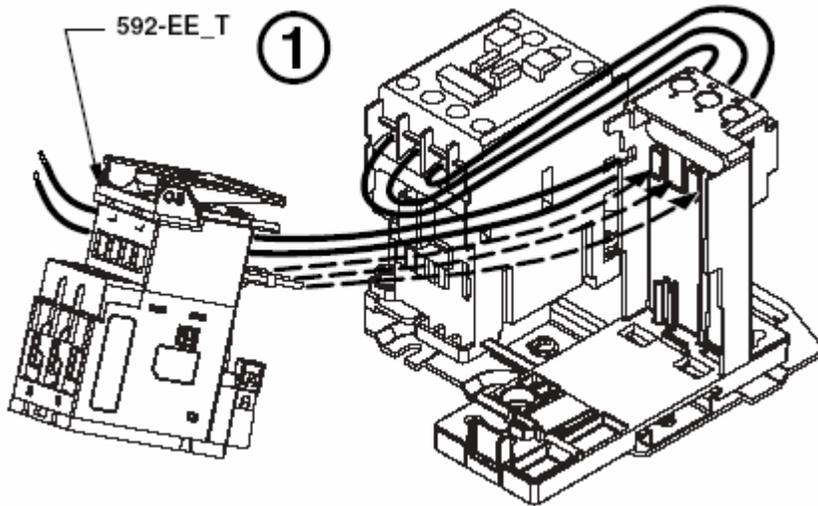
#### E1 Plus Overload Relay with Automatic/Manual Reset, Field Selectable Trip Class 10, 15, 20, or 30, Phase Loss Protection

Order the replacement overload relay catalog number from the table below. For example, the E1 Plus Class 10 overload relay for a 509-TOD-A1A would be ordered as catalog number 592-EEAT. If the Overload Panel Adapter needs to be replaced, order part number 193-EPB. The 193-EPB panel adapter is compatible with all of the E1 Plus overload listed in the table below.

Size	Full Load Current Adjustment Range (A)	Class 10 Cat. No. Suffix Code	Class 10 Overload Cat. No.	Class 20 Cat. No. Suffix Code	Class 20 Overload Cat. No.	Class 30 Cat. No. Suffix Code	Class 30 Overload Cat. No.
E1 Plus Overload Relay Manual Reset, Phase Loss Protection, Class 10, 20, or 30							
00	0.1 to 0.32	-A1A	592-EEAT	-A2A	592-EEAT	-A3A	592-EEAT
00	0.32 to 1.0	-A1C	592-EEAT	-A2C	592-EEAT	-A3C	592-EEAT
00	1.0 to 2.9	-A1D	592-EECT	-A2D	592-EECT	-A3D	592-EECT
00	1.6 to 5.0	-A1E	592-EECT	-A2E	592-EECT	-A3E	592-EECT
00	3.7 to 12	-A1F	592-EEDT	-A2F	592-EEDT	-A3F	592-EEDT
E1 Plus Overload Relay Automatic/Manual Reset, Phase Loss Protection, Class 10, 20, or 30							
00	0.1 to 0.32	-A4A	592-EEAT	-A5A	592-EEAT	-A6A	592-EEAT
00	0.32 to 1.0	-A4C	592-EEAT	-A5C	592-EEAT	-A6C	592-EEAT
00	1.0 to 2.9	-A4D	592-EECT	-A5D	592-EECT	-A6D	592-EECT
00	1.6 to 5.0	-A4E	592-EECT	-A5E	592-EECT	-A6E	592-EECT
00	3.7 to 12	-A4F	592-EEDT	-A5F	592-EEDT	-A6F	592-EEDT

Bulletin 509 Three Phase Full Voltage NEMA Starters  
Size 00 (all series)

## Solid-State Overload Relay - For Series 'D' Construction (E1 Plus overload shown below)



### E1 Plus Overload Relay with Automatic/Manual Reset, Field Selectable Trip Class 10, 15, 20, or 30, Phase Loss, Jam Protection, and Ground Fault Protection

Add catalog numbers 193-EGM or 193-EJM to the E1 Plus catalog number if Ground Fault or Jam Protection is required. If the Overload Panel Adapter needs to be replaced, order part number 193-EPB. The 193-EPB panel adapter is compatible with all of the E1 Plus overloads listed in the table below.

The E3/E3 Plus Overloads will mount directly to the Bulletin 500 size 00, series 'D' contactor. No panel adapter is required. The E3 Plus overloads include Ground Fault and Jam Protection, as standard, but must be configured via a DeviceNet network or a hand held programming terminal with a continuous power source of 24V DC from a DeviceNet network or a power supply.

E1 Plus Overload Relay with Automatic/Manual Reset, Field Selectable Trip Class 10, 15, 20, or 30, Phase Loss, Jam Protection, and Ground Fault Protection				
Starter Size	Full Load Current Adjustment Range (A)	Catalog No. Suffix Code	Overload Relay Catalog No.	E1 Plus Ground Fault or Jam Module
00	0.1 to 0.32	-B1A	592-EEAT	193-EGM or 193-EJM
00	0.32 to 1.0	-B1C	592-EEAT	193-EGM or 193-EJM
00	1.0 to 2.9	-B1D	592-EECT	193-EGM or 193-EJM
00	1.6 to 5.0	-B1E	592-EECT	193-EGM or 193-EJM
00	3.7 to 12	-B1F	592-EEDT	193-EGM or 193-EJM
E3 Plus DeviceNet Overload Relay with Automatic/Manual Reset, Field Selectable Trip Class 10, 15, 20, or 30, Phase Loss, Jam Protection, with DeviceNet Communication Capability				
00	0.7 to 2.5	-C1D	592-EC2PT (0.4-2.0A) or 592-EC2AT (1-5A)	Included as standard
00	2 to 10	-C1F	592-EC2AT (1-5A) or 592-EC2BT (3-15A)	Included as standard
00	7 to 37	-C1H	592-EC2BT (3-15A)	Included as standard

## Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Rockwell Automation does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout this document we use notes to make you aware of safety considerations:

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<b>ATTENTION</b>	Identifies information about practices or circumstances that can lead to personal injury or death, property damage or economic loss
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<b>IMPORTANT</b>	Identifies information that is critical for successful application and understanding of the product.
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Use only replacement parts and devices recommended by Rockwell Automation to maintain the integrity of the equipment. It is the user's responsibility to ensure that the renewal part number selected is properly matched to the model, series and revision level of the equipment being serviced.

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<b>ATTENTION</b>	<p>Servicing energized Industrial Control Equipment can be hazardous. Severe injury or death can result from electrical shock, burn, or unintended actuation of controlled equipment. Recommended practice is to disconnect and lockout control equipment from power sources, and release stored energy, if present.</p>
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Refer to **National Fire Protection Association Standard No. NFPA70E, Part 2 and (as applicable) OSHA rules for Control of Hazardous Energy Sources (Lockout/Tagout) and OSHA Electrical Safety Related Work Practices** for safety related work practices, including procedural requirements for lockout/tagout, and appropriate work practices, personnel qualifications and training requirements where it is not feasible to de-energize and lockout or tagout electric circuits and equipment before working on or near exposed circuit parts.

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