CATALOG

NEMA full voltage power devices



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Magnetic contactors

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Open/enclosed magnetic NEMA-style contactors

Overview

NEMA sizes 00–6
600 V maximum 50/60 Hz
600 Amperes maximum
400 hp maximum



CR305A002



CR306D10200AAAAA

Application

ABB's magnetic contactor is designed for use on today's modern equipment. Predominantly used for controlling the start and stop of AC motors, it can also handle resistive and capacitive loads in some applications. These 300-line contactors are known for their reliability and robustness, making them a durable choice for demanding applications where overload protection is provided separately.

Features

- Easy disassembly for maintenance and inspection of contacts.
- Auxiliary contacts with vertical contact surfaces enclosed to prevent accumulation of dust and dirt.
- Attractive, modern, squared-off enclosure.
- Magnet faces specially treated to resist rust.
- Provision for ring terminals may be specified as a special feature if required.
- Each CR305 contactor is furnished with a normally open auxiliary contact for use as a holding interlock in three-wire control circuits. This auxiliary contact has the same rating as a main pole (contact) for sizes 00, 0 and 1. If this contact is not required on these sizes, specify contactor with one less pole.
- Motor full-load current should not exceed continuous ampere rating of contactor.

Open/enclosed magnetic NEMA-style contactors

CR305 non-reversing contactors, single-phase, 1- and 2-pole

Non-reversing, NEMA type 1, 3R, 12, 4/4X
NEMA sizes 00–6
600 volts maximum 50/60 Hz

1- and 2-pole:
Includes holding contact (normally open) and pressure terminals for the line and load connections on NEMA sizes 0–6 in types 1, 3R, 12 and 4/4X enclosure, and open-type NEMA sizes 00–5. Open-type NEMA size 6 are supplied with bus bar type connections only.

However, pressure box terminals are available, if required, and can be ordered by description, using the terminology: “Similar to (a listed product number) except with pressure box terminals.”

CR305, single-phase, 1-pole magnetic contactors NEMA sizes 00–1

NEMA size	Continuous ampere rating[1] Enclosed	Continuous ampere rating[1] Open	Voltage @ 60 Hz	hp	Open type Product number	NEMA type 1 Product number	NEMA type 3R Product number	NEMA type 12 Product number	NEMA type 4/4X Product number
00	9 A	10 A	115–120	⅓	Use NEMA size 0	Use NEMA size 0	–	–	–
00	9 A	10 A	230–240	1	Use NEMA size 0	Use NEMA size 0	–	–	–
0	18 A	20 A	115–120	1	CR305J002ADA	CR305J102ADA	–	–	–
0	18 A	20 A	230–240	2	CR305J003ADA	CR305J103ADA	–	–	–
1	27 A	30 A	115–120	2	CR305K002ADA	CR305K102ADA	–	–	CR305K402ADA
1	27 A	30 A	230–240	3	CR305K003ADA	CR305K103ADA	–	–	CR305K403ADA

CR305, single-phase, 2-pole magnetic contactors NEMA sizes 00–6

NEMA size	Continuous ampere rating[1] Enclosed	Continuous ampere rating[1] Open	Voltage @ 60 Hz	hp	Open type Product number	NEMA type 1 Product number	NEMA type 3R Product number	NEMA type 12 Product number	NEMA type 4/4X Product number
00	9 A	10 A	115–120	⅓	CR305H002	CR305H10200ZAAAA	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0
00	9 A	10 A	230–240	1	CR305H003	CR305H10300ZAAAA	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0
0	18 A	20 A	115–120	1	CR305J002	CR305J10200ZAAAA	CR305J60200ZAAAA	CR305J20200ZAAAA	CR305J40200ZAAAA
0	18 A	20 A	230–240	2	CR305J003	CR305J10300ZAAAA	CR305J60300ZAAAA	CR305J20300ZAAAA	CR305J40300ZAAAA
1	27 A	30 A	115–120	2	CR305K002	CR305K10200ZAAAA	CR305K60200ZAAAA	CR305K20200ZAAAA	CR305K40200ZAAAA
1	27 A	30 A	230–240	3	CR305K003	CR305K10300ZAAAA	CR305K60300ZAAAA	CR305K20300ZAAAA	CR305K40300ZAAAA
2	45 A	50 A	115–120	3	CR305L002	CR305L10200ZAAAA	CR305L60200ZAAAA	CR305L20200ZAAAA	CR305L40200ZAAAA
2	45 A	50 A	230–240	7½	CR305L003	CR305L10300ZAAAA	CR305L60300ZAAAA	CR305L20300ZAAAA	CR305L40300ZAAAA
3	90 A	100 A	115–120	7½	CR305M002	CR305M10200ZAAAA	CR305M60200ZAAAA	CR305M20200ZAAAA	CR305M40200ZAAAA
3	90 A	100 A	230–240	15	CR305M003	CR305M10300ZAAAA	CR305M60300ZAAAA	CR305M20300ZAAAA	CR305M40300ZAAAA
3	90 A	100 A	460–480	25	CR305M004	CR305M10400ZAAAA	CR305M60400ZAAAA	CR305M20400ZAAAA	CR305M40400ZAAAA
3	90 A	100 A	575–600	25	CR305M005	CR305M10500ZAAAA	CR305M60500ZAAAA	CR305M20500ZAAAA	CR305M40500ZAAAA
4	135 A	150 A	115–120	–	CR305N002	CR305N10200ZAAAA	CR305N60200ZAAAA	CR305N20200ZAAAA	CR305N40200ZAAAA
4	135 A	150 A	200–208	–	CR305N023	CR305N12300ZAAAA	CR305N62300ZAAAA	CR305N22300ZAAAA	CR305N42300ZAAAA
4	135 A	150 A	230–240	–	CR305N003	CR305N10300ZAAAA	CR305N60300ZAAAA	CR305N20300ZAAAA	CR305N40300ZAAAA
4	135 A	150 A	460–480	–	CR305N004	CR305N10400ZAAAA	CR305N60400ZAAAA	CR305N20400ZAAAA	CR305N40400ZAAAA
4	135 A	150 A	575–600	–	CR305N005	CR305N10500ZAAAA	CR305N60500ZAAAA	CR305N20500ZAAAA	CR305N40500ZAAAA
5	270 A	300 A	115–120	–	CR305P002	CR305P10200ZAAAA	CR305P60200ZAAAA	–	CR305P40200ZAAAA
5	270 A	300 A	200–208	–	CR305P023	CR305P12300ZAAAA	CR305P62300ZAAAA	–	CR305P42300ZAAAA
5	270 A	300 A	230–240	–	CR305P003	CR305P10300ZAAAA	CR305P60300ZAAAA	–	CR305P40300ZAAAA
5	270 A	300 A	460–480	–	CR305P004	CR305P10400ZAAAA	CR305P60400ZAAAA	–	CR305P40400ZAAAA
5	270 A	300 A	575–600	–	CR305P005	CR305P10500ZAAAA	CR305P60500ZAAAA	–	CR305P40500ZAAAA
6	540 A	600 A	115–120	–	CR305HR002	–	–	–	–
6	540 A	600 A	200–208	–	CR305HR023	–	–	–	–
6	540 A	600 A	230–240	–	CR305HR003	–	–	–	–
6	540 A	600 A	460–480	–	CR305HR004	–	–	–	–
6	540 A	600 A	575–600	–	CR305HR005	–	–	–	–

Open/enclosed magnetic NEMA-style contactors

CR305 non-reversing contactors, 3-phase, 3-pole

Non-reversing, NEMA type 1, 3R, 12, 4/4X
NEMA sizes 00–6
600 volts maximum 50/60 Hz

3-pole:
Includes holding contact (normally open) and pressure terminals for the line and load connections on all NEMA sizes 00–5. NEMA size 6 contactor forms are furnished with bus bar type connections only as standard.

CR305, 3-phase, 3-pole magnetic contactors NEMA sizes 00–6

NEMA size	Continuous ampere rating[1] Enclosed	Open	Voltage @ 60 Hz	hp	Open type Product number	NEMA type 1 Product number	NEMA type 3R Product number	NEMA type 12 Product number	NEMA type 4/4X Product number
00	9 A	10 A	115–120	–	CR305A002	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0
00	9 A	10 A	200–208	1½	CR305A023	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0
00	9 A	10 A	230–240	1½	CR305A003	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0
00	9 A	10 A	460–480	2	CR305A004	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0
00	9 A	10 A	575–600	2	CR305A005	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0
0	18 A	20 A	115–120	–	CR305B002	CR305B10200ZAAAA	CR305B60200ZAAAA	CR305B20200ZAAAA	CR305B40200ZAAAA
0	18 A	20 A	200–208	3	CR305B023	CR305B12300ZAAAA	CR305B62300ZAAAA	CR305B22300ZAAAA	CR305B42300ZAAAA
0	18 A	20 A	230–240	3	CR305B003	CR305B10300ZAAAA	CR305B60300ZAAAA	CR305B20300ZAAAA	CR305B40300ZAAAA
0	18 A	20 A	460–480	5	CR305B004	CR305B10400ZAAAA	CR305B60400ZAAAA	CR305B20400ZAAAA	CR305B40400ZAAAA
0	18 A	20 A	575–600	5	CR305B005	CR305B10500ZAAAA	CR305B60500ZAAAA	CR305B20500ZAAAA	CR305B40500ZAAAA
1	27 A	30 A	115–120	–	CR305C002	CR305C10200ZAAAA	CR305C60200ZAAAA	CR305C20200ZAAAA	CR305C40200ZAAAA
1	27 A	30 A	200–208	7½	CR305C023	CR305C12300ZAAAA	CR305C62300ZAAAA	CR305C22300ZAAAA	CR305C42300ZAAAA
1	27 A	30 A	230–240	7½	CR305C003	CR305C10300ZAAAA	CR305C60300ZAAAA	CR305C20300ZAAAA	CR305C40300ZAAAA
1	27 A	30 A	460–480	10	CR305C004	CR305C10400ZAAAA	CR305C60400ZAAAA	CR305C20400ZAAAA	CR305C40400ZAAAA
1	27 A	30 A	575–600	10	CR305C005	CR305C10500ZAAAA	CR305C60500ZAAAA	CR305C20500ZAAAA	CR305C40500ZAAAA
2	45 A	50 A	115–120	–	CR305D002	CR305D10200ZAAAA	CR305D60200ZAAAA	CR305D20200ZAAAA	CR305D40200ZAAAA
2	45 A	50 A	200–208	10	CR305D023	CR305D12300ZAAAA	CR305D62300ZAAAA	CR305D22300ZAAAA	CR305D42300ZAAAA
2	45 A	50 A	230–240	15	CR305D003	CR305D10300ZAAAA	CR305D60300ZAAAA	CR305D20300ZAAAA	CR305D40300ZAAAA
2	45 A	50 A	460–480	25	CR305D004	CR305D10400ZAAAA	CR305D60400ZAAAA	CR305D20400ZAAAA	CR305D40400ZAAAA
2	45 A	50 A	575–600	25	CR305D005	CR305D10500ZAAAA	CR305D60500ZAAAA	CR305D20500ZAAAA	CR305D40500ZAAAA
3	90 A	100 A	115–120	–	CR305E002	CR305E10200ZAAAA	CR305E60200ZAAAA	CR305E20200ZAAAA	CR305E40200ZAAAA
3	90 A	100 A	200–208	25	CR305E023	CR305E12300ZAAAA	CR305E62300ZAAAA	CR305E22300ZAAAA	CR305E42300ZAAAA
3	90 A	100 A	230–240	30	CR305E003	CR305E10300ZAAAA	CR305E60300ZAAAA	CR305E20300ZAAAA	CR305E40300ZAAAA
3	90 A	100 A	460–480	50	CR305E004	CR305E10400ZAAAA	CR305E60400ZAAAA	CR305E20400ZAAAA	CR305E40400ZAAAA
3	90 A	100 A	575–600	50	CR305E005	CR305E10500ZAAAA	CR305E60500ZAAAA	CR305E20500ZAAAA	CR305E40500ZAAAA
4	135 A	150 A	115–120	–	CR305F002	CR305F10200ZAAAA	CR305F60200ZAAAA	CR305F20200ZAAAA	CR305F40200ZAAAA
4	135 A	150 A	200–208	40	CR305F023	CR305F12300ZAAAA	CR305F60200ZAAAA	CR305F22300ZAAAA	CR305F42300ZAAAA
4	135 A	150 A	230–240	50	CR305F003	CR305F10300ZAAAA	CR305F60300ZAAAA	CR305F20300ZAAAA	CR305F40300ZAAAA
4	135 A	150 A	460–480	100	CR305F004	CR305F10400ZAAAA	CR305F60400ZAAAA	CR305F20400ZAAAA	CR305F40400ZAAAA
4	135 A	150 A	575–600	100	CR305F005	CR305F10500ZAAAA	CR305F60500ZAAAA	CR305F20500ZAAAA	CR305F40500ZAAAA
5	270 A	300 A	115–120	–	CR305G002	CR305G10200ZAAAA	CR305G60200ZAAAA	CR305G20200ZAAAA	CR305G40200ZAAAA
5	270 A	300 A	200–208	75	CR305G023	CR305G12300ZAAAA	CR305G62300ZAAAA	CR305G22300ZAAAA	CR305G42300ZAAAA
5	270 A	300 A	230–240	100	CR305G003	CR305G10300ZAAAA	CR305G60300ZAAAA	CR305G20300ZAAAA	CR305G40300ZAAAA
5	270 A	300 A	460–480	200	CR305G004	CR305G10400ZAAAA	CR305G60400ZAAAA	CR305G20400ZAAAA	CR305G40400ZAAAA
5	270 A	300 A	575–600	200	CR305G005	CR305G10500ZAAAA	CR305G60500ZAAAA	CR305G20500ZAAAA	CR305G40500ZAAAA
6	540 A	600 A	115–120	–	CR305HH002	CR305HH10200ZAAAA	CR305HH60200ZAAAA	CR305HH20200ZAAAA	CR305HH40200ZAAAA
6	540 A	600 A	200–208	150	CR305HH023	CR305HH12300ZAAAA	CR305HH62300ZAAAA	CR305HH22300ZAAAA	CR305HH42300ZAAAA
6	540 A	600 A	230–240	200	CR305HH003	CR305HH10300ZAAAA	CR305HH60300ZAAAA	CR305HH20300ZAAAA	CR305HH40300ZAAAA
6	540 A	600 A	460–480	400	CR305HH004	CR305HH10400ZAAAA	CR305HH60400ZAAAA	CR305HH20400ZAAAA	CR305HH40400ZAAAA
6	540 A	600 A	575–600	400	CR305HH005	CR305HH10500ZAAAA	CR305HH60500ZAAAA	CR305HH20500ZAAAA	CR305HH40500ZAAAA

Open/enclosed magnetic NEMA-style contactors

CR305 non-reversing contactors, 3-phase, 4-pole

Non-reversing, NEMA type 1, 3R, 12, 4/4X
NEMA sizes 00–6
600 volts maximum 50/60 Hz

4-pole:
Includes holding contact (normally open) and pressure terminals for the line and load connector.

CR305, 3-phase, 4-pole magnetic contactors NEMA sizes 00–5

NEMA size	Continuous ampere rating[1] Enclosed	Open	Voltage @ 60 Hz	hp	Open type Product number
0	18 A	20 A	115–120	–	CR305R002AEA
0	18 A	20 A	200–208	3	CR305R023AEA
0	18 A	20 A	230–240	3	CR305R003AEA
0	18 A	20 A	460–480	5	CR305R004AEA
0	18 A	20 A	575–600	5	CR305R005AEA
1	27 A	30 A	115–120	–	CR305S002AEA
1	27 A	30 A	200–208	7½	CR305S023AEA
1	27 A	30 A	230–240	½	CR305S003AEA
1	27 A	30 A	460–480	10	CR305S004AEA
1	27 A	30 A	575–600	10	CR305S005AEA
2	45 A	50 A	115–120	–	CR305T002
2	45 A	50 A	200–208	10	CR305T023
2	45 A	50 A	230–240	15	CR305T003
2	45 A	50 A	460–480	25	CR305T004
2	45 A	50 A	575–600	25	CR305T005
3	90 A	100 A	115–120	–	CR305U002
3	90 A	100 A	200–208	25	CR305U023
3	90 A	100 A	230–240	30	CR305U003
3	90 A	100 A	460–480	50	CR305U004
3	90 A	100 A	575–600	50	CR305U005
4	135 A	150 A	115–120	–	CR305W002
4	135 A	150 A	200–208	40	CR305W023
4	135 A	150 A	230–240	50	CR305W003
4	135 A	150 A	460–480	100	CR305W004
4	135 A	150 A	575–600	100	CR305W005
5	270 A	300 A	115–120	–	CR305Z002
5	270 A	300 A	200–208	75	CR305Z023
5	270 A	300 A	230–240	100	CR305Z003
5	270 A	300 A	460–480	200	CR305Z004
5	270 A	300 A	575–600	200	CR305Z005

[1]Motor full-load current should not exceed continuous ampere rating of contactor.

Field-installed contactor modification kits

Auxiliary contacts

NEMA sizes 0–6



CR305X100A

Application

Auxiliary contacts can add to the versatility of magnetic contactors by providing additional control circuits to do a variety of jobs without adding to the width of the contactor.

Kits make it easy to add contacts to control accessory equipment such as indicating lights. Auxiliary contacts can be added to all across-the-line magnetic contactors. Each auxiliary contact is rated 10 amperes AC, resistive load, NEMA “A600,” and is suitable for either right or left side mounting. An insulating shield is also provided between each auxiliary contact unit and the contactor.

Auxiliary contacts are furnished in the basic block design or as an adder block. Each contact is marked NO or NC on the block and is not convertible. Logic reed contacts suitable for low energy level circuits are also available. These are designed for applications on low-voltage control circuits (24 volts and below), such as inputs to computers and programmable starters.

Product number selection instructions

1. Order by quantity and complete product number.
   Example: Three CR305X300A

Field-installed contactor modification kits

Auxiliary contacts

For CR305 contactors

Auxiliary contact kits

NEMA size	Contact configuration	Block design	Product number
0,1	1 NO	Basic	CR305X100A
0,1	1 NC	Basic	CR305X100B
0,1	1 NO–1 NC	Basic	CR305X100C
2	1 NO	Basic	CR305X200A
2	1 NC	Basic	CR305X200B
2	1 NO–1 NC	Basic	CR305X200C
3, 4	1 NO	Basic	CR305X300A
3, 4	1 NC	Basic	CR305X300B
3, 4	1 NO–1 NC	Basic	CR305X300C
5, 6	1 NO	Basic	CR305X500A
5, 6	1 NC	Basic	CR305X500B
5, 6	1 NO–1 NC	Basic	CR305X500C

Auxiliary contact kits — adder blocks

NEMA size	Contact configuration	Block design	Product number
0–6	1 NO	Adder	CR305X100D[1]
0–6	1 NC	Adder	CR305X100E[1]

Logic reed switch auxiliary contacts

NEMA size	Contact configuration	Product number
00, 0, 1	1 NO-0 NC	CR305X100RA
00, 0, 1	0 NO-1 NC	CR305X100RB
00, 0, 1	1 NO–1 NC	CR305X100RC
2	1 NO-0 NC	CR305X200RA
2	0 NO-1 NC	CR305X200RB
2	1 NO–1 NC	CR305X200RC
3, 4	1 NO-0 NC	CR305X300RA
3, 4	0 NO-1 NC	CR305X300RB
3, 4	1 NO–1 NC	CR305X300RC
5, 6	1 NO-0 NC	CR305X500RA
5, 6	0 NO-1 NC	CR305X500RB
5, 6	1 NO–1 NC	CR305X500RC

[1]First adder block must be mounted to a basic block. A second adder block can be added to the first adder block on size 2 through size 9 starters.
Four extra auxiliary contacts (not blocks) is the maximum that can be added to either a NEMA size 0 or 1 starter while five is the maximum extra auxiliary contacts that can be added to NEMA size 2 through 6 devices.

