









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	<ul style="list-style-type: none"> • 502 disconnect switch • 503 circuit breaker 	<ul style="list-style-type: none"> • 506 disconnect switch • 507 circuit breaker 	<ul style="list-style-type: none"> • 512/512M disconnect switch • 513/513M circuit breaker 	<ul style="list-style-type: none"> • 512H disconnect switch • 513H circuit breaker 	<ul style="list-style-type: none"> • 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
Product Selection	Page 1-79 (Bul. 502) or page 1-80 (Bul. 503)	Page 1-81 (Bul. 506) or page 1-82 (Bul. 507)	Page 1-84 (Bul. 512), page 1-86 (Bul. 512M), page 1-87 (Bul. 513), page 1-90 (Bul. 513M)	Web†	Web†

			
Bulletin	522/523	1232X/1233X	1232V/1233V
Features	<ul style="list-style-type: none"> • 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
Disconnecting Means	<ul style="list-style-type: none"> • 522E,F,G disconnect switch • 523E,F,G circuit breaker 	<ul style="list-style-type: none"> • 1232X disconnect switch • 1233X circuit breaker 	<ul style="list-style-type: none"> • 1232V disconnect switch • 1233V 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)
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	—	—
Product Selection	Page 1-91 (Bul. 522) or page 1-95 (Bul. 523)	Page 1-100 (Bul. 1232X) or page 1-103 (Bul. 1233X)	Page 1-101 (Bul. 1232V) or page 1-105 (Bul. 1233V)

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

Note: For reduced voltage starters such as wye-delta, part-winding, and autotransformer, see the Industrial Controls Catalog website: www.ab.com/catalogs.

Configuration of a Basic Combination Starter

The information below is for reference purposes only. 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 - A2E - 1 - 24R - 90
 a b c d e f

1

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
512M	Non-reversing combination starter with disconnect switch — extra panel space
513	Non-reversing combination starter with circuit breaker
513M	Non-reversing combination starter with circuit breaker — extra panel space
522E	2-speed, separate-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, separate-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
1232	Pump panel with disconnect switch (Narrow)
1232X	Pump panel with disconnect switch (Extra space)
1232V	Pump panel with vacuum contactor and disconnect switch (Extra space)
1233	Pump panel with circuit breaker (Narrow)
1233X	Pump panel with circuit breaker (Extra space)
1233V	Pump panel with vacuum contactor and circuit breaker (Extra space)

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

Enclosure Type	
Code	Type
A	Type 1: General purpose, painted metal enclosure with spring latch door fastener, external overload relay reset, and non-metallic handle
F	Type 3R/4/12: Rainproof, watertight, dusttight, painted metal enclosure with screw fasteners, external overload relay reset, and non-metallic handle
J	Type 3R/4/12: Rainproof, watertight, dusttight, painted metal enclosure with door safety hardware, metal handle, and NO external overload relay reset
N	Type 3R: Rainproof, painted metal 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
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.
H	Type 3R/7/9: Hazardous location bolted enclosure, rain proof, metal handle.
U	Type 3R/7/9: Hazardous location Unilock enclosure, rain proof, metal handle.

Coil Voltage			
Voltage Code	Description	Line Voltage [V]	Coil Voltage [V]
H	Common Control (without transformer)	208	208
A		240	240
B		480	480
C		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

Overload Relay	
Code	Description
None	Eutectic Alloy
See page 1-164	Solid-State

Options	
See page 1-109	

***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.

NEMA Combination Non-Reversing Starters

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



1



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
- 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

Modifications..... 1-108
 Accessories..... 1-111
 Specifications..... 1-128
 Approximate Dimensions..... 1-146

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 1-164.

NEMA Size	Continuous Ampere Rating [A]	Max. Hp Rating Full Load Current Must Not Exceed Continuous Ampere Rating				Line Voltage [V]	Fuse Clip Rating Amperes [A] Fuses not included. Select per NEC	Type 1 General Purpose	Type 3R/4/12 Rainproof, Waterproof, Dusttight	Type 3R/4/12 Rainproof, Waterproof, Dusttight (Door Safety Hardware)†	Type 4/4X Watertight Corrosion-Resistant Stainless Steel
		Motor Voltage									
		60 Hz	60 Hz	50 Hz	60 Hz						
		200V	230V	380 ... 415V	460 ... 575V						
0	18	3	3	—	—	208...240	30	512-AA⊗-24R	512-AF⊗-24R	512-AJ⊗-24R	512-AC⊗-24R
		—	—	5	5	480...600	30	512-AA⊗-24R	512-AF⊗-24R	512-AJ⊗-24R	512-AC⊗-24R
1	27	7-1/2	7-1/2	—	—	208...240	30	512-BA⊗-24R	512-BF⊗-24R	512-BJ⊗-24R	512-BC⊗-24R
		—	—	10	10	480...600	30	512-BA⊗-24R	512-BF⊗-24R	512-BJ⊗-24R	512-BC⊗-24R
		7-1/2	7-1/2	—	—	208...240	60	512-BA⊗-25R	512-BF⊗-25R	512-BJ⊗-25R	512-BC⊗-25R
		—	—	10	10	480...600	60	512-BA⊗-25R	512-BF⊗-25R	512-BJ⊗-25R	512-BC⊗-25R
2	45	—	—	25	25	480...600	30	512-CA⊗-24R	512-CF⊗-24R	512-CJ⊗-24R	512-CC⊗-24R
		10	15	—	—	208...240	60	512-CA⊗-25R	512-CF⊗-25R	512-CJ⊗-25R	512-CC⊗-25R
		—	—	25	25	480...600	60	512-CA⊗-25R	512-CF⊗-25R	512-CJ⊗-25R	512-CC⊗-25R
		10	15	—	—	208...240	100	512-CA⊗-26J	512-CF⊗-26J	512-CJ⊗-26J	512-CC⊗-26J
		—	—	25	25	480...600	100	512-CA⊗-26J	512-CF⊗-26J	512-CJ⊗-26J	512-CC⊗-26J

*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**.

⊗ 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 1-78 Note)		AD	AD	CD	CD
120V Separate Control (without transformer)		AD	AD	CD	CD

⊗ Overload Relay Code

Use to order solid-state overload relay. Do not use when ordering eutectic alloy overload relay. The cat. no. as listed is incomplete.

Select an overload relay code from page 1-159 to complete the cat. no.

Example: **Cat. No. 512-AAB-24R** becomes **Cat. No. 512-AAB-A2E-24R**.