Field-installed contactor modification kits

Auxiliary contacts

Contact ratings — basic blocks

High fidelity contact basic block

120 V AC maximum 0.15 A maximum, 8 VA maximum resistive.
30 V DC maximum 0.15 A maximum, 4.5 VA maximum resistive.

—

Standard block

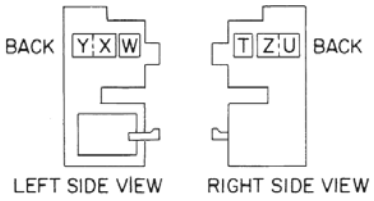
AC volts	Continuous current amperes	Inrush current amperes	DC volts	Continuous current amperes	Inrush current amperes
115	6.0	60	125	1.1	–
230	3.0	30	250	0.5	–
460	1.5	15	–	–	–
575	1.2	12	–	–	–

Field-installed contactor modification kits

Auxiliary contacts

Selection and installation guides

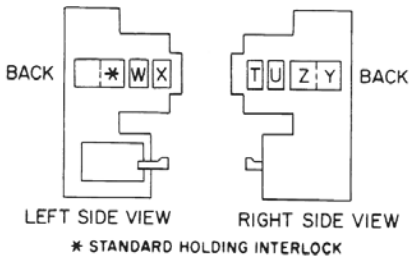
Extra auxiliary contact table
For NEMA size 0 and 1, AC coils only



NEMA sizes 0 and 1, single-speed, nonreversing, 2- and 3-pole (side views)

Contact location 5 contacts max.						Kits for field modification order in quantities shown				
						CR305 X100A	CR305 X100B	CR305 X100C[1]	CR305 X100D	CR305 X100E
W	X	Y	Z	T	U	Basic blocks			Adder blocks	
	⊣⊢					1				
		⋕					1			
	⊣⊢	⋕						1		
⊣⊢	⊣⊢					1			1	
⋕		⋕					1			1
⊣⊢	⊣⊢	⋕						1	1	
⋕	⊣⊢	⋕						1		1
⊣⊢	⊣⊢			⊣⊢		2			1	
⋕		⋕	⊣⊢		⋕		2			1
⊣⊢	⊣⊢		⋕	⊣⊢		2			2	
⋕		⋕			⋕		2			2
	⊣⊢	⋕		⊣⊢	⋕			2		
⊣⊢	⊣⊢	⋕		⊣⊢		1		1	1	
⋕	⊣⊢	⋕			⋕		1	1		1

Extra auxiliary contact table
For NEMA size 2, 3 and 4, AC coils only



NEMA sizes 2, 3 and 4, single-speed, nonreversing (side views)

Contact location 5 contacts max.						Kits for field modification order in quantities shown				
										For size 2
						CR305 X200A	CR305 X200B	CR305 X200C[1]	CR305 X100D	CR305 X100E
										For size 3, 4
						CR305 X300A	CR305 X300B	CR305 X300C[1]	CR305 X100D	CR305 X100E
W	X	Y	Z	T	U	Basic blocks			Adder blocks	
⊣⊢									1	
⋕										1
		⋕	⊣⊢					1		
⊣⊢	⊣⊢								2	
⋕	⋕									2
⊣⊢		⋕	⊣⊢					1	1	
⋕		⋕	⊣⊢					1		1
⊣⊢	⊣⊢		⊣⊢			1			2	
⋕	⋕	⋕					1			2
⊣⊢	⊣⊢	⋕	⊣⊢		⊣⊢	1			3	
⋕	⋕	⋕			⋕		1			3
⋕	⊣⊢	⋕	⊣⊢					1	1	1
⊣⊢	⊣⊢	⋕	⊣⊢					1	2	
⋕	⋕	⋕	⊣⊢					1		2
⋕	⊣⊢	⋕	⊣⊢		⊣⊢			1	2	1
⋕	⊣⊢	⋕	⊣⊢		⋕			1	1	2
⊣⊢	⊣⊢	⋕	⊣⊢		⊣⊢			1	3	
⋕	⋕	⋕	⊣⊢		⋕			1		3
⊣⊢	⊣⊢		⊣⊢	⊣⊢	⊣⊢	1			4	
⋕	⋕	⋕		⋕	⋕		1			4

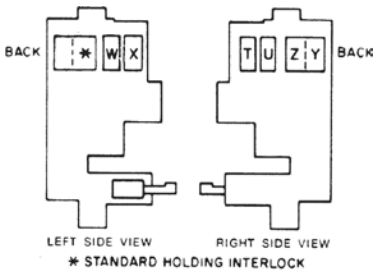
Field-installed contactor modification kits

Auxiliary contacts

Selection and installation guides

Extra auxiliary contact table
For NEMA size 5 and 6, AC coils only

Contact location 5 contacts max.							Kits for field modification order in quantities shown				
							CR305 X200A	CR305 X200B	CR305 X200C[1]	CR305 X100D	CR305 X100E
							CR305 X300A	CR305 X300B	CR305 X300C[1]	CR305 X100D	CR305 X100E
W	X	Y	Z	T	U		Basic blocks			Adder blocks	
⫩										1	
⫫											1
		⫫	⫩						1		
⫩	⫩									2	
⫫	⫫										2
⫩		⫫	⫩						1	1	
⫫		⫫	⫩						1		1
⫩	⫩		⫩				1			2	
⫫	⫫	⫫						1			2
⫩	⫩		⫩		⫩		1			3	
⫫	⫫	⫫			⫫			1			3
⫫	⫩	⫫	⫩						1	1	1
⫩	⫩	⫫	⫩						1	2	
⫫	⫫	⫫	⫩						1		2
⫫	⫩	⫫	⫩		⫩				1	2	1
⫫	⫩	⫫	⫩		⫫				1	1	2
⫩	⫩	⫫	⫩		⫩				1	3	
⫫	⫫	⫫	⫩		⫫				1		3
⫩	⫩		⫩	⫩	⫩		1			4	
⫫	⫫	⫫		⫫	⫫			1			4



NEMA sizes 5 and 6 single-speed, nonreversing (side views)

[1]Both NO and NC contacts must be wired for same polarity

Field-installed contactor modification kits

Pilot device and fifth pole

NEMA sizes 00–6

Pilot device modification kits

The push button and selector switch kits listed here are supplied complete with the necessary components, hardware and written instructions for easy field installation on Type 1 enclosed contactors—CR305.

	Kit type	NEMA size	Product number
 CR305X120N	Momentary contact start-stop push button kit	00, 0, 1	CR305X120N
	Momentary contact start-stop push button kit	2	CR305X220N
	Momentary contact start-stop push button kit	3, 4	CR305X320B
	Momentary contact start-stop push button kit	5	CR305X520B
 CR305X130N	Hand-off-auto selector switch kit	00, 0, 1	CR305X130N
	Hand-off-auto selector switch kit	2	CR305X230N
	Hand-off-auto selector switch kit	3, 4	CR305X330B
	Hand-off-auto selector switch kit	5	CR305X530B
	Off-on selector switch kit	00, 0, 1	CR305X130P
	Off-on selector switch kit	2	CR305X230D
	Off-on selector switch kit	3, 4	CR305X330D
	Off-on selector switch kit	5	CR305X530D

Fifth-pole kits

To be installed on NEMA size 0, 1, and 2 magnetic 4-pole contactors. Permits the addition of a fifth pole with the same rating as the main poles.

	NEMA size	Mounting position	Product number
 CR305X211B	0, 1	Right	CR305X111B
	2 (add to 4-pole form)	Left	CR305X211B

Field-installed contactor modification kits

Surge suppression and control circuit fuses

NEMA sizes 00–6

Surge suppression kit

To be connected in parallel with operating coil where the demands of solid-state circuitry necessitate prevention of undesirable reactions in logic circuits. For use on 120 volt AC only.

	NEMA size	Product number
 CR305X146C	0–6	CR305X146C

Control circuit fuse kits

Control circuit fuse kits are designed for installation on NEMA size 00–5 across-the-line contactors. They install on the side of the contactor and provide fuse protection for control circuit wiring. These kits incorporate one or two 10 ampere 600 volt fuse holders for use with KTK or KTKR fuses (or equivalent). The fuses are easily accessible with the enclosure covers open, and each kit contains instructions and hardware for easy installation.

NEMA size	No. of fuses	Fuse type	Product number
00–1	1	KTK	CR305X141A
00–1	2	KTK	CR305X141B
2	1	KTK	CR305X241A
2	2	KTK	CR305X241B
3, 4	1	KTK	CR305X341A
3, 4	2	KTK	CR305X341B
5, 6	1	KTK	CR305X541A
5, 6	2	KTK	CR305X541B
00–1	1	KTK-R	CR305X141C
00–1	2	KTK-R	CR305X141D
2	1	KTK-R	CR305X241C
2	2	KTK-R	CR305X241D
3, 4	1	KTK-R	CR305X341C
3, 4	2	KTK-R	CR305X341D
5, 6	1	KTK-R	CR305X541C
5, 6	2	KTK-R	CR305X541D

Field-installed contactor modification kits

Control amplifier

NEMA sizes 00–6

Control amplifier

The ABB CR305X control amplifier is suitable for applications with low level 24 volt DC outputs. It allows the low level signals from a programmable control, microprocessor or photoelectric cell to operate ABB's 300-line contactors while their control coils operate at the line voltage. The control amplifier is UL listed and CSA certified, and forms are available for NEMA sizes 00 through 5.

Operation type	NEMA size	Product number
Non-reversing	00, 0, and 1	CR305X112A
Non-reversing	2	CR305X212A
Non-reversing	3 and 4	CR305X312A
Non-reversing	00, 0, 1, 2, 3, and 4	CR305X112P[1]

[1]A quantity of two panel-mount CR305X112P is required for use with reversing contactors and starters.

Field-installed contactor modification kits

Space heaters and mechanical interlocks

NEMA sizes 00–6

Space heater kits

CR305X701 and CR305X702 space heater kits (50 watts, except size 5 and 6 at 100 watts) come complete with one NC auxiliary contact, necessary hardware and ready for installation on any NEMA size 0 through 6 enclosed contactor CR305.



7GSP009115R0006

NEMA size	Operating voltage	Product number
0–1	115	CR305X701D[1]
0–1	230	CR305X701A
0–1	460	CR305X701B
0–1	600	CR305X701C
2, 3, 4	115	CR305X702D
2, 3, 4	230	CR305X702A
2, 3, 4	460	CR305X702B
2, 3, 4	600	CR305X702C
5, 6	115	CR305X705D[1]
5, 6	230	CR305X705A
5, 6	460	CR305X705B
5, 6	600	CR305X705C

Mechanical interlock kits

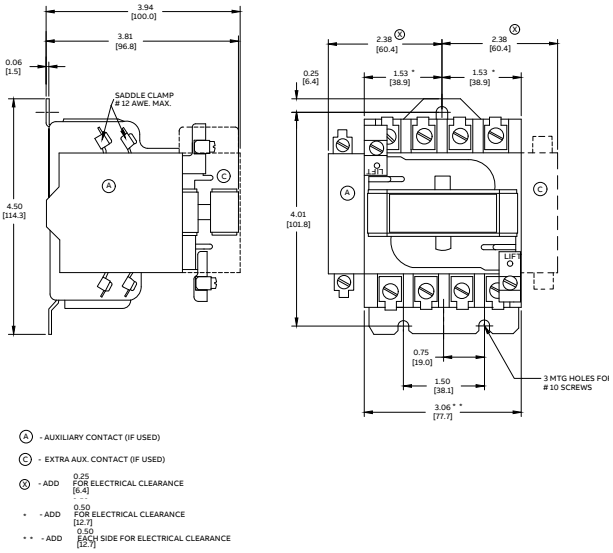
To be installed on open CR305 contactors unless otherwise noted. Kits include all parts to mechanically interlock two devices.

NEMA size	Mounting position	Baseplate	Product number
0–1	Horizontal	No	CR309X100B
2	Horizontal	No	CR309X200D
3–4	Horizontal	No	CR309X300B
5	Horizontal	Yes	CR309X501K
0–1	Vertical	Yes	CR309X102B[2]
2	Vertical	Yes	CR309X202B[2]
3–4	Vertical	Yes	CR309X302B[2]

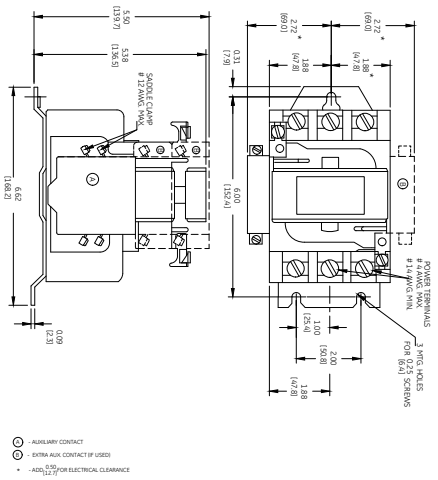
[1]If connected to control circuit transformer, 115-volt heater requires an extra-capacity transformer. Contact nearest ABB representative for additional information.
[2]For contactors top and bottom or contactor on top.
[3]For contactors top and bottom only.

CR305 open magnetic contactors

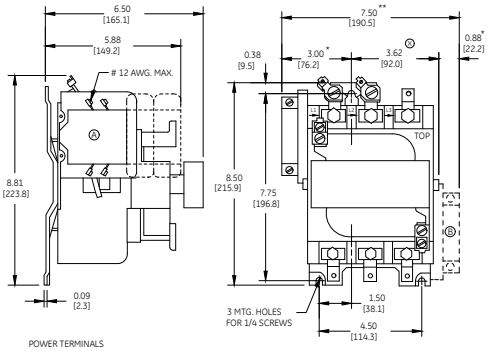
Dimensions



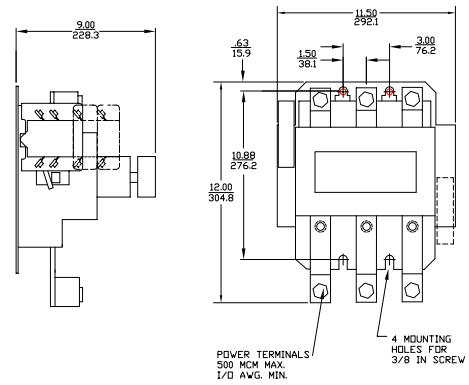
Open type, NEMA sizes 00-1, (auxiliary interlocks not provided on size 00); 2 3/4 lbs.



Open type, NEMA size 2, 7 lbs.



Open type, NEMA sizes 3 and 4; 17 1/2 lbs.

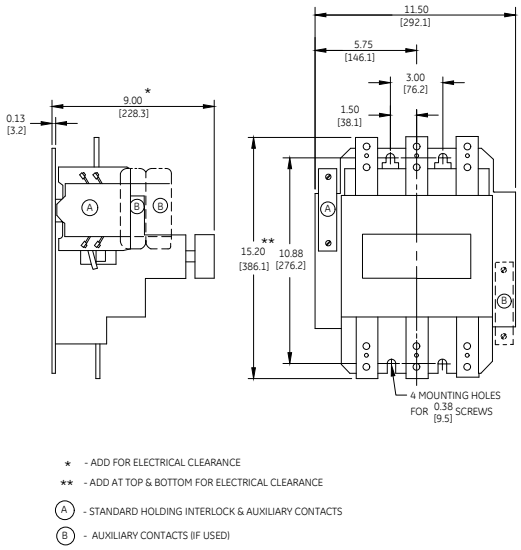


Open type, NEMA size 5, 50 lbs.

Outlines, dimensions ($\frac{\text{in.}}{\text{mm}}$) and weights (for estimating only)

01

CR305 open magnetic contactors
Dimensions



* - ADD FOR ELECTRICAL CLEARANCE

** - ADD AT TOP & BOTTOM FOR ELECTRICAL CLEARANCE

(A) - STANDARD HOLDING INTERLOCK & AUXILIARY CONTACTS

(B) - AUXILIARY CONTACTS (IF USED)

—

CR305, open-type, NEMA size 6; 50 lbs.

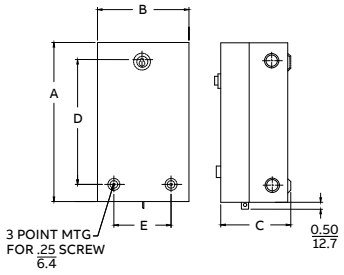
Outlines, dimensions ($\frac{\text{in.}}{\text{mm}}$) and weights (for estimating only)

CR305 enclosed magnetic contactors

Dimensions

CR305 NEMA type 1 lift-off cover without CPT size 00–4

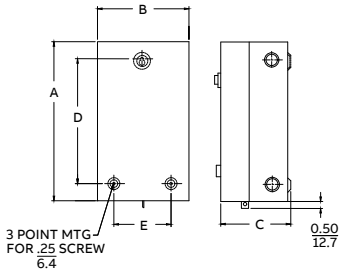
NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Approx. shipping wt. (lbs)
00	10.00 (254.0)	6.00 (152.4)	4.63 (117.5)	8.00 (203.2)	4.00 (101.6)	10
0	10.00 (254.0)	6.00 (152.4)	4.63 (117.5)	8.00 (203.2)	4.00 (101.6)	10
1	10.00 (254.0)	6.00 (152.4)	4.63 (117.5)	8.00 (203.2)	4.00 (101.6)	10
2	13.25 (336.6)	7.38 (187.3)	6.13 (155.6)	11.00 (279.4)	5.00 (127)	15
3	20.25 (514.4)	8.75 (222.2)	7.31 (185.7)	17.00 (431.8)	5.75 (146.0)	35
4	25.00 (635.0)	8.75 (222.2)	7.31 (185.7)	22.00 (558.8)	5.75 (146.0)	40



Type 1, NEMA sizes 00–4
Drawing no. 55-200202S1

CR305 NEMA type 1 lift-off cover with CPT size 00–2

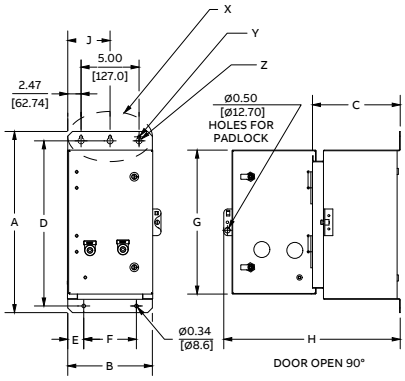
NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Approx. shipping wt. (lbs)
00	10.00 (254.0)	10.00 (254.0)	4.62 (117.3)	8.00 (203.2)	8.00 (203.2)	15
0	10.00 (254.0)	10.00 (254.0)	4.62 (117.3)	8.00 (203.2)	8.00 (203.2)	15
1	10.00 (254.0)	10.00 (254.0)	4.62 (117.3)	8.00 (203.2)	8.00 (203.2)	15
2	13.25 (336.5)	12.00 (304.8)	6.13 (155.7)	11.00 (279.4)	9.00 (228.6)	30



Type 1, NEMA sizes 00–2
Drawing no. 55-200202S1

CR305 enclosed magnetic contactors
Dimensions

CR305 NEMA type 1 hinged cover without CPT size 00–4



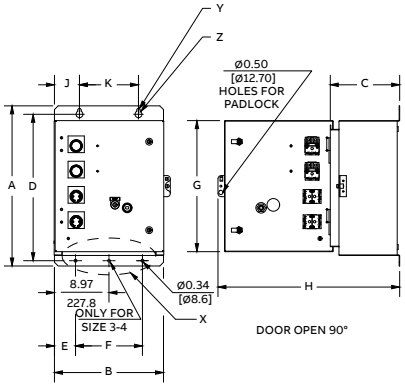
NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
0	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
1	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
2	17.00 (431.8)	7.94 (201.6)	8.23 (209.0)	15.49 (393.4)	1.50 (38.1)	4.94 (125.4)	13.51 (343.1)	16.55 (420.3)	3.97 (100.8)	25
3	30.0 (762)	9.94 (252.4)	8.23 (209.0)	28.37 (720.5)	2.00 (50.8)	5.94 (150.8)	26.55 (674.3)	18.55 (471.1)	–	50
4	30.0 (762)	9.94 (252.4)	8.23 (209.0)	28.37 (720.5)	2.00 (50.8)	5.94 (150.8)	26.55 (674.3)	18.55 (471.1)	–	50

Mounting details

NEMA size	No. of top holes X	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	2	0.40 (10.2)	0.82 (20.8)

Type 1, NEMA sizes 00–4
Drawing no. 270A7282P1_1

CR305 NEMA type 1 hinged cover with CPT size 00–4



NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

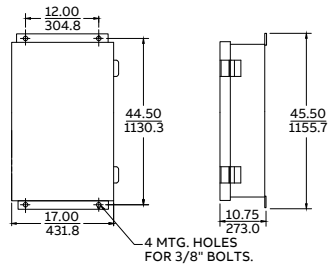
Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

Type 1, NEMA sizes 00–4
Drawing no. 270A7283P1_2

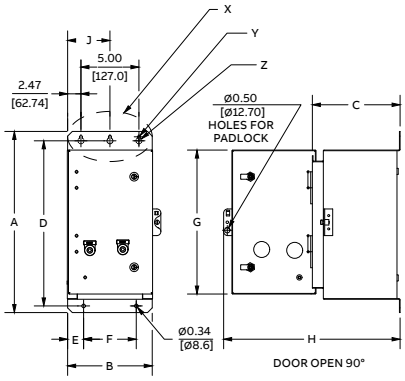
CR305 enclosed magnetic contactors
Dimensions

CR305 NEMA type 1 size 5



Type 1, NEMA size 5
Drawing no. 55-209746S1

CR305 NEMA type 12 hinged cover without CPT size 00–4



NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
0	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
1	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
2	17.00 (431.8)	7.94 (201.6)	8.23 (209.0)	15.49 (393.4)	1.50 (38.1)	4.94 (125.4)	13.51 (343.1)	16.55 (420.3)	3.97 (100.8)	25
3	30.0 (762)	9.94 (252.4)	8.23 (209.0)	28.37 (720.5)	2.00 (50.8)	5.94 (150.8)	26.55 (674.3)	18.55 (471.1)	–	50
4	30.0 (762)	9.94 (252.4)	8.23 (209.0)	28.37 (720.5)	2.00 (50.8)	5.94 (150.8)	26.55 (674.3)	18.55 (471.1)	–	50

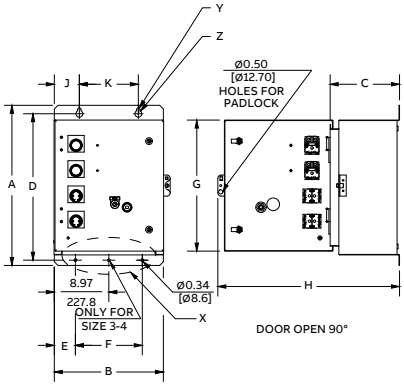
Mounting details

NEMA size	No. of top holes X	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	2	0.40 (10.2)	0.82 (20.8)

Type 12, NEMA sizes 00–4
Drawing no. 270A7282P1_1

CR305 enclosed magnetic contactors
Dimensions

CR305 NEMA type 12 hinged cover with CPT size 00–4



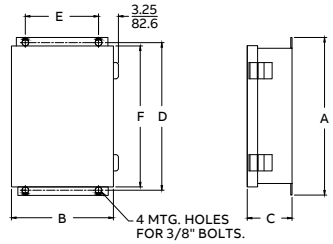
Type 12, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR305 NEMA type 12 size 5



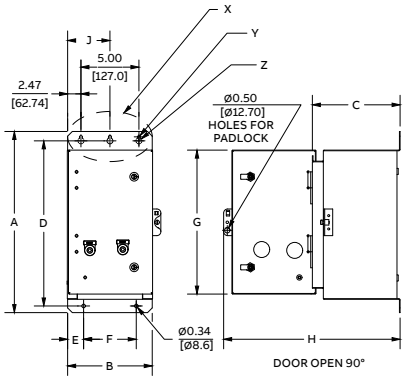
Type 12, NEMA size 5
Drawing no. 55-200201

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Approx. shipping wt. (lbs)
5	45.50 (1155.7)	17.00 (431.8)	10.25 (260.4)	44.50 (1130.3)	12.00 (304.8)	42.75 (1085.9)	154

CR305 enclosed magnetic contactors

Dimensions

CR305 NEMA type 3R hinged cover without CPT size 00–4



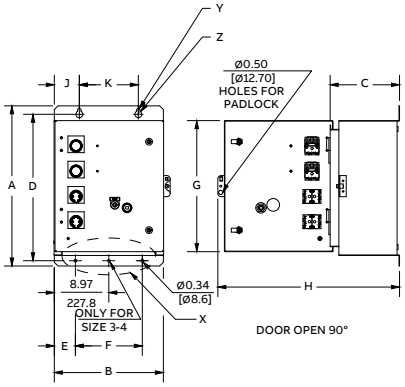
NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
0	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
1	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
2	17.00 (431.8)	7.94 (201.6)	8.23 (209.0)	15.49 (393.4)	1.50 (38.1)	4.94 (125.4)	13.51 (343.1)	16.55 (420.3)	3.97 (100.8)	25
3	30.0 (762)	9.94 (252.4)	8.23 (209.0)	28.37 (720.5)	2.00 (50.8)	5.94 (150.8)	26.55 (674.3)	18.55 (471.1)	–	50
4	30.0 (762)	9.94 (252.4)	8.23 (209.0)	28.37 (720.5)	2.00 (50.8)	5.94 (150.8)	26.55 (674.3)	18.55 (471.1)	–	50

Mounting details

NEMA size	No. of top holes X	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	2	0.40 (10.2)	0.82 (20.8)

Type 3R, NEMA sizes 00–4
Drawing no. 270A7282P1_1

CR305 NEMA type 3R hinged cover with CPT size 00–4



NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

Mounting details

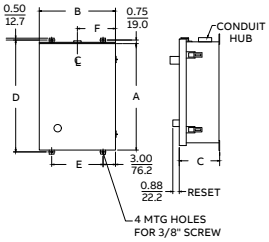
NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

Type 3R, NEMA sizes 00–4
Drawing no. 270A7283P1_2

CR305 enclosed magnetic contactors
Dimensions

CR305 NEMA type 3R size 5–6

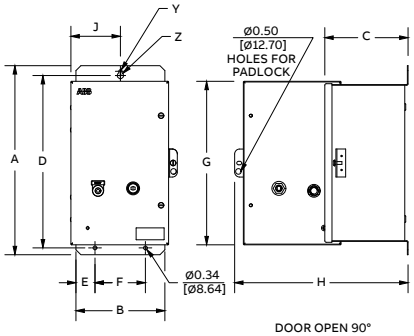
NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Approx. shipping wt. (lbs)
5	42.00 (1066.8)	22.00 (558.8)	10.25 (260.4)	43.50 (1104.9)	16.00 (406.0)	11.0 (279.4)	135
6	46.00 (1168.4)	20.00 (508.0)	14.00 (355.6)	47.75 (1212.8)	17.62 (447.7)	–	260



Type 3R, NEMA sizes 5–6
Drawing no. 55-210106

CR305 NEMA type 4/4X hinged cover without CPT size 00–4

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	12.88 (327.1)	5.94 (150.8)	6.18 (156.9)	11.39 (289.3)	0.97 (24.6)	4.00 (101.6)	10.6 (269.2)	12.36 (313.9)	2.97 (75.4)	15
0	12.88 (327.1)	5.94 (150.8)	6.18 (156.9)	11.39 (289.3)	0.97 (24.6)	4.00 (101.6)	10.6 (269.2)	12.36 (313.9)	2.97 (75.4)	15
1	12.88 (327.1)	5.94 (150.8)	6.18 (156.9)	11.39 (289.3)	0.97 (24.6)	4.00 (101.6)	10.6 (269.2)	12.36 (313.9)	2.97 (75.4)	15
2	16.88 (428.7)	7.94 (201.6)	7.30 (185.4)	15.39 (390.9)	1.70 (43.1)	4.50 (114.3)	14.60 (370.8)	15.48 (393.19)	3.97 (100.8)	20
3	29.88 (758.9)	9.94 (252.4)	8.20 (208.2)	28.27 (718.0)	2.35 (59.6)	5.50 (139.7)	27.60 (701.0)	18.38 (466.8)	4.97 (126.2)	50
4	29.88 (758.9)	9.94 (252.4)	8.20 (208.2)	28.27 (718.0)	2.35 (59.6)	5.50 (139.7)	27.60 (701.0)	18.38 (466.8)	4.97 (126.2)	50



Type 4/4X, NEMA sizes 00–4
Drawing no. 270A7290P1_3

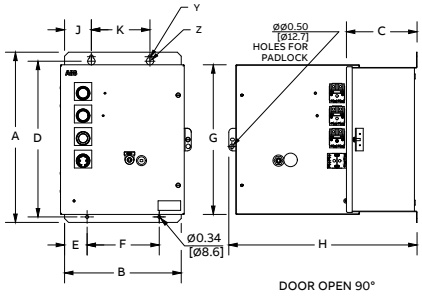
Mounting details

NEMA size	No. of top holes	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	1	2	0.40 (10.2)	0.82 (20.8)

CR305 enclosed magnetic contactors

Dimensions

CR305 NEMA type 4/4X hinged cover with CPT size 00–4



Type 4/4X, NEMA sizes 00–4
Drawing no. 270A7291P1_4

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
0	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
1	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
2	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
3	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55
4	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55

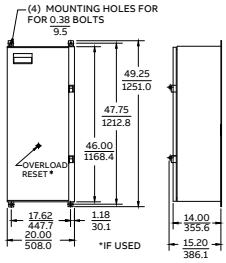
Mounting details

NEMA size	No. of top holes	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2,3, 4	2	2	0.40 (10.2)	0.82 (20.8)

CR305 NEMA type 4/4X size 5–6

NEMA size	Height	Depth	Width	Approx. shipping wt. (lbs)
5	44.50 (1130.3)	10.25 (260.4)	22.00 (558.8)	154
6				Contact nearest ABB Representative

CR305 NEMA type 1 and type 12 size 6



Type 1 and type 12, NEMA size 6
Drawing no. 55-186660

NEMA starters with NEMA-style components

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300-line starters

A proven product for the toughest industrial applications



CR306C002

1600 horsepower maximum
NEMA sizes 00–6
600 volts maximum
50/60 Hz

Basic 300-line features

ABB's full voltage (600-volt maximum) magnetic motor starter has an encapsulated coil and a 3-leg overload relay to protect against overloads in all phases. It is on standard specifications of major manufacturers. The line offers features and benefits most asked for by users.

Forms available include reversing and non-reversing, two-speed and combination, sizes 00–6.

- Toolless contactor disassembly (sizes 00–4) — allows quick access for inspection and maintenance. Just release two retainers and pull a clip to get at magnet, coil and contacts.
- Saddle clamp terminals (sizes 00–1) — accommodate ring, spade and stripped wire leads and carry permanent stamped-in identification. Staggered arrangement makes wiring easier and helps prevent shorting between phases.
- Current-carrying components — contact tips are weld-resistant silver cadmium oxide (fine silver on sizes 00 and 0 only). Contacts are installed in a wedge configuration for positive make with minimum bounce.
- Optional PF capacitor terminals — permit easy connection of power factor correction capacitors between contactor and overload relay for energy conservation.
- Class 20 overload protection.
- Visual trip indicator with manual reset — to avoid surprise restarts. Reset occurs on arm upstroke so a tripped condition can't be overridden by holding the arm down.
- Manual weld check — provides a convenient test against welding of overload relay contacts. Just depress the weld check operator to trip the relay, run a simple continuity test across the relay contacts, then depress the manual reset to return the starter to service.
- Optional isolated NO contact on the overload relay — provides means of direct interface with programmable controller or computer to monitor performance and diagnose faults.
- Dual bimetals — anticipate overloads, responding to rising current and temperature with faster tripping on severe overloads for better motor protection. Trip points are factory-calibrated for accuracy.
- ±10% trip adjustment — turning a dial in the overload relay face allows "tuning" the protection to the motor on the spot.
- Largest selection of modifications and accessory kits — includes auxiliary contacts, coils, fifth-pole addition, vertical and horizontal mechanical interlocks, surge suppressors, control circuit fusing, NEMA type enclosures, pushbuttons, selector switches, indicating lights, control transformers, space heaters and more.

300-line starters

Application information and technical data

	Maximum horsepower NEMA size							
Description	**00**	**0**	**1**	**2**	**3**	**4**	**5**	**6**
Normal starting duty hp rating[1]								
Single-phase								
115 V 60 Hz	⅓	1	2	3	7½	–	–	–
230 V 60 Hz	1	2	3	7½	15	–	–	–
Three-phase								
200 V 60 Hz	1½	5	7½	10	25	40	75	150
230 V 60 Hz	1½	5	7½	15	30	50	100	200
380–415 V 50 Hz	1½	3	10	25	50	75	150	300
460 V 60 Hz	2	3	10	25	50	100	200	400
575 V 60 Hz	2	5	10	25	50	100	200	400
Plugging or jogging hp rating[1]								
Single phase								
115 V 60 Hz	–	½	1	2	5	–	–	–
230 V 60 Hz	–	1½	3	7½	10	–	–	–
Three phase								
200 V 60 Hz	–	1½	5	15	15	25	60	125
230 V 60 Hz	–	2	5	15	30	30	75	150
380–415 V 50h	–	2	5	15	30	50	125	250
460 V 60 Hz	–	1½	3	10	30	60	150	250
575 V 60 Hz	–	1	2	5	20	60	150	250
Continuous current max								
Starters and enclosed contactors	9	18	27	45	90	135	270	540
Open contactors	10	20	30	50	100	150	300	600
Coil burden (VA)								
Inrush 2-pole	151	151	151	528	1152	1248	2580	3360
Holding 2-pole	24	24	24	60	83	87	191	255
Inrush 3-pole	151	151	151	528	1152	1248	2580	3360
Holding 3-pole	24	24	24	60	83	87	191	255
Inrush 4- and 5-pole	151	151	151	576	1248	1356	3600	–
Holding 4- and 5-pole	24	24	24	75	87	95	276	–
Control power transformer VA (min)	50	50	50	100	200	250	500[2]	500[2]
Coil operating voltage								
% Minimum pickup	63	85	85	85	85	85	85	85
% Maximum dropout	15–30	63	63	68	65	65	65	65
Switching delay 3-pole								
Pickup typical (milliseconds)	7–15	15–30	15–30	20–40	20–45	20–45	30–50	30–50
Dropout typical (milliseconds)	20	7–15	7–15	7–15	7–15	7–15	15–25	15–25
Mechanical life (millions nominal)	2 ¾	20	20	10	5	5	5	1
Weight (less carton)								
Contactor (pounds)	3¾	2 ¾	2 ¾	6 ½	15	14 ¾	48	48
Starter (pounds)	14–8	3 ¾	3 ¾	7 ½	17 ¾	17 ½	53	75
Power terminals								
Wire size range (75°) AWG	20	14–8	14–8	14–4	10–1/0	8–3/0	1/0–500 kcmil	2 2/0– 500 kcmil
Torque (pounds–inches)	50	20	20	50	150	200	300	375
Max. noise (DBA)	85	50	50	50	50	50	65	65

[1]When operation of the controller requires jogging (inching) or plug stopping or when normal operation requires continued operation in excess of 5 operations per minute or 10 operations in a 10-minute period, the plugging or jogging horsepower ratings must be followed.
[2]In lieu of a 500 to 1500 VA control transformer, a 50 VA unit in conjunction with a control relay can be used as follows:
a. Wire control relay coil in control circuit on secondary side of control transformer.
b. Wire two poles of control relay in series with contactor coil at line voltage.

Mounting position
Devices must be mounted to a sturdy vertical surface with the line side terminals up. No other orientations are permitted.

Operating temperature
Equipment is designed for ambient temperature outside of equipment enclosures to be -25 ° to 40 °C. When contactor is energized, temperatures will be above outside ambient in equipment enclosures. If condensing moisture is present, space heater kits should be used to prevent condensation when contactor is not energized.

Storage temperature should be -30 ° to 65 °C. If equipment is stored over 1 week, it may be necessary to cover the equipment and provide a source of heat to prevent condensation.

300-line starters

Application information and technical data

Short-circuit ratings

Fusible forms of combination magnetic starters equipped with UL labeled, non-renewable, NEC-type fuses listed in the table below, are adequate for installation on motor branch circuits where the available short-circuit current at the incoming line terminals of the starter does not exceed the value shown.

Circuit breaker-type combination magnetic starters equipped with the circuit breakers listed in the table at right are adequate for installation on motor branch circuits where the available short-circuit current at the incoming line terminals of the starter does not exceed the value shown.

For either type, it is recognized that maintenance of some components may be required after a branch circuit fault and in some cases a device may require replacement.

Fusible combination starters

NEMA size	Fuse type	Maximum symmetrical RMS amperes
0–3	H, K	5,000
4, 5	H, K	10,000
0–5	J, RK-1, RK-5	100,000
6	J, L, RK-1, RK-5	100,000

"High available" short circuit ratings for NEMA size 00–4 contactors

NEMA size	Product series*	Max. FLA [amperes]	RMS symmetrical amperes [A]	Voltage max. [V AC] [B]	Branch circuit protection* [D]	Max. breaker rating [amps] [E]	Encl. min. volume [Cu-in.] [F]
00	CR305	8	100	240	XT2	125	1399
00	CR305	8	100	480	XT2	125	1399
00	CR305	8	25	600	XT2	125	1399
0	CR305	16	100	240	XT2	125	1399
0	CR305	16	100	480	XT2	125	1399
0	CR305	16	25	600	XT2	125	1399
1	CR305	25.3	100	240	XT2	125	1399
1	CR305	25.3	100	480	XT2	125	1399
1	CR305	25.3	25	600	XT2	125	1399
2	CR305	42	100	240	XT2	125	1399
2	CR305	42	100	480	XT2	125	1399
2	CR305	42	25	600	XT2	125	1399
3	CR305	80	100	240	XT2	125	5288
3	CR305	80	100	480	XT2	125	5288
3	CR305	80	25	600	XT2	125	5288
3	CR305	80	100	240	XT4	250	5288
3	CR305	80	100	480	XT4	250	5288
3	CR305	80	25	600	XT4	250	5288
4	CR305	136	100	240	XT2	125	5288
4	CR305	136	100	480	XT2	125	5288
4	CR305	136	25	600	XT2	125	5288
4	CR305	136	100	240	XT4	250	5288
4	CR305	136	100	480	XT4	250	5288
4	CR305	136	25	600	XT4	250	5288

* These contactors are also suitable for use with instantaneous-trip circuit breakers, when used as part of combination motor controllers. Click on the following link for CMC ratings: https://www.ul.com/resources/short-circuit-current-ratings-combination-motor-controller-components

300-line starters

Application information and technical data

NEMA starters enclosure selection
The following information is intended to aid in the selection of the proper enclosure type for an enclosed starter. While a variety of enclosure styles are available, the Type 1, 12, 3R and 4X are typically used in motor starting applications. Of those enclosure styles, the Type 1, 12, 3R and 4X options are most commonly used for starter installations. Whenever practically possible, mount the starter in a stable environment, such as a mechanical room.

UL Type 1 enclosure
- Indoor locations only
- Minimal dirt/dust in the air
- No exposure to water spray or drips

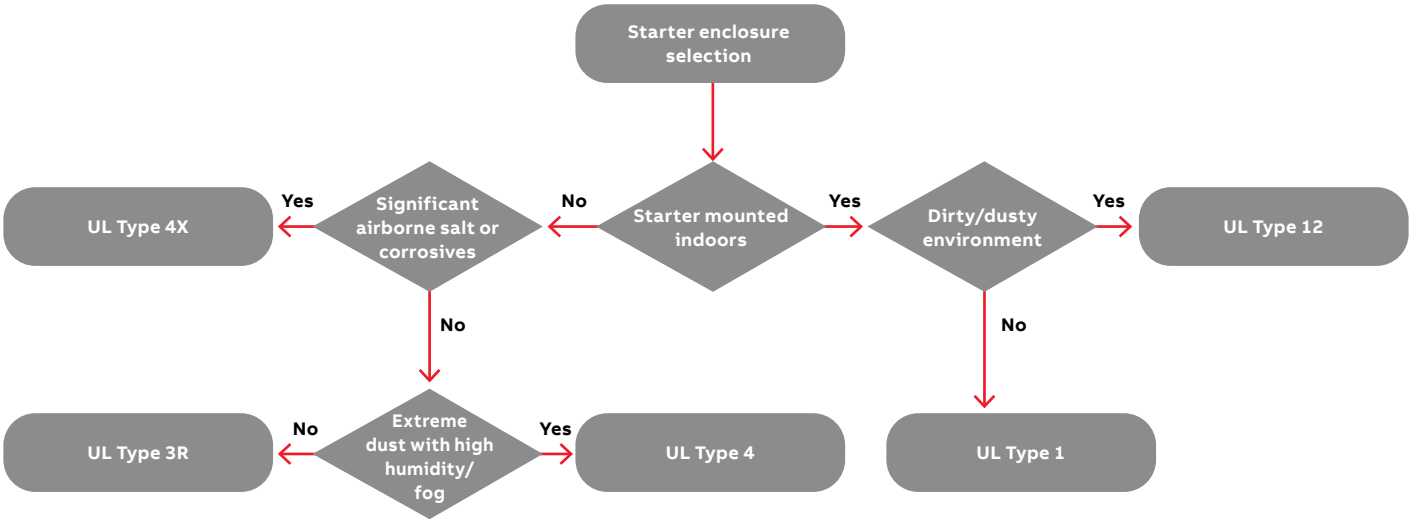
UL Type 12 enclosure
- Indoor locations only
- Dirty/dusty environment
- Possibility to be splashed with water

UL Type 3R enclosure
- Outdoor location
- Minimal salt/corrosives in the air
- Maximum ambient temperature ≤122 °F

UL Type 4X enclosure[1]
- Indoor or outdoor locations[2]
- Requirement to wash-down
- Significant salt/corrosives in the air
- Properly sized units may operate >122 °F

[1] Type 4 and 4X may require an air conditioner for proper cooling
[2] Outdoor use requires a UV-resistant enclosure

The below simplified decision tree will assist in the enclosure selection in the majority of starter installation locations. Contact your local ABB representative with any questions.



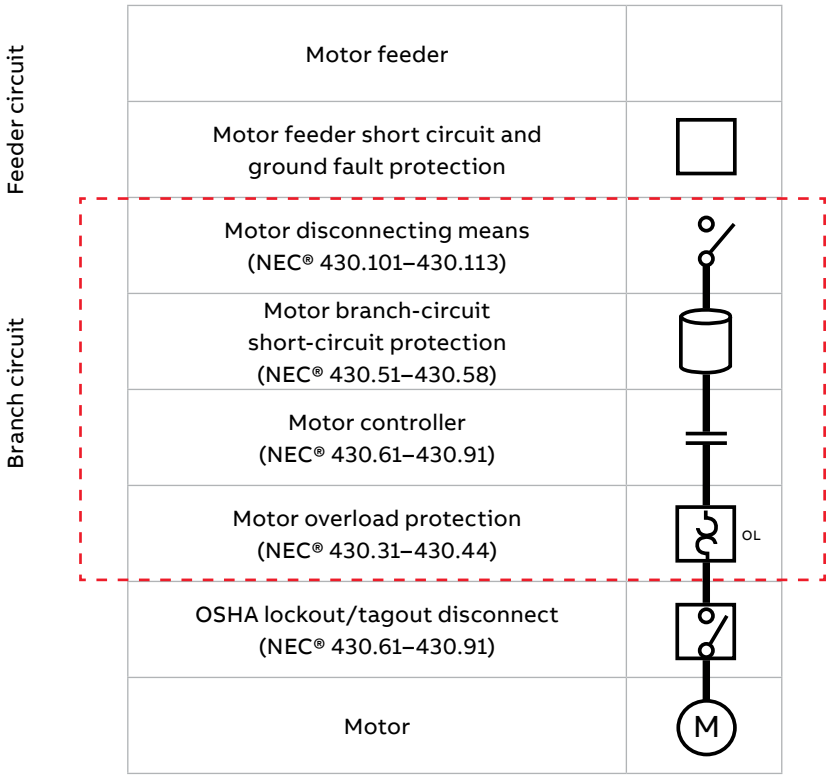
For more information, refer to NEMA standard 250.

300-line starters

Application information and technical data

Motor circuit overview

The following information is intended to provide an overview of a motor circuit and aid in the design of your motor starter. While a variety of different possible component combinations exist, this diagram provides a basic outline of the functions necessary to build a motor circuit. This catalog provides multiple different branch circuit solutions to fit specific applications. For more information, please refer to UL 508 specifications.



300-line starters

Application information and technical data

Control transformers — where to use

It is often desirable to use a control transformer in conjunction with a magnetic starter or controller to provide low voltage control.

Description — factory wired

A transformer, with sufficient capacity for the control circuit, mounted with the starter can be supplied by the factory for the majority of transformer ratings and types of enclosures.

Coil suffix

(This table is to be used for starter forms without control transformers.) Indicates voltage and frequency of operating coils. For use in ordering full voltage starters and contactors, sizes 00–6, with other coil ratings than those shown in listing in Section 2, magnetic starters.

Frequency (Hz)	24 V	115–120 V[5]	200–208 V[5]	230–240 V[5]	265–277 V	460–480 V[5]	575–600 V[5]
60	24	02	23	03	13	04	05
Frequency (Hz)	–	110 V	–	220 V	380–415 V	440 V	550 V
50	–	02	–	03	64	04	05

Note: The 02 coil suffix (115–120 V, 60 Hz/110 V, 50 Hz) supersedes the 22 coil suffix (120 V, 60 Hz).

[5]Suffix shown for this voltage is part of product number in magnetic starter-contactor listings.

Auxiliary contact ratings — NEMA size 0–6

		Amperes	
AC volts	Continuous	Make	Break
115	10	60	6.0
230	10	30	3.0
460	10	15	1.5
575	10	12	1.2
DC volts			
125	10	–	1.1
250	10	–	0.5

300-line starters

Application information and technical data

Contactor DC ratings

NEMA size	No. of poles in series	Continuous current rating	Interrupting ratings							
			Inductive amps @125 V		Inductive amps @250 V		Noninductive amps @125 V		Noninductive amps @250 V	
			N.O.	N.C.	N.O.	N.C.	N.O.	N.C.	N.O.	N.C.
00	1	9	2.5	2.5	0.6	0.5	5	4	1	0.8
00	2	9	7	7	1.2	1.2	25	25	5	4
00	3	9	14	14	3.5	3.5	35	35	15	15
00	4	9	25	25	7	7	50	50	50	50
0	1	18	2.8	2.5	0.7	0.5	6	4.5	1.1	0.9
0	2	18	7	7	1.5	1.2	35	25	6	4.5
0	3	18	14	14	3.5	3.5	50	35	25	25
0	4	18	25	25	7	7	90	60	60	55
1	1	27	3	2.5	0.7	0.5	6.5	4.5	1.2	0.9
1	2	27	7	7	1.5	1.2	50	25	7	4.5
1	3	27	14	14	3.5	3.5	70	35	35	25
1	4	27	25	25	7	7	120	60	70	55
2	2	45	7	–	1.5	–	60	–	9	–
2	3	45	14	–	3.5	–	120	–	40	–
2	4	45	25	–	7	–	160	–	80	–
3	2	90	7	–	2.2	–	600	–	300	–
3	3	90	14	–	4.5	–	600	–	600	–
3	4	90	25	–	9	–	600	–	600	–
4	2	135	7	–	2.2	–	600	–	300	–
4	3	135	14	–	4.5	–	600	–	600	–
4	4	135	25	–	9	–	600	–	600	–

300-line starters

Application information and technical data

Approximate motor full-load current ratings

Full-load current of normal efficiency motors — average expected values

For three-phase, 60 Hz, GE Type K (NEMA Design B) Tri-Clad 700-Line, normal efficiency, drip-proof, normal starting torque, continuous, 40 °C ambient (1.15 service factor) horizontal induction motors.

Motor horsepower	Synchronous speed RPM	Average expected values of full-load currents[1]			
		200 V	230 V	460 V	575 V
1/42	1800	1.6	1.4	0.70	0.56
	1200	1.7	1.5	0.75	0.60
1/32	3600	2.0	1.7	0.85	0.68
	1800	1.7	1.5	0.75	0.60
	1200	2.0	1.7	0.85	0.68
½	3600	2.0	1.8	0.88	0.70
	1800	2.3	2.0	1.0	0.80
	1200	2.3	2.0	1.0	0.80
	900	3.2	2.8	1.4	1.4
¾	3600	2.8	2.4	1.2	0.96
	1800	3.2	2.8	1.4	1.1
	1200	3.7	3.2	1.6	1.3
	900	4.4	3.8	1.9	1.5
1	3600	3.7	3.2	1.6	1.3
	1800	4.1	3.6	1.8	1.4
	1200	4.4	3.8	1.9	1.5
	900	5.5	4.8	2.4	1.9
1½	3600	5.3	4.6	2.3	1.8
	1800	6.0	5.2	2.6	2.1
	1200	6.0	5.2	2.6	2.1
	900	7.1	6.2	3.1	2.5
2	3600	6.9	6.0	3.0	2.4
	1800	7.1	6.2	3.1	2.5
	1200	7.6	6.6	3.3	2.6
	900	10.6	9.2	4.6	3.7
3	3600	9.4	8.2	4.1	3.3
	1800	9.9	8.6	4.3	3.4
	1200	12.0	10.4	5.2	4.2
	900	15.4	13.4	6.7	5.4
5	3600	15.4	13.4	6.7	5.4
	1800	16.3	14.2	7.1	5.7
	1200	19.3	16.8	8.4	6.7
	900	19.8	17.2	8.6	6.9
7½	3600	21.6	18.8	9.4	7.5
	1800	23.7	20.6	10.3	8.2
	1200	26.0	23.6	11.3	9.0
	900	28.5	24.8	12.4	9.9
10	3600	27.4	23.8	11.9	9.5
	1800	31.3	27.2	13.6	10.9
	1200	32.7	28.4	14.2	11.4
	900	33.1	28.8	14.4	11.5
15	3600	42.6	37.0	18.5	14.8
	1800	46.7	40.6	20.3	16.2
	1200	45.1	39.2	19.6	15.7
	900	47.6	41.4	20.7	16.6
20	3600	62.3	54.2	27.1	21.7
	1800	59.3	51.6	25.8	20.6
	1200	56.6	48.2	24.6	19.7
	900	63.9	55.6	27.8	22.2
25	3600	72.0	62.6	31.3	25.0
	1800	71.3	62.0	31.0	24.8
	1200	73.8	64.2	32.1	25.7
	900	82.6	71.8	35.9	28.7
30	3600	85.6	74.4	37.2	29.8
	1800	86.0	74.8	37.4	29.9
	1200	88.6	77.0	38.5	30.8
	900	92.2	80.2	40.1	32.1
40	3600	110	95.6	47.8	39.2
	1800	116	100.9	50.4	40.3
	1200	114	99.6	49.8	39.8
	900	122	105.8	52.9	42.3
50	3600	140	122.2	61.1	48.9
	1800	142	123.6	61.8	49.4
	1200	144	125.2	62.6	50.1
	900	159	138.2	69.1	55.3
60	3600	163	141.4	70.7	56.6
	1800	172	149.8	74.9	59.9
	1200	172	149.2	74.6	59.7
	900	176	153.4	76.7	61.4
75	3600	206	178.8	89.4	71.5
	1800	207	180.0	90.0	72.0
	1200	206	179.2	89.6	71.7
	900	221	191.8	95.9	76.7
100	3600	262	228	114	91.2
	1800	281	244	122	97.7
	1200	283	246	123	98.4
	900	296	258	129	103
125	3600	334	290	145	116
	1800	340	296	148	118
	1200	352	306	153	122
	900	370	322	161	129
150	3600	398	346	173	138
	1800	412	348	179	143
	1200	419	364	182	146
	900	435	378	189	151
200	3600	–	446	223	178
	1800	–	468	234	187
	1200	–	482	241	193
250	3600	–	574	287	230
	1800	–	590	295	236
	1200	–	594	297	238
300	3600	–	676	338	270
	1800	–	686	343	274
350	3600	–	774	387	310
	1800	–	792	396	317
400	3600	–	890	445	356

[1]For expected values on 208 volt, 50 Hz, three-phase motors, contact nearest ABB Representative.

[2]Open, type K, general-purpose, NEMA SF, solid-base, rolled-steel-shell, ABB induction motors.

Note: T he listed data is based on approximate full-load current ratings of standard, open, 1.15 service factor, continuous rated GE motors. Full-load current ratings of similar motors of other manufacturers may vary considerably. Therefore, whenever possible use actual full-load current rating given on motor nameplate. Contact motor manufacturer for full-load currents of single-phase and DC motors.

300-line starters

Application information and technical data

Approximate motor full-load current ratings

Full-load current of Energy Saver™ motors—average expected values

For three-phase, 60 Hz, GE Type KS (NEMA Design B) Energy Saver™ high-efficiency, drip-proof, normal starting torque, continuous, 40 °C ambient (1.15 service factor) horizontal induction motors.

Motor horsepower	Synchronous speed RPM	Average expected values of full-load currents[1]			
		200 V	230 V	460 V	575 V
3	1200	10.4	9.0	4.5	3.6
5	1200	16.1	14.0	7.0	5.6
7½	3600	20.2	17.6	8.8	7.0
	1800	20.7	18.0	9.0	7.2
	1200	22.5	19.6	9.8	7.8
10	3600	26.2	22.8	11.4	9.1
	1800	27.6	24.0	12.0	9.6
	1200	29.4	25.6	12.8	10.2
15	3600	40.7	35.4	17.7	14.2
	1800	42.1	36.6	18.3	14.6
	1200	42.1	36.4	18.2	14.6
20	3600	52.2	45.4	22.7	18.1
	1800	54.3	47.2	23.6	18.9
	1200	55.4	48.2	24.1	19.3
25	3600	65.1	56.6	28.3	22.6
	1800	66.0	57.4	28.7	23.0
	1200	69.9	60.8	30.4	24.3
30	3600	76.4	66.4	33.2	26.6
	1800	79.4	69.0	34.5	27.6
	1200	83.3	72.4	36.2	29.0
40	3600	100.7	87.6	43.8	35.0
	1800	104.6	91.0	45.5	36.4
	1200	108.3	94.2	47.1	37.7
50	3600	126.0	110.0	55.0	44.0
	1800	132.2	115.0	57.5	46.0
	1200	134.6	117.0	58.5	46.8
60	3600	151.6	131.8	65.9	52.7
	1800	160.8	139.8	69.9	55.9
	1200	161.5	140.4	70.2	56.2
75	3600	187.4	163.0	81.5	65.2
	1800	198.7	172.8	86.4	69.1
	1200	199.4	173.4	86.7	69.4
100	3600	253.0	220.0	110.0	88.0
	1800	264.5	230.0	115.0	92.0
	1200	257.6	224.0	112.0	89.6
125	3600	317.9	276.4	138.2	110.6
	1800	314.6	273.6	136.8	109.4
	1200	319.7	278.0	139.0	111.2
150	3600	381.3	331.6	165.8	132.6
	1800	381.8	332.0	166.0	132.8
	1200	395.6	344.0	172.0	137.6
200	3600	480.7	418.0	209.0	167.2
	1800	499.1	434.0	217.0	173.6
	1200	522.1	454.0	227.0	181.6
250	3600	637.1	554.0	277.0	221.6
	1800	676.2	588.0	294.0	235.2

[1]For expected values on 208 volt, 50 Hz, three-phase motors, contact nearest ABB Representative.

300-line magnetic motor starter

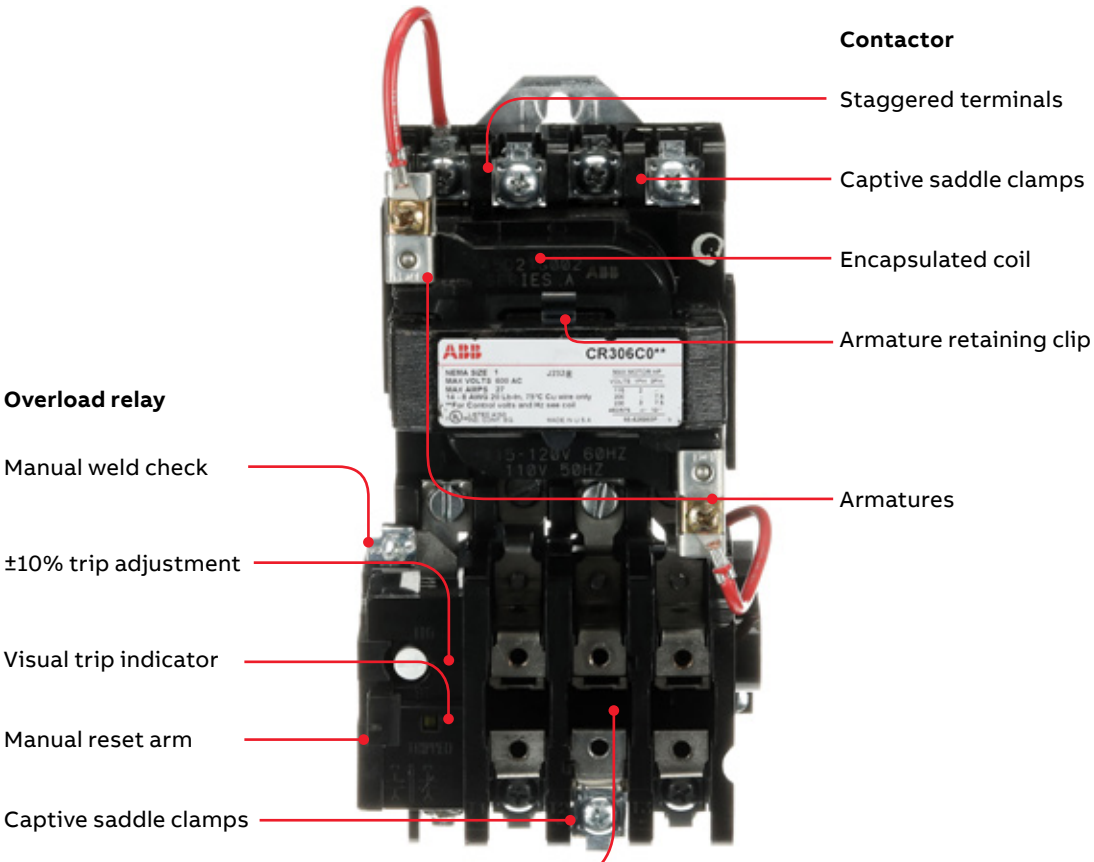
All these features plus an edge on productivity

— 01 CR306C0 magnetic starter

The 300-line starter is a full voltage, magnetic motor starter with encapsulated coil and three-leg block overload relay with visual trip indicator, manual reset and manual weld check. It incorporates all the features and benefits users demand and has received standard specification approval by many major manufacturers.

The 300-line is available in the following forms:
NEMA sizes 00–6
- Standard non-reversing
- Reversing
- Two-speed
- Combination

...and in a wide selection of enclosures:
- Type 1 general purpose
- Type 3R rainproof, sleet-resistant
- Type 4 watertight, dust-tight
- Type 4X watertight, dust-tight, corrosion-resistant
- Type 12 driptight, dust-tight



— 01

300-line contactor

High performance with simplified maintenance

Several features combine to make the 300-line contactor a high-performance unit that is easy to inspect and maintain.

01 CR305C0 contactor

02 CR306C0 contactor

- All line and load terminals on NEMA size 00, 0 and 1 starters can accommodate ring, spade and stripped-wire terminations
- Tool-less disassembly for sizes 00–4
- Terminal numbering is permanently stamped
- NEMA size 00–1 terminals are staggered for easy termination
- In-line, stripped-wire connections are standard for NEMA size 2–6 starters
- Ring terminal options available for sizes 2–5
- Optional terminals available on NEMA size 1–4 starters to permit easy connection of power factor correction capacitors for energy conservation
- NEMA size 1 starters and larger feature weld-resistant silver alloy contact tips
- Contacts have a wedge-shaped configuration for positive make with minimum bounce
- Size 00, 0 and 1 contacts can be easily changed from normally open to normally closed without additional parts
- The magnet provides long life and is specially treated to resist rust
- Molded coil is impervious to moisture, dirt and oil and is highly resistant to mechanical damage and high-humidity failure
- Retaining clips engage detents encapsulated in the coil to hold it securely in place

The 300-line contactor provides easy disassembly in sizes 00–6:

- Lift off the armature to allow quick inspection and ready access to contacts
- Pull the spring clip from the armature to access the coil
- No need to remove any wiring!



01



02

Open/enclosed non-combination magnetic starters

CR306 non-reversing with thermal overload relay



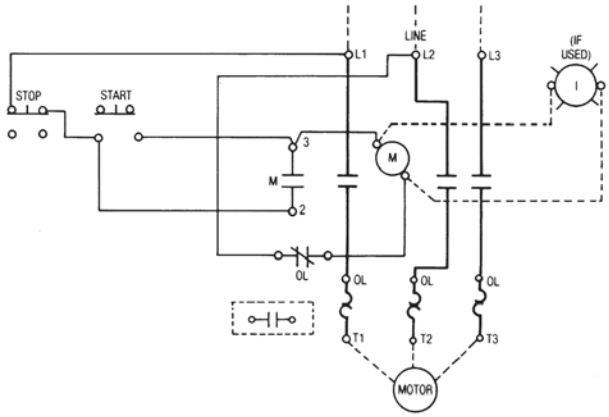
CR306B002

NEMA sizes 00–6 with thermal overload relay
600 volts maximum 50/60 Hz

Application

ABB's magnetic motor starters listed here may be used for starting full-voltage, non-reversing, single-speed AC motors up to 400 horsepower, 600 volts maximum, providing protection to the motor against running or stalled overloads.

Their compact size and ease of wiring make them especially suitable for motor control centers, custom-type control panels and switchgear equipment.



Typical schematic diagram for
CR306 starter (NEMA sizes 00–6)

Open/enclosed non-combination magnetic starters

CR306 non-reversing with thermal overload relay

NEMA sizes 00–6 with thermal overload relay
600 volts maximum 50/60 Hz

Standard features
Includes a holding interlock. One heater (per starter) for sizes 00–2 and two heaters (per starter) for size 3 should be ordered as separate items. See heaters section.

CR306, single-phase magnetic starters

				Open type	NEMA type 1	NEMA type 3R	NEMA type 12	NEMA type 4/4X
NEMA size	Continuous ampere rating[1]	Voltage	hp	Product number	Product number	Product number	Product number	Product number
00	9	115–120	1/3	CR306H002	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0
00	9	230–240	1	CR306H003	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0
0	18	115–120	1	CR306J002	CR306J10200AAAAA	CR306J60200AAAAA	CR306J20200AAAAA	CR306J40200AAAAA
0	18	230–240	2	CR306J003	CR306J10300AAAAA	CR306J60300AAAAA	CR306J20300AAAAA	CR306J40300AAAAA
1	27	115–120	2	CR306K002	CR306K10200AAAAA	CR306K60200AAAAA	CR306K20200AAAAA	CR306K40200AAAAA
1	27	230–240	3	CR306K003	CR306K12300AAAAA	CR306K60300AAAAA	CR306K20300AAAAA	CR306K40300AAAAA
1P	36	115–120	3	CR306K002BMA	CR306K102BKA	CR306K602BKA	CR306K202BKA	CR306K402BKA
1P	36	230–240	5	CR306K003BMA	CR306K103BKA	CR306K603BKA	CR306K203BKA	CR306K403BKA
2	45	115–120	3	CR306L002	CR306K602BKA	CR306K202BKA	CR306L20200AAAAA	CR306L40200AAAAA
2	45	230–240	7½	CR306L003	CR306K603BKA	CR306K203BKA	CR306L20300AAAAA	CR306L40300AAAAA
3	90	115–120	7½	CR306M002	CR306K202BKA	CR306K402BKA	CR306M20200AAAAA	CR306M40200AAAAA
3	90	230–240	15	CR306M003	CR306K203BKA	CR306K403BKA	CR306M20300AAAAA	CR306M40300AAAAA
3	90	460–480	25	CR306M004	CR306K402BKA	CR306M60400AAAAA	CR306M20400AAAAA	CR306M40400AAAAA
3	90	575–600	25	CR306M005	CR306K403BKA	CR306M60500AAAAA	CR306M20500AAAAA	CR306M40500AAAAA

[1]Motor full load current should not exceed continuous ampere rating of the starter.

Open/enclosed non-combination magnetic starters

CR306 non-reversing with thermal overload relay

NEMA sizes 00–6 with thermal overload relay
600 volts maximum 50/60 Hz

Standard features
Includes a holding interlock, pressure terminals for the line and load connections, plus a 3-leg block type ambient compensated overload relay with manual reset. All enclosures include external reset. NO/NC contacts on the overload relay are provided. To order, add suffix LAA to product numbers (size 00–5) listed in table. Three heaters should be ordered as separate items.

CR306, three-phase magnetic starters

NEMA size	Continuous ampere rating[1]	Voltage	hp	Open type Product number	NEMA type 1 Product number	NEMA type 3R Product number	NEMA type 12 Product number	NEMA type 4/4X Product number
00	9	Separate control—115–120 V		CR306A002	CR306A10200AAAAA	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0
00	9	200–208	1½	CR306A023	CR306A12300AAAAA	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0
00	9	230–240	1½	CR306A003	CR306A10300AAAAA	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0
00	9	460–480	2	CR306A004	CR306A10400AAAAA	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0
00	9	575–600	2	CR306A005	CR306A10500AAAAA	Use NEMA size 0	Use NEMA size 0	Use NEMA size 0
0	18	Separate control—115–120 V		CR306B002	CR306B10200AAAAA	CR306B60200AAAAA	CR306B20200AAAAA	CR306B40200AAAAA
0	18	200–208	3	CR306B023	CR306B12300AAAAA	CR306B62300AAAAA	CR306B22300AAAAA	CR306B42300AAAAA
0	18	230–240	3	CR306B003	CR306B10300AAAAA	CR306B60300AAAAA	CR306B20300AAAAA	CR306B40300AAAAA
0	18	460–480	5	CR306B004	CR306B10400AAAAA	CR306B60400AAAAA	CR306B20400AAAAA	CR306B40400AAAAA
0	18	575–600	5	CR306B005	CR306B10500AAAAA	CR306B60500AAAAA	CR306B20500AAAAA	CR306B40500AAAAA
1	27	Separate control—115–120 V		CR306C002	CR306C10200AAAAA	CR306C60200AAAAA	CR306C20200AAAAA	CR306C40200AAAAA
1	27	200–208	7½	CR306C023	CR306C12300AAAAA	CR306C62300AAAAA	CR306C22300AAAAA	CR306C42300AAAAA
1	27	230–240	7½	CR306C003	CR306C10300AAAAA	CR306C60300AAAAA	CR306C20300AAAAA	CR306C40300AAAAA
1	27	460–480	10	CR306C004	CR306C10400AAAAA	CR306C60400AAAAA	CR306C20400AAAAA	CR306C40400AAAAA
1	27	575–600	10	CR306C005	CR306C10500AAAAA	CR306C60500AAAAA	CR306C20500AAAAA	CR306C40500AAAAA
2	45	Separate control—115–120 V		CR306D002	CR306D10200AAAAA	CR306D60200AAAAA	CR306D20200AAAAA	CR306D40200AAAAA
2	45	200–208	10	CR306D023	CR306D12300AAAAA	CR306D62300AAAAA	CR306D22300AAAAA	CR306D42300AAAAA
2	45	230–240	15	CR306D003	CR306D10300AAAAA	CR306D60300AAAAA	CR306D20300AAAAA	CR306D40300AAAAA
2	45	460–480	25	CR306D004	CR306D10400AAAAA	CR306D60400AAAAA	CR306D20400AAAAA	CR306D40400AAAAA
2	45	575–600	25	CR306D005	CR306D10500AAAAA	CR306D60500AAAAA	CR306D20500AAAAA	CR306D40500AAAAA
3	90	Separate control—115–120 V		CR306E002	CR306E10200AAAAA	CR306E60200AAAAA	CR306E20200AAAAA	CR306E40200AAAAA
3	90	200–208	25	CR306E023	CR306E12300AAAAA	CR306E62300AAAAA	CR306E22300AAAAA	CR306E42300AAAAA
3	90	230–240	30	CR306E003	CR306E10300AAAAA	CR306E60300AAAAA	CR306E20300AAAAA	CR306E40300AAAAA
3	90	460–480	50	CR306E004	CR306E10400AAAAA	CR306E60400AAAAA	CR306E20400AAAAA	CR306E40400AAAAA
3	90	575–600	50	CR306E005	CR306E10500AAAAA	CR306E60500AAAAA	CR306E20500AAAAA	CR306E40500AAAAA
4	135	Separate control—115–120 V		CR306F002	CR306F10200AAAAA	CR306F60200AAAAA	CR306F20200AAAAA	CR306F40200AAAAA
4	135	200–208	40	CR306F023	CR306F12300AAAAA	CR306F62300AAAAA	CR306F22300AAAAA	CR306F42300AAAAA
4	135	230–240	50	CR306F003	CR306F10300AAAAA	CR306F60300AAAAA	CR306F20300AAAAA	CR306F40300AAAAA
4	135	460–480	100	CR306F004	CR306F10400AAAAA	CR306F60400AAAAA	CR306F20400AAAAA	CR306F40400AAAAA
4	135	575–600	100	CR306F005	CR306F10500AAAAA	CR306F60500AAAAA	CR306F20500AAAAA	CR306F40500AAAAA
5	270	Separate control—115–120 V		CR306G002	CR306G10200ZAAAA	CR306G60200ZAAAA	CR306G20200ZAAAA	CR306G40200ZAAAA
5	270	200–208	75	CR306G023	CR306G12300ZAAAA	CR306G62300ZAAAA	CR306G22300ZAAAA	CR306G42300ZAAAA
5	270	230–240	100	CR306G003	CR306G10300ZAAAA	CR306G60300ZAAAA	CR306G20300ZAAAA	CR306G40300ZAAAA
5	270	460–480	200	CR306G004	CR306G10400ZAAAA	CR306G60400ZAAAA	CR306G20400ZAAAA	CR306G40400ZAAAA
5	270	575–600	200	CR306G005	CR306G10500ZAAAA	CR306G60500ZAAAA	CR306G20500ZAAAA	CR306G40500ZAAAA
6	540	Separate control—115–120 V		CR306HH002	CR306HH10200AAAAA	CR306HH60200AAAAA	CR306HH20200AAAAA	CR306HH40200AAAAA
6	540	200–208	150	CR306HH023	CR306HH12300AAAAA	CR306HH62300AAAAA	CR306HH22300AAAAA	CR306HH42300AAAAA
6	540	230–240	200	CR306HH003	CR306HH10300AAAAA	CR306HH60300AAAAA	CR306HH20300AAAAA	CR306HH40300AAAAA
6	540	460–480	400	CR306HH004	CR306HH10400AAAAA	CR306HH60400AAAAA	CR306HH20400AAAAA	CR306HH40400AAAAA
6	540	575–600	400	CR306HH005	CR306HH10500AAAAA	CR306HH60500AAAAA	CR306HH20500AAAAA	CR306HH40500AAAAA

[1]Motor full load current should not exceed continuous ampere rating of the starter.
[2]External reset not included on standard listed forms.

Open/enclosed non-combination magnetic starters

CR306 non-reversing with solid-state overload relay



CR306CXE002

NEMA sizes 1–6 with solid state overload relay
600 volts maximum 50/60 Hz

Product number selection instructions

1. 50 Hz starters
   50 Hz forms (at standard voltages) are the same as shown in table for 60 Hz. Refer to technical data for 380–415 volt horsepower ratings.
2. Product notes
   Motor full-load current should not exceed continuous ampere rating of starter.
3. Note: Reversing, two-speed and combination starters are also available with solid-state overload relays.
4. Units are individually boxed and poly-packed six per carton as standard.
5. External reset not included on standard listed forms (NEMA Type 12).
6. For additional details on the solid-state overload relay, refer to the overload relays section.

Technical features — solid-state overload

- 2:1 adjustable full load amps with tactile feedback dial
- Selectable 10/20/30 protection class
- Ambient insensitive within the stated operating temperature range of -20 °C to +70 °C
- Built-in thermal memory to prevent hot motor restarts
- Protection against complete phase current loss
- Manual reset (standard) and remote reset (optional) 120 V AC
- Accuracy: ± 2%
- Repeatability: ± 2%
- Self-powered at 50% of minimum current range
- Size: 1–6 (0.40–540 A, 600 V, 50/60 Hz)
- Unbalance trip signal for PLC operation
- Manual trip
- Visual trip indication
- Standard isolated 1 NO and 1 NC auxiliary contact (A600, Q600)
- Built-in line/load straps
- Fits with existing 300-line starters
- Power factor correction terminals (sizes 1–4)
- DIN rail mountable sizes 1 and 2

Open/enclosed non-combination magnetic starters

CR306 non-reversing with solid-state overload relay

NEMA sizes 1–6 with solid-state overload relay
600 volts maximum 50/60 Hz

Includes a holding interlock, pressure terminals for the line and load connections, plus a solid-state overload relay (manual reset). Standard isolated 1 NO and 1 NC auxiliary contact (A600, Q600). Select current range from full load current selection table. Insert letter (C, D, E, F, etc.) from table on the next page, in product number to replace *.

Refer to empower configurator for other available starter coils and suffixes.

For NEMA size 0 and 00 applications, NEMA size 1 relay can be adjusted down to the proper amperage rating to fill 0–00 applications.

CR306, three-phase magnetic starters

NEMA size	Continuous ampere rating[1]	Voltage	hp	Open type Product number	NEMA type 1 Product number	NEMA type 3R Product number	NEMA type 12[2] Product number	NEMA type 4/4X Product number
1	27	Separate control — 115–120 V		CR306CX*002	CR306C10200XAAAA*	CR306C60200XAAAA*	CR306C20200XAAAA*	CR306C40200XAAAA*
1	27	200–208	7½	CR306CX*023	CR306C12300XAAAA*	CR306C62300XAAAA*	CR306C22300XAAAA*	CR306C42300XAAAA*
1	27	230–240	7½	CR306CX*003	CR306C10300XAAAA*	CR306C60300XAAAA*	CR306C20300XAAAA*	CR306C40300XAAAA*
1	27	460–480	10	CR306CX*004	CR306C10400XAAAA*	CR306C60400XAAAA*	CR306C20400XAAAA*	CR306C40400XAAAA*
1	27	575–600	10	CR306CX*005	CR306C10500XAAAA*	CR306C60500XAAAA*	CR306C20500XAAAA*	CR306C40500XAAAA*
2	45	Separate control — 115–120 V		CR306DX*002	CR306D10200XAAAA*	CR306D60200XAAAA*	CR306D20200XAAAA*	CR306D40200XAAAA*
2	45	200–208	10	CR306DX*023	CR306D12300XAAAA*	CR306D62300XAAAA*	CR306D22300XAAAA*	CR306D42300XAAAA*
2	45	230–240	15	CR306DX*003	CR306D10300XAAAA*	CR306D60300XAAAA*	CR306D20300XAAAA*	CR306D40300XAAAA*
2	45	460–480	25	CR306DX*004	CR306D10400XAAAA*	CR306D60400XAAAA*	CR306D20400XAAAA*	CR306D40400XAAAA*
2	45	575–600	25	CR306DX*005	CR306D10500XAAAA*	CR306D60500XAAAA*	CR306D20500XAAAA*	CR306D40500XAAAA*
3	90	Separate control — 115–120 V		CR306EX*002	CR306E10200XAAAA*	CR306E60200XAAAA*	CR306E20200XAAAA*	CR306E40200XAAAA*
3	90	200–208	25	CR306EX*023	CR306E12300XAAAA*	CR306E62300XAAAA*	CR306E22300XAAAA*	CR306E42300XAAAA*
3	90	230–240	30	CR306EX*003	CR306E10300XAAAA*	CR306E60300XAAAA*	CR306E20300XAAAA*	CR306E40300XAAAA*
3	90	460–480	50	CR306EX*004	CR306E10400XAAAA*	CR306E60400XAAAA*	CR306E20400XAAAA*	CR306E40400XAAAA*
3	90	575–600	50	CR306EX*005	CR306E10500XAAAA*	CR306E60500XAAAA*	CR306E20500XAAAA*	CR306E40500XAAAA*
4	135	Separate control — 115–120 V		CR306FX*002	CR306F10200XAAAA*	CR306F60200XAAAA*	CR306F20200XAAAA*	CR306F40200XAAAA*
4	135	200–208	40	CR306FX*023	CR306F12300XAAAA*	CR306F62300XAAAA*	CR306F22300XAAAA*	CR306F42300XAAAA*
4	135	230–240	50	CR306FX*003	CR306F10300XAAAA*	CR306F60300XAAAA*	CR306F20300XAAAA*	CR306F40300XAAAA*
4	135	460–480	100	CR306FX*004	CR306F10400XAAAA*	CR306F60400XAAAA*	CR306F20400XAAAA*	CR306F40400XAAAA*
4	135	575–600	100	CR306FX*005	CR306F10500XAAAA*	CR306F60500XAAAA*	CR306F20500XAAAA*	CR306F40500XAAAA*
5	270	Separate control — 115–120 V		CR306GX*002	CR306G10200XAAAA*	CR306G60200XAAAA*	CR306G20200XAAAA*	CR306G40200XAAAA*
5	270	200–208	75	CR306GX*023	CR306G12300XAAAA*	CR306G62300XAAAA*	CR306G22300XAAAA*	CR306G42300XAAAA*
5	270	230–240	100	CR306GX*003	CR306G10300XAAAA*	CR306G60300XAAAA*	CR306G20300XAAAA*	CR306G40300XAAAA*
5	270	460–480	200	CR306GX*004	CR306G10400XAAAA*	CR306G60400XAAAA*	CR306G20400XAAAA*	CR306G40400XAAAA*
5	270	575–600	200	CR306GX*005	CR306G10500XAAAA*	CR306G60500XAAAA*	CR306G20500XAAAA*	CR306G40500XAAAA*
6	540	Separate control — 115–120 V		CR306HX*002	CR306HX*102	CR306HX*602	CR306HX*202	CR306HX*402
6	540	200–208	150	CR306HX*023	CR306HX*123	CR306HX*623	CR306HX*223	CR306HX*423
6	540	230–240	200	CR306HX*003	CR306HX*103	CR306HX*603	CR306HX*203	CR306HX*403
6	540	460–480	400	CR306HX*004	CR306HX*104	CR306HX*604	CR306HX*204	CR306HX*404
6	540	575–600	400	CR306HX*005	CR306HX*105	CR306HX*605	CR306HX*205	CR306HX*405

[1]Motor full load current should not exceed continuous ampere rating of the starter.
[2]External reset not included on standard listed forms.

Open/enclosed non-combination magnetic starters

CR306 non-reversing with solid-state overload relay

Full load current selection table

For continuous rated motors, with a service factor of 1.15 to 1.25, select the heater with maximum motor amperes equal to or immediately greater than the motor full-load current (provides a maximum of 125% protection). For continuous rated motors with no service factor, multiply the full-load current of the motor by 0.90 and use this value to select the heater.

Overload range for solid-state starters	NEMA size	Fuse max.	Breaker max.	Insert digit in product number
0.4–0.85	00–1	3	15	C
0.8–1.7	00–1	6	15	D
1.6–3.4	00–1	12	15	E
3.2–6.8	00–1	25	25	F
6.5–13.5	00–1	50	50	G
13–27	00–1	100	100	H
6.5–13.5	2	50	50	G
13–27	2	100	100	H
25–50	2	200	200	J
17–35	3 and 4	125	125	K
35–70	3 and 4	250	250	L
65–135	3 and 4	500	400	M
35–70	5	–	–	N
65–135	5	500	400	P
130–270	5	600	800	Q
130–270	6	1200	800	S
260–540	6	1200	800	T

Open/enclosed non-combination magnetic starters

CR309 reversing with thermal overload relay

NEMA sizes 00–7 with thermal overload relay
600 volts maximum 50/60 Hz

For four-wire split phase or capacitor start induction motor (60 Hz) overload protection. One heater should be ordered as a separate item.

CR309 single-phase magnetic reversing starters

NEMA size	Continuous ampere rating[1]	Voltage	hp	Open type Product number	NEMA type 1 Product number	NEMA type 12[2] Product number	NEMA type 4/4X[2] Product number
00	9	115–120	⅓	CR309A002AFA	CR309A102AFA	–	–
00	9	230–240	1	CR309A003AFA	CR309A103AFA	–	–
0	18	115–120	1	CR309B002BBA	CR309B102DAA	CR309B202DAA	CR309B402CCA
0	18	230–240	2	CR309B003BBA	CR309B103DAA	CR309B203DAA	CR309B403CCA
1	27	115–120	2	CR309C002FSA	CR309C102DAA	CR309C202ALA	CR309C402BXA
1	27	230–240	3	CR309C003FSA	CR309C103DAA	CR309C203ALA	CR309C403BXA

[1]Motor full load current should not exceed continuous ampere rating of the starter.
[2]External reset not included on standard listed forms.

Open/enclosed non-combination magnetic starters

CR309 reversing with thermal overload relay

NEMA sizes 00–7 with thermal overload relay
600 volts maximum 50/60 Hz

Includes a holding interlock, mechanical and cross-electrical interlock on each contactor, pressure terminals for the line and load connections, plus a 3-leg block type overload relay (manual reset). One NO isolated contact on the overload relay is available. To order, add suffix LAA to product numbers listed in table for enclosed types and open forms.

CR309 three-phase magnetic reversing starters

NEMA size	Continuous ampere rating[1]	Voltage (60 Hz)	hp	Open type w/ vertical mechanical interlock Product number	Open type w/ horizontal mechanical interlock Product number	NEMA type 1 Product number	NEMA type 3R Product number	NEMA type 12 Product number	NEMA type 4/4X Product number
00	9	Separate control — 115–120 V		–	CR309A002	–	–	–	–
00	9	200–208	1½	–	CR309A023	–	–	–	–
00	9	230–240	1½	–	CR309A003	–	–	–	–
00	9	460–480	2	–	CR309A004	–	–	–	–
00	9	575–600	2	–	CR309A005	–	–	–	–
0	18	Separate control — 115–120 V		CR309B002CAA	CR309B002	CR309B10200AAAAA	CR309B60200AAAAA	CR309B20200AAAAA	CR309B40200AAAAA
0	18	200–208	3	CR309B023CAA	CR309B023	CR309B12300AAAAA	CR309B62300AAAAA	CR309B22300AAAAA	CR309B42300AAAAA
0	18	230–240	3	CR309B003CAA	CR309B003	CR309B10300AAAAA	CR309B60300AAAAA	CR309B20300AAAAA	CR309B40300AAAAA
0	18	460–480	5	CR309B004CAA	CR309B004	CR309B10400AAAAA	CR309B60400AAAAA	CR309B20400AAAAA	CR309B40400AAAAA
0	18	575–600	5	CR309B005CAA	CR309B005	CR309B10500AAAAA	CR309B60500AAAAA	CR309B20500AAAAA	CR309B40500AAAAA
1	27	Separate control — 115–120 V		CR309C002CAA	CR309C002	CR309C10200AAAAA	CR309C60200AAAAA	CR309C20200AAAAA	CR309C40200AAAAA
1	27	200–208	7½	CR309C023CAA	CR309C023	CR309C12300AAAAA	CR309C62300AAAAA	CR309C22300AAAAA	CR309C42300AAAAA
1	27	230–240	7½	CR309C003CAA	CR309C003	CR309C10300AAAAA	CR309C60300AAAAA	CR309C20300AAAAA	CR309C40300AAAAA
1	27	460–480	10	CR309C004CAA	CR309C004	CR309C10400AAAAA	CR309C60400AAAAA	CR309C20400AAAAA	CR309C40400AAAAA
1	27	575–600	10	CR309C005CAA	CR309C005	CR309C10500AAAAA	CR309C60500AAAAA	CR309C20500AAAAA	CR309C40500AAAAA
2	45	Separate control — 115–120 V		CR309D002AMA	CR309D002	CR309D10200AAAAA	CR309D60200AAAAA	CR309D20200AAAAA	CR309D40200AAAAA
2	45	200–208	10	CR309D023AMA	CR309D023	CR309D12300AAAAA	CR309D62300AAAAA	CR309D22300AAAAA	CR309D42300AAAAA
2	45	230–240	15	CR309D003AMA	CR309D003	CR309D10300AAAAA	CR309D60300AAAAA	CR309D20300AAAAA	CR309D40300AAAAA
2	45	460–480	25	CR309D004AMA	CR309D004	CR309D10400AAAAA	CR309D60400AAAAA	CR309D20400AAAAA	CR309D40400AAAAA
2	45	575–600	25	CR309D005AMA	CR309D005	CR309D10500AAAAA	CR309D60500AAAAA	CR309D20500AAAAA	CR309D40500AAAAA
3	90	Separate control — 115–120 V		CR309E002AMA	CR309E002	CR309E10200AAAAA	CR309E60200AAAAA	CR309E20200AAAAA	CR309E40200AAAAA
3	90	200–208	25	CR309E023AMA	CR309E023	CR309E12300AAAAA	CR309E62300AAAAA	CR309E22300AAAAA	CR309E42300AAAAA
3	90	230–240	30	CR309E003AMA	CR309E003	CR309E10300AAAAA	CR309E60300AAAAA	CR309E20300AAAAA	CR309E40300AAAAA
3	90	460–480	50	CR309E004AMA	CR309E004	CR309E10400AAAAA	CR309E60400AAAAA	CR309E20400AAAAA	CR309E40400AAAAA
3	90	575–600	50	CR309E005AMA	CR309E005	CR309E10500AAAAA	CR309E60500AAAAA	CR309E20500AAAAA	CR309E40500AAAAA
4	135	Separate control — 115–120 V		CR309F002AMA	CR309F002	CR309F10200AAAAA	CR309F60200AAAAA	CR309F20200AAAAA	CR309F40200AAAAA
4	135	200–208	40	CR309F023AMA	CR309F023	CR309F12300AAAAA	CR309F62300AAAAA	CR309F22300AAAAA	CR309F42300AAAAA
4	135	230–240	50	CR309F003AMA	CR309F003	CR309F10300AAAAA	CR309F60300AAAAA	CR309F20300AAAAA	CR309F40300AAAAA
4	135	460–480	100	CR309F004AMA	CR309F004	CR309F10400AAAAA	CR309F60400AAAAA	CR309F20400AAAAA	CR309F40400AAAAA
4	135	575–600	100	CR309F005AMA	CR309F005	CR309F10500AAAAA	CR309F60500AAAAA	CR309F20500AAAAA	CR309F40500AAAAA
5	270	Separate control — 115–120 V		CR309G002AMA	CR309G002	CR309G10200AAAAA	CR309G60200AAAAA	CR309G20200AAAAA	CR309G40200AAAAA
5	270	200–208	75	CR309G023AMA	CR309G023	CR309G12300AAAAA	CR309G62300AAAAA	CR309G22300AAAAA	CR309G42300AAAAA
5	270	230–240	100	CR309G003AMA	CR309G003	CR309G10300AAAAA	CR309G60300AAAAA	CR309G20300AAAAA	CR309G40300AAAAA
5	270	460–480	200	CR309G004AMA	CR309G004	CR309G10400AAAAA	CR309G60400AAAAA	CR309G20400AAAAA	CR309G40400AAAAA
5	270	575–600	200	CR309G005AMA	CR309G005	CR309G10500AAAAA	CR309G60500AAAAA	CR309G20500AAAAA	CR309G40500AAAAA

[1]Motor full load current should not exceed continuous ampere rating of the starter.

Open/enclosed non-combination magnetic starters

CR309 2-speed starters



CR309C002BAA

200 horsepower maximum
NEMA Sizes 0–5,
600 volts maximum 50/60 Hz

Used for full-voltage operation of two-speed squirrel-cage induction motors at either speed. Consists of two mechanical and cross-electrical interlocked contactors with two three-leg block type overload relays, one on each contactor. These bimetallic relays provide overload protection for each speed. 3-3 pole starters are for two-speed, two winding motors; 5-3 pole starters are for two-speed, one-winding consequent pole motors.

Proper motor-speed selection is obtained by adding pilot devices to correspond to each of the motor speeds.

Open/enclosed non-combination magnetic starters

CR309 2-speed starters

Two-speed, two-winding, 3-3 pole
Non-combination, open, NEMA type 1, 3R, 12, 4/4X
NEMA sizes 0–5 with thermal overload relay
600 volts maximum 50/60 hertz

Three-phase
Includes a holding interlock, mechanical and cross-electrical interlock, pressure terminals for the line and load connections, plus a 3-leg block type overload relay (manual reset) for each speed. All enclosures include external reset. One NO isolated contact on each overload relay is available as an option. To order, change suffix AKA to LKA for product numbers listed in table. Six heaters should be ordered as separate items. The product numbers listed are starters suitable for wye or closed delta connected motor windings.

CR309, three-phase two-winding magnetic starters

NEMA size	Continuous ampere rating[1]	Voltage (60 Hz)	hp	Open type Product number	NEMA type 1 Product number	NEMA type 3R Product number	NEMA type 12 Product number	NEMA type 4/4X Product number
0	18	Separate control—115-120 V		CR309B002AKA	CR309B102AKA	CR309B602AKA	CR309B202AKA	CR309B402AKA
0	18	200-208	3	CR309B023AKA	CR309B123AKA	CR309B623AKA	CR309B223AKA	CR309B423AKA
0	18	230-240	3	CR309B003AKA	CR309B103AKA	CR309B603AKA	CR309B203AKA	CR309B403AKA
0	18	460-480	5	CR309B004AKA	CR309B104AKA	CR309B604AKA	CR309B204AKA	CR309B404AKA
0	18	575-600	5	CR309B005AKA	CR309B105AKA	CR309B605AKA	CR309B205AKA	CR309B405AKA
1	27	Separate control—115-120 V		CR309C002AKA	CR309C102AKA	CR309C602AKA	CR309C202AKA	CR309C402AKA
1	27	200-208	7½	CR309C023AKA	CR309C123AKA	CR309C623AKA	CR309C223AKA	CR309C423AKA
1	27	230-240	7½	CR309C003AKA	CR309C103AKA	CR309C603AKA	CR309C203AKA	CR309C403AKA
1	27	460-480	10	CR309C004AKA	CR309C104AKA	CR309C604AKA	CR309C204AKA	CR309C404AKA
1	27	575-600	10	CR309C005AKA	CR309C105AKA	CR309C605AKA	CR309C205AKA	CR309C405AKA
2	45	Separate control—115-120 V		CR309D002AKA	CR309D102AKA	CR309D602AKA	CR309D202AKA	CR309D402AKA
2	45	200-208	10	CR309D023AKA	CR309D123AKA	CR309D623AKA	CR309D223AKA	CR309D423AKA
2	45	230-240	15	CR309D003AKA	CR309D103AKA	CR309D603AKA	CR309D203AKA	CR309D403AKA
2	45	460-480	25	CR309D004AKA	CR309D104AKA	CR309D604AKA	CR309D204AKA	CR309D404AKA
2	45	575-600	25	CR309D005AKA	CR309D105AKA	CR309D605AKA	CR309D205AKA	CR309D405AKA
3	90	Separate control—115-120 V		CR309E002AKA	CR309E102AKA	CR309E602AKA	CR309E202AKA	CR309E402AKA
3	90	200-208	25	CR309E023AKA	CR309E123AKA	CR309E623AKA	CR309E223AKA	CR309E423AKA
3	90	230-240	30	CR309E003AKA	CR309E103AKA	CR309E603AKA	CR309E203AKA	CR309E403AKA
3	90	460-480	50	CR309E004AKA	CR309E104AKA	CR309E604AKA	CR309E204AKA	CR309E404AKA
3	90	575-600	50	CR309E005AKA	CR309E105AKA	CR309E605AKA	CR309E205AKA	CR309E405AKA
4	135	Separate control—115-120 V		CR309F002AKA	CR309F102AKA	CR309F602AKA	CR309F202AKA	CR309F402AKA
4	135	200-208	40	CR309F023AKA	CR309F123AKA	CR309F623AKA	CR309F223AKA	CR309F423AKA
4	135	230-240	50	CR309F003AKA	CR309F103AKA	CR309F603AKA	CR309F203AKA	CR309F403AKA
4	135	460-480	100	CR309F004AKA	CR309F104AKA	CR309F604AKA	CR309F204AKA	CR309F404AKA
4	135	575-600	100	CR309F005AKA	CR309F105AKA	CR309F605AKA	CR309F205AKA	CR309F405AKA
5	270	Separate control—115-120 V		CR309G002AKA	CR309G102AKA	CR309G602AKA	CR309G202AKA	CR309G402AKA
5	270	200-208	75	CR309G023AKA	CR309G123AKA	CR309G623AKA	CR309G223AKA	CR309G423AKA
5	270	230-240	100	CR309G003AKA	CR309G103AKA	CR309G603AKA	CR309G203AKA	CR309G403AKA
5	270	460-480	200	CR309G004AKA	CR309G104AKA	CR309G604AKA	CR309G204AKA	CR309G404AKA
5	270	575-600	200	CR309G005AKA	CR309G105AKA	CR309G605AKA	CR309G205AKA	CR309G405AKA

[1]Motor full load current should not exceed continuous ampere rating of the starter.

Open/enclosed non-combination magnetic starters

CR309 2-speed starters

Two-speed, one-winding (consequent pole), 5-3 pole
Non-combination, open, NEMA type 1, 3R, 12, 4/4X
NEMA sizes 0–5 with thermal overload relay
600 volts maximum 50/60 hertz

Three-phase
Includes a holding interlock, mechanical and cross-electrical interlock, pressure terminals for the line and load connections, plus a 3-leg block type overload relay (manual reset) for each speed. All enclosures include external reset. One NO isolated contact on each overload relay is available as an option. To order, change suffix AKA to LKA for product numbers listed in table. Six heaters should be ordered as separate items. Starters are wired for constant or variable torque motor application. Reconnection of control wiring may be required for constant horsepower application. Motor full-load current should not exceed continuous ampere rating of starter.

CR309, three-phase one-winding magnetic starters

NEMA size	Continuous ampere rating[1]	Voltage (60 Hz)	hp	Open type Product number	NEMA type 1 Product number	NEMA type 3R Product number	NEMA type 12 Product number	NEMA type 4/4X Product number
0	18	Separate control—115-120 V		CR309R002AEA	CR309R102AEA	CR309R602AEA	CR309R202AEA	CR309R402AEA
0	18	200-208	3	CR309R023AEA	CR309R123AEA	CR309R623AEA	CR309R223AEA	CR309R423AEA
0	18	230-240	3	CR309R003AEA	CR309R103AEA	CR309R603AEA	CR309R203AEA	CR309R403AEA
0	18	460-480	5	CR309R004AEA	CR309R104AEA	CR309R604AEA	CR309R204AEA	CR309R404AEA
0	18	575-600	5	CR309R005AEA	CR309R105AEA	CR309R605AEA	CR309R205AEA	CR309R405AEA
1	27	Separate control—115-120 V		CR309S002AEA	CR309S102AEA	CR309S602AEA	CR309S202AEA	CR309S402AEA
1	27	200-208		CR309S023AEA	CR309S123AEA	CR309S623AEA	CR309S223AEA	CR309S423AEA
1	27	230-240	7½	CR309S003AEA	CR309S103AEA	CR309S603AEA	CR309S203AEA	CR309S403AEA
1	27	460-480	10	CR309S004AEA	CR309S104AEA	CR309S604AEA	CR309S204AEA	CR309S404AEA
1	27	575-600	10	CR309S005AEA	CR309S105AEA	CR309S605AEA	CR309S205AEA	CR309S405AEA
2	45	Separate control—115-120 V		CR309T002AEA	CR309T102AEA	CR309T602AEA	CR309T202AEA	CR309T402AEA
2	45	200-208	10	CR309T023AEA	CR309T123AEA	CR309T623AEA	CR309T223AEA	CR309T423AEA
2	45	230-240	15	CR309T003AEA	CR309T103AEA	CR309T603AEA	CR309T203AEA	CR309T403AEA
2	45	460-480	25	CR309T004AEA	CR309T104AEA	CR309T604AEA	CR309T204AEA	CR309T404AEA
2	45	575-600	25	CR309T005AEA	CR309T105AEA	CR309T605AEA	CR309T205AEA	CR309T405AEA
3	90	Separate control—115-120 V		CR309U002AEA	CR309U102AEA	CR309U602AEA	CR309U202AEA	CR309U402AEA
3	90	200-208	25	CR309U023AEA	CR309U123AEA	CR309U623AEA	CR309U223AEA	CR309U423AEA
3	90	230-240	30	CR309U003AEA	CR309U103AEA	CR309U603AEA	CR309U203AEA	CR309U403AEA
3	90	460-480	50	CR309U004AEA	CR309U104AEA	CR309U604AEA	CR309U204AEA	CR309U404AEA
3	90	575-600	50	CR309U005AEA	CR309U105AEA	CR309U605AEA	CR309U205AEA	CR309U405AEA
4	135	Separate control—115-120 V		CR309W002AEA	CR309W102AEA	CR309W602AEA	CR309W202AEA	CR309W402AEA
4	135	200-208	40	CR309W023AEA	CR309W123AEA	CR309W623AEA	CR309W223AEA	CR309W423AEA
4	135	230-240	50	CR309W003AEA	CR309W103AEA	CR309W603AEA	CR309W203AEA	CR309W403AEA
4	135	460-480	100	CR309W004AEA	CR309W104AEA	CR309W604AEA	CR309W204AEA	CR309W404AEA
4	135	575-600	100	CR309W005AEA	CR309W105AEA	CR309W605AEA	CR309W205AEA	CR309W405AEA
5	270	Separate control—115-120 V		CR309Z002AEA	CR309Z102AEA	CR309Z602AEA	CR309Z202AEA	CR309Z402AEA
5	270	200-208	75	CR309Z023AEA	CR309Z123AEA	CR309Z623AEA	CR309Z223AEA	CR309Z423AEA
5	270	230-240	100	CR309Z003AEA	CR309Z103AEA	CR309Z603AEA	CR309Z203AEA	CR309Z403AEA
5	270	460-480	200	CR309Z004AEA	CR309Z104AEA	CR309Z604AEA	CR309Z204AEA	CR309Z404AEA
5	270	575-600	200	CR309Z005AEA	CR309Z105AEA	CR309Z605AEA	CR309Z205AEA	CR309Z405AEA

[1]Motor full load current should not exceed continuous ampere rating of the starter.

Enclosed combination magnetic starters

CR307, CR407, CR308, CR408 non-reversing



CR307 enclosed combination starter

400 horsepower maximum
NEMA sizes 0–6
600 volts maximum
50/60 Hz

Application

These combination starters are used for full voltage starting of single-speed squirrel-cage induction motors up to 400 horsepower maximum, 600 volts maximum. Each starter provides short-circuit protection by means of a fusible disconnect, a thermal magnetic trip circuit breaker, or circuit interrupter function with a non-fusible disconnect switch.

Features

- Branch circuit protection — is provided by means of a disconnect switch or molded case circuit breaker.
- Mechanism — always controls interrupting switch.
- Easy inspection, maintenance — performed from starter front.
- LED lights standard.
- Optional factory-installed control transformer.

Enclosed combination magnetic starters

CR307, CR407 non-reversing, thermal magnetic circuit breaker

NEMA sizes 0–6, thermal magnetic circuit breaker type
600 volts maximum 50/60 Hz

Standard features

Tmax® XT circuit breaker. Includes a holding interlock, pressure terminals for the line and load connections, plus a 3-leg block type ambient compensated overload relay with manual reset. All enclosures include external reset. NO/NC contacts on the overload relay are provided. LED lights standard.

CR307/407 thermal magnetic circuit breaker type

Voltage (60 Hz)	NEMA size	Max. hp	Continuous amp rating	CB rating (amps)	NEMA type 1 Product number	NEMA type 3R Product number	NEMA type 12 Product number	NEMA type 4/4X Product number
200–208	0	2	18	15	CR307BT08TC4AAAAA	CR407B608TC4AAAAA	CR407B208TC4AAAAA	CR407B408TC4AAAAA
200–208	0	3	18	20	CR307BT08TD4AAAAA	CR407B608TD4AAAAA	CR407B208TD4AAAAA	CR407B408TD4AAAAA
200–208	1	5	27	30	CR307CT08TF4AAAAA	CR407C608TF4AAAAA	CR407C208TF4AAAAA	CR407C408TF4AAAAA
200–208	1	7½	27	40	CR307CT08TG4AAAAA	CR407C608TG4AAAAA	CR407C208TG4AAAAA	CR407C408TG4AAAAA
200–208	2	10	45	50	CR307DT08TH4AAAAA	CR407D608TH4AAAAA	CR407D208TH4AAAAA	CR407D408TH4AAAAA
200–208	3	15	90	80	CR407E108TL4AAAAA	CR407E608TL4AAAAA	CR407E208TL4AAAAA	CR407E408TL4AAAAA
200–208	3	20	90	100	CR407E108TN4AAAAA	CR407E608TN4AAAAA	CR407E208TN4AAAAA	CR407E408TN4AAAAA
200–208	3	25	90	125	CR407E108TQ4AAAAA	CR407E608TQ4AAAAA	CR407E208TQ4AAAAA	CR407E408TQ4AAAAA
200–208	4	30	135	150	CR407F108TR4AAAAA	CR407E608TQ4AAAAA	CR407F208TR4AAAAA	CR407F408TR4AAAAA
200–208	4	40	135	200	CR407F108TT4AAAAA	CR407F608TT4AAAAA	CR407F208TT4AAAAA	CR407F408TT4AAAAA
230–240	0	3	18	15	CR307BT03TC4AAAAA	CR407B603TC4AAAAA	CR407B203TC4AAAAA	CR407B403TC4AAAAA
230–240	1	5	27	25	CR307CT03TE4AAAAA	CR407C603TE4AAAAA	CR407C203TE4AAAAA	CR407C403TE4AAAAA
230–240	1	7½	27	40	CR307CT03TG4AAAAA	CR407C603TG4AAAAA	CR407C203TG4AAAAA	CR407C403TG4AAAAA
230–240	2	10	45	50	CR307DT03TH4AAAAA	CR407D603TH4AAAAA	CR407D203TH4AAAAA	CR407D403TH4AAAAA
230–240	2	15	45	70	CR307DT03TK4AAAAA	CR407D603TK4AAAAA	CR407D203TK4AAAAA	CR407D403TK4AAAAA
230–240	3	20	90	90	CR407E103TM4AAAAA	CR407E603TM4AAAAA	CR407E203TM4AAAAA	CR407E403TM4AAAAA
230–240	3	25	90	110	CR407E103TP4AAAAA	CR407E603TP4AAAAA	CR407E203TP4AAAAA	CR407E403TP4AAAAA
230–240	3	30	90	125	CR407E103TP4AAAAA	CR407E603TQ4AAAAA	CR407E203TQ4AAAAA	CR407E403TQ4AAAAA
230–240	4	40	135	175	CR407F103TS4AAAAA	CR407F603TS4AAAAA	CR407F203TS4AAAAA	CR407F403TS4AAAAA
230–240	4	50	135	200	CR407F103TT4AAAAA	CR407F603TS4AAAAA	CR407F203TT4AAAAA	CR407F403TT4AAAAA
460–480	0	5	18	15	CR307BT04TC4AAAAA	CR407B604TC4AAAAA	CR407B204TC4AAAAA	CR407B404TC4AAAAA
460–480	1	7½	27	20	CR307CT04TD4AAAAA	CR407C604TD4AAAAA	CR407C204TD4AAAAA	CR407C404TD4AAAAA
460–480	1	10	27	25	CR307CT04TE4AAAAA	CR407C604TE4AAAAA	CR407C204TE4AAAAA	CR407C404TE4AAAAA
460–480	2	15	45	40	CR307DT04TG4AAAAA	CR407D604TG4AAAAA	CR407D204TG4AAAAA	CR407D404TG4AAAAA
460–480	2	20	45	50	CR307DT04TH4AAAAA	CR407D604TH4AAAAA	CR407D204TH4AAAAA	CR407D404TH4AAAAA
460–480	2	25	45	60	CR307DT04TH4AAAAA	CR407D604TJ4AAAAA	CR407D204TJ4AAAAA	CR407D404TJ4AAAAA
460–480	3	30	90	60	CR407E104TJ4AAAAA	CR407D604TH4AAAAA	CR407E204TJ4AAAAA	CR407E404TJ4AAAAA
460–480	3	40	90	80	CR407E104TL4AAAAA	CR407E604TL4AAAAA	CR407E204TL4AAAAA	CR407E404TL4AAAAA
460–480	3	50	90	100	CR407E104TN4AAAAA	CR407E604TN4AAAAA	CR407E204TN4AAAAA	CR407E404TN4AAAAA
460–480	4	60	135	125	CR407E104TN4AAAAA	CR407F604TQ4AAAAA	CR407F204TQ4AAAAA	CR407F404TQ4AAAAA
460–480	4	75	135	150	CR407F104TR4AAAAA	CR407F604TR4AAAAA	CR407F204TR4AAAAA	CR407F404TR4AAAAA
460–480	4	100	135	200	CR407F104TT4AAAAA	CR407F604TT4AAAAA	CR407F204TT4AAAAA	CR407F404TT4AAAAA
575–600	0	5	18	15	CR407F104TT4AAAAA	CR407B605TC4AAAAA	CR407B205TC4AAAAA	CR407B405TC4AAAAA
575–600	1	7 ½	27	15	CR407F104TT4AAAAA	CR407C605TC4AAAAA	CR407C205TC4AAAAA	CR407C405TC4AAAAA
575–600	1	10	27	20	CR407F104TT4AAAAA	CR407C605TD4AAAAA	CR407C205TD4AAAAA	CR407C405TC4AAAAA
575–600	2	15	45	30	CR407F104TT4AAAAA	CR407D605TF4AAAAA	CR407D205TF4AAAAA	CR407D405TF4AAAAA
575–600	2	20	45	40	CR407F104TT4AAAAA	CR407D605TG4AAAAA	CR407D205TG4AAAAA	CR407D405TG4AAAAA
575–600	2	25	45	50	CR407F104TT4AAAAA	CR407D605TH4AAAAA	CR407D205TH4AAAAA	CR407D405TH4AAAAA
575–600	3	30	90	50	CR407E105TH4AAAAA	CR407E605TH4AAAAA	CR407E205TH4AAAAA	CR407E405TH4AAAAA
575–600	3	40	90	70	CR407E105TH4AAAAA	CR407E605TK4AAAAA	CR407E205TK4AAAAA	CR407E405TK4AAAAA
575–600	3	50	90	80	CR407E105TL4AAAAA	CR407E605TL4AAAAA	CR407E205TL4AAAAA	CR407E405TL4AAAAA
575–600	4	60	135	100	CR407F105TN4AAAAA	CR407F605TN4AAAAA	CR407F205TN4AAAAA	CR407F405TN4AAAAA
575–600	4	75	135	125	CR407F105TQ4AAAAA	CR407F605TQ4AAAAA	CR407F205TQ4AAAAA	CR407F405TQ4AAAAA
575–600	4	100	135	150	CR407F105TQ4AAAAA	CR407F605TR4AAAAA	CR407F205TR4AAAAA	CR407F405TR4AAAAA

[1]For ordinary starting duty only.

- NEMA size 0–4 starters with 115–120 volt, 60 Hz coil for separate control are available. To order, replace digits 8 and 9 of listed product numbers with 02. Example: CR407B604TC1AAAAA with 115–120 volt, 60 Hz coil for separate control becomes CR407B602TC1AAAAA.
- Motor full load current should not exceed continuous ampere rating of starter.

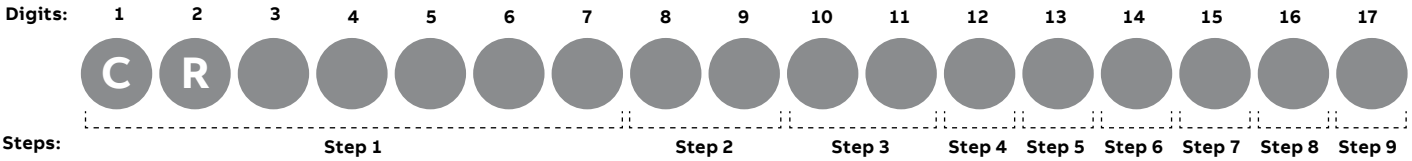
02

Enclosed combination magnetic starters

CR307 non-reversing, thermal magnetic circuit breaker

Part number configuration

Valid for NEMA sizes 0–2, type 1 standard enclosure



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–7) select NEMA size and enclosure

	NEMA type 1
NEMA size	Standard enclosure
0	CR307BT
1	CR307CT
2	CR307DT

Note: All enclosures include external overload reset buttons.

Step 2 (digits 8, 9) select control voltage

Control circuit voltage and CPT	No CPT	Control fuses, no CPT	Standard size CPT	Standard size CPT + 100 VA
120 V with surge protector (SP)	01	F1	–	–
120 V	02	F2	–	–
240 V	03	F3	–	–
480 V	04	F4	–	–
600 V	05	F5	–	–
208 V	08	F8	–	–
24 V	09	–	–	–
240 V/120 V with CPT	–	–	93	13
480 V/120 V with CPT	–	–	94	14
600 V/120 V with CPT	–	–	95	15
208 V/120 V with CPT	–	–	98	18
240 V/120 V with CPT and SP	–	–	33	53
480 V/120 V with CPT and SP	–	–	34	54
600 V/120 V with CPT and SP	–	–	35	55
208 V/120 V with CPT and SP	–	–	38	58
240 V/24 V with CPT	–	–	S3	A3
480 V/24 V with CPT	–	–	S4	A4
600 V/24 V with CPT	–	–	S5	A5
208 V/24 V with CPT	–	–	S8	A8

Note: CPT includes 2 primary fuses and 1 secondary fuse.

Step 3 (digits 10, 11) select protective device

Thermal magnetic circuit breaker

	200–208 V			240 V			480 V			600 V		
NEMA size	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code
0	2	15	TC	3	15	TC	5	15	TC	5	15	TC
	3	15	TC	–	–	–	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	7½	15	TC
	5	25	TE	5	25	TE	7½	25	TE	–	–	–
	–	–	–	–	–	–	–	–	–	10	25	TE
	7½	40	TG	7½	40	TG	10	25	TE	10	20	TD
2	–	–	–	–	–	–	15	40	TG	15	40	TG
	10	60	TJ	10	60	TJ	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	20	40	TG
	–	–	–	15	60	TJ	20	60	TJ	–	–	–
	–	–	–	–	–	–	25	60	TJ	25	60	TJ

Enclosed combination magnetic starters

CR307 non-reversing, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–2, type 1 standard enclosure

Step 4 (digit 12) select overload relay

Overload relay	Code
No overload	Z
Thermal bi-metallic ambient compensated (1 NC)	3
Thermal bi-metallic ambient compensated (1 NO–1 NC)	4
Solid state overload (1 NO–1 NC)	(#)

(#) Select code for solid state overload amp rating from standard or optional ranges table below.
No overload is not available with 387, 487, 490, 492 and 494 product lines.

Solid state overload relay — standard range

		200–208 V		230–240 V		460–480 V		575–600 V	
NEMA size	OL range	Max. hp	Code	Max. hp	Code	Max. hp	Code	Max. hp	Code
0	0.8–1.7	–	–	–	–	3/4	D	1	D
	1.6–3.4	½	E	¾	E	2	E	2	E
	3.2–6.8	1	F	2	F	3	F	5	F
	6.5–13.5	3	G	3	G	5	G	–	–
1	6.5–13.5	–	–	–	–	7½	G	10	G
	13–27	7½	H	7½	H	10	H	–	–
2	13–27	–	–	–		20	H	25	H
	25–50	10	J	15	J	25	J	–	–

Optional ranges

	NEMA size	
OL amp range	0 and 1	2
0.4–0.85	C	–
0.8–1.7	D	–
1.6–3.4	E	–
3.2–6.8	F	–
6.5–13.5	G	G
13–27	H	H
25–50	–	J
17–35	–	–
35–70	–	–
65–135	–	–

Step 5 (digit 13) select auxiliary contacts

Auxiliary contacts	Code
None	A
1 NO	B
1 NC	C
1 NO–1 NC	D
2 NO	E
2 NC	F
2 NO–1 NC	G
1 NO–2 NC	H
3 NO	J
3 NC	K
4 NO	L[1]
4 NC	M[1]
2 NO–2 NC	N[1]
3 NO–1 NC	P[1]
1 NO–3 NC	R[1]

[1]Exceeds maximum number of contacts for some pilot light selections. See step 8 (digit 16)

Step 6 (digit 14) select monitoring options

Device	Code
None[2]	A

[2]Phase failure relay is not available for CR307 series standard enclosures. If this is required for your application, use CR407 series oversized enclosure.

Step 7 (digit 15) select pushbutton/ selector switch

Pushbutton/selector switch — heavy duty	Code
None	A
Start/stop pushbutton	J
Hand-off-auto (HOA) selector switch	L
Off-on selector switch	M
HOA selector switch and start pushbutton	S
Keyed HOA selector switch, key removal center pos.	N

Enclosed combination magnetic starters

CR307 non-reversing, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–2, type 1 standard enclosure

Step 8 (digit 16) select pilot device

Pilot light (heavy duty) type	Color — functionality	Code
None		A
LED lights	Red — across coil	1
	Green — across coil	2
	Red — thru NO aux contact	3[3]
	Green — thru NC aux contact	4[3]
	Red — thru NO aux contact and green — thru NC aux contact	5[4]
	Red — across coil and green — thru NC aux contact	6[3]
	Red — across coil and green — thru NC aux contact and unwired amber	7[3]
Push-to-test lights	Red — across coil	R
	Green — across coil	S
	Red — thru NO aux contact	C[3]
	Green — thru NC aux contact	D[3]
	Red — thru NO aux contact and green — thru NC aux contact	E[4]
	Red — across coil and green — thru NC aux contact	V[3]
	Red — across coil and green — thru NC aux contact and unwired amber	Y[3]

[3]Maximum of 3 aux contacts may be added to sizes 0 and 1.
[4]Maximum of 2 aux contacts may be added to sizes 0 and 1. Maximum of 3 aux contacts may be added to sizes 2-4.
Note: Auxiliary contacts wired as part of pilot light selection are in addition to the auxiliary contacts selected from Step 5 (digit 13), which are for customer/field connections.

Step 9 (digit 17) select control options

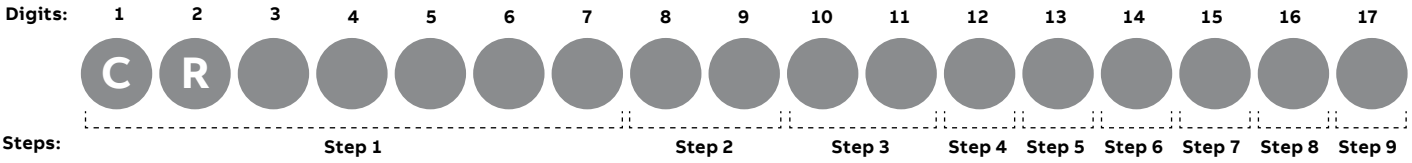
Device	Code
None	A

General note:
On NEMA size 3 and 4 starters, if selecting factory installed and wired operator devices (pushbuttons, selector switches and/or pilot lights), then control circuit fusing, a control power transformer or 120 V separate sourced control is required when the protective device is rated greater than 100 amps.

Enclosed combination magnetic starters

CR407 non-reversing, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–7) select NEMA size and enclosure

	NEMA type 1		NEMA type 3R		NEMA type 12		NEMA type 4/4X	
NEMA size	Standard enclosure	Oversized enclosure	Standard enclosure	Oversized enclosure	Standard enclosure	Oversized enclosure	Standard enclosure	Oversized enclosure
0	Use CR307	CR407B5	CR407B6	CR407BR	CR407B2	CR407B7	CR407B4	CR407BS
1	Use CR307	CR407C5	CR407C6	CR407CR	CR407C2	CR407C7	CR407C4	CR407CS
2	Use CR307	CR407D5	CR407D6	CR407DR	CR407D2	CR407D7	CR407D4	CR407DS
3	CR407E1	CR407E5	CR407E6	CR407ER	CR407E2	CR407E7	CR407E4	CR407ES
4	CR407F1	CR407F5	CR407F6	CR407FR	CR407F2	CR407F7	CR407F4	CR407FS

Note: All enclosures include external overload reset buttons. NEMA type 4/4X enclosures are type 304 stainless steel.

Step 2 (digits 8, 9) select control voltage (no CPT and standard size CPT)

Control circuit voltage and CPT	No CPT	Control fuses, no CPT	Standard size CPT
120 V with surge protector (SP)	01	F1	–
120 V	02	F2	–
240 V	03	F3	–
480 V	04	F4	–
600 V	05	F5	–
208 V	08	F8	–
24 V[1]	09	–	–
240 V/120 V with CPT	–	–	93
480 V/120 V with CPT	–	–	94
600 V/120 V with CPT	–	–	95
208 V/120 V with CPT	–	–	98
240 V/120 V with CPT and SP	–	–	33
480 V/120 V with CPT and SP	–	–	34
600 V/120 V with CPT and SP	–	–	35
208 V/120 V with CPT and SP	–	–	38
240 V/24 V with CPT[1]	–	–	S3
480 V/24 V with CPT[1]	–	–	S4
600 V/24 V with CPT[1]	–	–	S5
208 V/24 V with CPT[1]	–	–	S8

Step 2 (digits 8, 9) select control voltage (extra capacity CPT + 100 VA and 200 VA)

Control circuit voltage and CPT	Standard size CPT + 100 VA	Standard size CPT + 200 VA
120 V with surge protector (SP)	–	–
120 V	–	–
240 V	–	–
480 V	–	–
600 V	–	–
208 V	–	–
24 V[1]	–	–
240 V/120 V with CPT	13	23
480 V/120 V with CPT	14	24
600 V/120 V with CPT	15	25
208 V/120 V with CPT	18	28
240 V/120 V with CPT and SP	53	63
480 V/120 V with CPT and SP	54	64
600 V/120 V with CPT and SP	55	65
208 V/120 V with CPT and SP	58	68
240 V/24 V with CPT[1]	A3	B3
480 V/24 V with CPT[1]	A4	B4
600 V/24 V with CPT[1]	A5	B5
208 V/24 V with CPT[1]	A8	B8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.
[2]Requires oversized enclosure for NEMA sizes 0–2. Select proper NEMA size and enclosure type from step 1 (digits 1–7) table.

Enclosed combination magnetic starters

CR407 non-reversing, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 3 (digits 10, 11) select protective device

Thermal magnetic circuit breaker

	200–208 V			240 V			480 V			600 V		
NEMA size	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code
0	2	15	TC	3	15	TC	5	15	TC	5	15	TC
	3	15	TC	–	–	–	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	7½	15	TC
	5	25	TE	5	25	TE	7½	25	TE	–	–	–
	–	–	–	–	–	–	–	–	–	10	25	TE
	7½	40	TG	7½	40	TG	10	25	TE	10	20	TD
2	–	–	–	–	–	–	15	40	TG	15	40	TG
	10	60	TJ	10	60	TJ	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	20	40	TG
	–	–	–	15	60	TJ	20	60	TJ	–	–	–
	–	–	–	–	–	–	25	60	TJ	25	60	TJ
3	–	–	–	–	–	–	30	60	TJ	30	60	TJ
	15	100	TN	20	100	TN	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	40	60	TJ
	20	100	TN	25	100	TN	40	100	TN	–	–	–
	–	–	–	–	–	–	50	100	TN	50	100	TN
	25	125	TQ	30	125	TQ	–	–	–	–	–	–
4	30	150	TR	–	–	–	60	150	TR	60	150	TR
	–	–	–	40	200	TT	–	–	–	–	–	–
	–	–	–	–	–	–	75	150	TR	75	150	TR
	40	200	TT	50	200	TT	–	–	–	–	–	–
	–	–	–	–	–	–	100	200	TT	100	200	TT

Step 4 (digit 12) select overload relay

Overload relay	Code
No overload	Z
Thermal bi-metallic ambient compensated (1 NC)	3
Thermal bi-metallic ambient compensated (1 NO–1 NC)	4
Solid state overload (1 NO–1 NC)	(#)

(#) Select code for solid state overload amp rating from standard or optional ranges below.
No overload is not available with 387, 487, 490, 492 and 494 product lines.

Solid state overload relay - standard range

		200–208 V		230–240 V		460–480 V		575–600 V	
NEMA size	OL range	Max. hp	Code	Max. hp	Code	Max. hp	Code	Max. hp	Code
0	0.8–1.7	–	–	–	–	3/4	D	1	D
	1.6–3.4	1/2	E	3/4	E	2	E	2	E
	3.2–6.8	1	F	2	F	3	F	5	F
	6.5–13.5	3	G	3	G	5	G	–	–
1	6.5–13.5	–	–	–	–	7½	G	10	G
	13–27	7½	H	7½	H	10	H	–	–
2	13–27	–	–	–	–	20	H	25	H
	25–50	10	J	15	J	25	J	–	–
3	17–35	–	–	–	–	–	–	30	K
	35–70	20	L	25	L	50	L	50	L
	65–135	25	M	30	M	–	–	–	–
4	65–135	40	M	50	M	100	M	100	M

Optional ranges

	NEMA size		
OL amp range	0 and 1	2	3 and 4
0.4–0.85	C	–	–
0.8–1.7	D	–	–
1.6–3.4	E	–	–
3.2–6.8	F	–	–
6.5–13.5	G	G	–
13–27	H	H	–
25–50	–	J	–
17–35	–	–	K
35–70	–	–	L
65–135	–	–	M

Enclosed combination magnetic starters

CR407 non-reversing, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

—

Step 5 (digit 13) select auxiliary contacts

Aux contacts	Code
None	A
1 NO	B
1 NC	C
1 NO–1 NC	D
2 NO	E
2 NC	F
2 NO–1 NC	G
1 NO–2 NC	H
3 NO	J
3 NC	K
4 NO	L[3]
4 NC	M[3]
2 NO–2 NC	N3[3]
3 NO–1 NC	P[3]
1 NO–3 NC	R[3]

[3]Exceeds maximum number of contacts for some pilot light selections. See step 8 (digit 16).

—

Step 6 (digit 14) select monitoring options

Device	Code
None	A
Phase failure relay with undervoltage protection (panel mounted) — 190–480 V (PFR w/UV)	C[2]
Phase failure relay with undervoltage protection (panel mounted) — 575 V (PFR w/UV)	D[2]
Phase failure relay — 208 V (PFR)	E[4,6]
Phase failure relay — 240 V (PFR)	F[4,6]
Phase failure relay — 480 V (PFR)	G[4,6]
Phase failure relay — 575 V (PFR)	H[4,6]
Elapsed time meter (120 V/60 Hz) wired across coil (ETM)	1[2,5]
ETM + PFR w/UV (190–480 V)	L[2,5,6]
ETM + PFR w/UV (575 V)	N[2,5,6]
ETM + PFR (208 V)	P[2,4,5,6]
ETM + PFR (240 V)	Q[2,4,5,6]
ETM + PFR (480 V)	R[2,4,5,6]
ETM + PFR (575 V)	S[2,4,5,6]

[2]Requires oversized enclosure for NEMA sizes 0–2. Select proper NEMA size and enclosure type from step 1 (digits 1–7).
[4]Available for type 1 enclosure only.
[5]Requires 120 V control circuit voltage or CPT with 120 V secondary.
[6]Requires oversized enclosure for phase failure relay.

—

Step 7 (digit 15) select pushbutton/selector switch

Pushbutton Push button/selector switch — heavy duty	Code
None	A
Start/stop pushbutton	J
Hand-off-auto (HOA) selector switch	L
Off-on selector switch	M
HOA selector switch and start pushbutton	S
Keyed HOA selector switch, key removal center pos.	N

Enclosed combination magnetic starters

CR407 non-reversing, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

—

Step 8 (digit 16) select pilot device

Pilot light (heavy duty) type	Color — functionality	Code
None		A
LED lights	Red — across coil	1
	Green — across coil	2
	Red — thru NO aux contact	3[7]
	Green — thru NC aux contact	4[7]
	Red — thru NO aux contact and green — thru NC aux contact	5[8]
	Red — across coil and green — thru NC aux contact	6[7]
	Red — across coil and green — thru NC aux contact and unwired amber	7[7]
Push-to-test lights	Red — across coil	R
	Green — across coil	S
	Red — thru NO aux contact	C[7]
	Green — thru NC aux contact	D[7]
	Red — thru NO aux contact and green — thru NC aux contact	E[8]
	Red — across coil and green — thru NC aux contact	V[7]
	Red — across coil and green — thru NC aux contact and unwired amber	Y[7]

[7]Maximum of 3 Aux contacts may be added to sizes 0 and 1.
[8]Maximum of 2 Aux contacts may be added to sizes 0 and 1. Maximum of 3 Aux contacts may be added to sizes 2–4.
Note: Auxiliary contacts wired as part of pilot light selection are in addition to the auxiliary contacts selected from step 5 (digit 13), which are for customer/field connections.

—

Step 9 (digit 17) select control options

Device	Code
None	A
1 relay, 2 NO-2 NC, 24/120 V coil — unwired	B[2,9]
2 relays, 24/120 V coil — unwired	C[2,9]
DIN rail - for customer use	D[2]
12 point terminal strip — unwired (12 PT strip)	E[2]
Space heater with NC contact	H[2,10]
1 relay + 12 PT strip	J[2,9]
2 relays + 12 PT strip	K[2,9]
DIN rail + 12 PT strip + space heater	L[2,10]
2 relays + 12 PT strip + space heater	M[2,9,10]
Time delay on relay, 24/120 V coil — unwired (TD)	N[2,9]
Time delay off relay, 24/120 V coil — unwired (TD)	P[2,9]
12 PT strip + TD on	R[2,9]
12 PT strip + TD off	S[2,9]
12 PT strip + space heater + TD on	T[2,9,10]
12 PT strip + space heater + TD off	U[2,9,10]

[2]Requires oversized enclosure for NEMA sizes 0–2. Select proper NEMA size and enclosure type from step 1 (digits 1–7).
[9]Relay/timer coil voltage is equivalent to CPT secondary voltage. Requires minimum 100 extra VA CPT option.
[10]Maximum number of auxiliary contacts shall be reduced by 1.

General note:
On NEMA size 3 and 4 starters, if selecting factory installed and wired operator devices (pushbuttons, selector switches and/or pilot lights), then control circuit fusing, a control power transformer or 120 V separate sourced control is required when the protective device is rated greater than 100 amps.

Enclosed combination magnetic starters

CR308, CR408 non-reversing, non-fusible disconnect switch

NEMA sizes 0–6, nonfusible disconnect type
600 volts maximum 50/60 Hz

Standard features
Includes a holding interlock, pressure terminals for the line and load connections, plus a 3-leg block type ambient compensated overload relay with manual reset. All enclosures include external reset. NO/NC contacts on the overload relay are provided. LED lights standard.

CR308/408 non-fusible disconnect

Voltage (60 Hz)	NEMA size	Max. hp	Continuous amp rating	NEMA type 1 Product number	NEMA type 3R Product number	NEMA type 12 Product number	NEMA type 4/4X Product number
200–208	0	3	18	CR308BT081A4AAAAA	CR408B6081A4AAAAA	CR408B2081A4AAAAA	CR408B4081A4AAAAA
200–208	1	7½	27	CR308CT081A4AAAAA	CR408C6081A4AAAAA	CR408C2081A4AAAAA	CR408C4081A4AAAAA
200–208	2	10	45	CR308DT081A4AAAAA	CR408D6081A4AAAAA	CR408D2081A4AAAAA	CR408D4081A4AAAAA
200–208	3	25	90	CR408E1081A4AAAAA	CR408E6081A4AAAAA	CR408E2081A4AAAAA	CR408E4081A4AAAAA
200–208	4	40	135	CR408F1081A4AAAAA	CR408F6081A4AAAAA	CR408F2081A4AAAAA	CR408F4081A4AAAAA
230–240	0	3	18	CR308BT031A4AAAAA	CR408B6031A4AAAAA	CR408B2031A4AAAAA	CR408B4031A4AAAAA
230–240	1	7½	27	CR308CT031A4AAAAA	CR408C6031A4AAAAA	CR408C2031A4AAAAA	CR408C4031A4AAAAA
230–240	2	15	45	CR308DT031A4AAAAA	CR408D6031A4AAAAA	CR408D2031A4AAAAA	CR408D4031A4AAAAA
230–240	3	30	90	CR408E1031A4AAAAA	CR408E6031A4AAAAA	CR408E2031A4AAAAA	CR408E4031A4AAAAA
230–240	4	50	135	CR408F1031A4AAAAA	CR408F6031A4AAAAA	CR408F2031A4AAAAA	CR408F4031A4AAAAA
460–480	0	5	18	CR308BT041A4AAAAA	CR408B6041A4AAAAA	CR408B2041A4AAAAA	CR408B4041A4AAAAA
460–480	1	10	27	CR308CT041A4AAAAA	CR408C6041A4AAAAA	CR408C2041A4AAAAA	CR408C4041A4AAAAA
460–480	2	25	45	CR308DT041A4AAAAA	CR408D6041A4AAAAA	CR408D2041A4AAAAA	CR408D4041A4AAAAA
460–480	3	50	90	CR408E1041A4AAAAA	CR408E6041A4AAAAA	CR408E2041A4AAAAA	CR408E4041A4AAAAA
460–480	4	100	135	CR408F1041A4AAAAA	CR408F6041A4AAAAA	CR408F2041A4AAAAA	CR408F4041A4AAAAA
575–600	0	5	18	CR308BT051A4AAAAA	CR408B6051A4AAAAA	CR408B2051A4AAAAA	CR408B4051A4AAAAA
575–600	1	10	27	CR308CT051A4AAAAA	CR408C6051A4AAAAA	CR408C2051A4AAAAA	CR408C4051A4AAAAA
575–600	2	25	45	CR308DT051A4AAAAA	CR408D6051A4AAAAA	CR408D2051A4AAAAA	CR408D4051A4AAAAA
575–600	3	50	90	CR408E1051A4AAAAA	CR408E6051A4AAAAA	CR408E2051A4AAAAA	CR408E4051A4AAAAA
575–600	4	100	135	CR408F1051A4AAAAA	CR408F6051A4AAAAA	CR408F2051A4AAAAA	CR408F4051A4AAAAA

- NEMA size 0–4 starters with 115–120 volt, 60 Hz coil for separate control are available. To order, replace digits 8 and 9 of listed product numbers with 02. Example: CR408C2051A1AAAAA with 115–120 volt, 60 Hz coil for separate control becomes CR408C2021A1AAAAA.
- Motor full load current should not exceed continuous ampere rating of starter.

Enclosed combination magnetic starters

CR308, CR408 non-reversing, fusible disconnect switch

NEMA sizes 0–6, fusible disconnect type
600 volts maximum 50/60 Hz

Standard features
Includes a holding interlock, pressure terminals for the line and load connections, plus a 3-leg block type ambient compensated overload relay with manual reset. All enclosures include external reset. NO/NC contacts on the overload relay are provided. LED lights standard.

CR308/408 fusible disconnect (class R fuse clips)

Voltage (60 Hz)	NEMA size	Max. hp	Continuous amp rating	Fuse clip amp rating	NEMA type 1 Product number	NEMA type 3R Product number	NEMA type 12 Product number	NEMA type 4/4X Product number
200–208	0	3	18	30	CR308BT08RA4AAAAA	CR408B608RA4AAAAA	CR408B208RA4AAAAA	CR408B408RA4AAAAA
200–208	1	5	27	30	CR308CT08RA4AAAAA	CR408C608RA4AAAAA	CR408C208RA4AAAAA	CR408C408RA4AAAAA
200–208	1	7½	27	60	CR308CT08RB4AAAAA	CR408C608RB4AAAAA	CR408C208RB4AAAAA	CR408C408RB4AAAAA
200–208	2	10	45	60	CR308DT08RB4AAAAA	CR408D608RB4AAAAA	CR408D208RB4AAAAA	CR408D408RB4AAAAA
200–208	3	20	90	100	CR408E108RC4AAAAA	CR408E608RC4AAAAA	CR408E208RC4AAAAA	CR408E408RC4AAAAA
200–208	3	25	90	200[1]	CR408E108RD4AAAAA	CR408E608RD4AAAAA	CR408E208RD4AAAAA	CR408E408RD4AAAAA
200–208	4	40	135	200[1]	CR408F108RD4AAAAA	CR408F608RD4AAAAA	CR408F208RD4AAAAA	CR408F408RD4AAAAA
230–240	0	3	18	30	CR308BT03RA4AAAAA	CR408B603RA4AAAAA	CR408B203RA4AAAAA	CR408B403RA4AAAAA
230–240	1	5	27	30	CR308CT03RA4AAAAA	CR408C603RA4AAAAA	CR408C203RA4AAAAA	CR408C403RA4AAAAA
230–240	1	7½	27	60	CR308CT03RB4AAAAA	CR408C603RB4AAAAA	CR408C203RB4AAAAA	CR408C403RB4AAAAA
230–240	2	15	45	60	CR308DT03RB4AAAAA	CR408D603RB4AAAAA	CR408D203RB4AAAAA	CR408D403RB4AAAAA
230–240	3	25	90	100	CR408E103RC4AAAAA	CR408E603RC4AAAAA	CR408E203RC4AAAAA	CR408E403RC4AAAAA
230–240	3	30	90	200[1]	CR408E103RD4AAAAA	CR408E603RD4AAAAA	CR408E203RD4AAAAA	CR408E403RD4AAAAA
230–240	4	50	135	200[1]	CR408F103RD4AAAAA	CR408F603RD4AAAAA	CR408F203RD4AAAAA	CR408F403RD4AAAAA
460–480	0	5	18	30	CR308BT04R34AAAAA	CR408B604R34AAAAA	CR408B204R34AAAAA	CR408B404R34AAAAA
460–480	1	10	27	30	CR308CT04R34AAAAA	CR408C604R34AAAAA	CR408C204R34AAAAA	CR408C404R34AAAAA
460–480	2	25	45	60	CR308DT04R64AAAAA	CR408D604R64AAAAA	CR408D204R64AAAAA	CR408D404R64AAAAA
460–480	3	50	90	100	CR408E104R14AAAAA	CR408E604R14AAAAA	CR408E204R14AAAAA	CR408E404R14AAAAA
460–480	4	100	135	200[1]	CR408F104R24AAAAA	CR408F604R24AAAAA	CR408F204R24AAAAA	CR408F404R24AAAAA
575–600	0	5	18	30	CR308BT05R34AAAAA	CR408B605R34AAAAA	CR408B205R34AAAAA	CR408B405R34AAAAA
575–600	1	10	27	30	CR308CT05R34AAAAA	CR408C605R34AAAAA	CR408C205R34AAAAA	CR408C405R34AAAAA
575–600	2	15	45	30	CR308DT05R34AAAAA	CR408D605R34AAAAA	CR408D205R34AAAAA	CR408D405R34AAAAA
575–600	2	25	45	60	CR308DT05R64AAAAA	CR408D605R64AAAAA	CR408D205R64AAAAA	CR408D405R64AAAAA
575–600	3	30	90	60	CR408E105R64AAAAA	CR408E605R64AAAAA	CR408E205R64AAAAA	CR408E405R64AAAAA
575–600	3	50	90	100	CR408E105R14AAAAA	CR408E605R14AAAAA	CR408E205R14AAAAA	CR408E405R14AAAAA
575–600	4	60	135	100[1]	CR408F105R14AAAAA	CR408F605R14AAAAA	CR408F205R14AAAAA	CR408F405R14AAAAA
575–600	4	100	135	200[1]	CR408F105R24AAAAA	CR408F605R24AAAAA	CR408F205R24AAAAA	CR408F405R24AAAAA

[1]Oversized enclosure provided as standard.

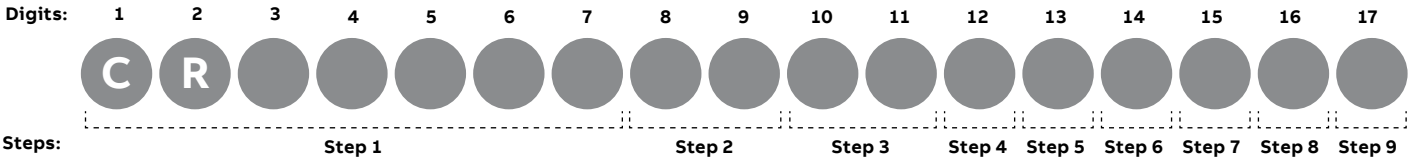
- NEMA size 0–4 starters with 115–120 volt, 60 Hz coil for separate control are available. To order, replace digits 8 and 9 of listed product numbers with 02. Example: CR408D604R61AAAAA with 115–120 volt, 60 Hz coil for separate control becomes CR408D602R61AAAAA.
- For ordinary starting duty only
- Motor full load current should not exceed continuous ampere rating of starter.
- hp rating is based on dual element fuses.

Enclosed combination magnetic starters

CR308 non-reversing, disconnect switch

Part number configuration

Valid for NEMA sizes 0–2, type 1 standard enclosure



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–7) select NEMA size and enclosure

NEMA size	NEMA type 1 Standard enclosure
0	CR308BT
1	CR308CT
2	CR308DT

Note: All enclosures include external overload reset buttons.

Step 2 (digits 8, 9) select control voltage

Control circuit voltage and CPT	No CPT	Control fuses, no CPT	Standard size CPT
120 V with surge protector (SP)	01	F1	–
120 V	02	F2	–
240 V	03	F3	–
480 V	04	F4	–
600 V	05	F5	–
208 V	08	F8	–
24 V	09	–	–
240 V/120 V with CPT	–	–	93
480 V/120 V with CPT	–	–	94
600 V/120 V with CPT	–	–	95
208 V/120 V with CPT	–	–	98
240 V/120 V with CPT and SP	–	–	33
480 V/120 V with CPT and SP	–	–	34
600 V/120 V with CPT and SP	–	–	35
208 V/120 V with CPT and SP	–	–	38
240 V/24 V with CPT	–	–	S3
480 V/24 V with CPT	–	–	S4
600 V/24 V with CPT	–	–	S5
208 V/24 V with CPT	–	–	S8

Note: CPT includes 2 primary fuses and 1 secondary fuse.

Step 3 (digits 10, 11) select protective device

NEMA size	Code
All	1A

Note: All enclosures include external overload reset buttons.

Disconnect with class H fuse clips — for use with non-time delay/single element class H fuses

	200–208 V			230–240 V			460–480 V			575–600 V		
NEMA size	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code
0	3	30	HA	3	30	HA	5	30	H3	5	30	H3
1	7½	60	HB	7½	60	HB	7½	30	H3	10	30	H3
	–	–	–	–	–	–	10	60	H6	–	60	H6
2	10	100	HC	15	100	HC	15	60	H6	20	60	H6
	–	–	–	–	–	–	25	100	H1[1]	25	100	H1[1]

[1]Oversized enclosure included as standard.

Enclosed combination magnetic starters

CR308 non-reversing, disconnect switch

Part number configuration
Valid for NEMA sizes 0–2, type 1 standard enclosure

Step 3 (digits 10, 11) select protective device (continued)

Disconnect with class R fuse clips — for use with time delay/dual element class RK1/RK5 fuses

	200–208 V			230–240 V			460–480 V			575–600 V		
NEMA size	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code
0	3	30	RA	3	30	RA	5	30	R3	5	30	R3
1	5	30	RA	5	30	RA	10	30	R3	10	30	R3
	7½	60	RB	7½	60	RB	–	–	–	–	–	–
2	10	60	RB	15	60	RB	–	30	R3	15	30	R3
	–	–	–	–	–	–	25	60	R6	25	60	R6

Disconnect with class J fuse clips — for use with time delay/dual element class J fuses

	200–208 V			230–240 V			460–480 V			575–600 V		
NEMA size	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code
0	3	30	J3	3	30	J3	5	30	J3	5	30	J3
1	5	30	J3	5	30	J3	10	30	J3	10	30	J3
	7½	60	J6	7½	60	J6	–	–	–	–	–	–
2	10	60	J6	15	60	J6	–	30	J3	15	30	J3
	–	–	–	–	–	–	25	60	J6	25	60	J6

Step 4 (digit 12) select overload relay

Overload relay	Code
No overload	Z
Thermal bi-metallic ambient compensated (1 NC)	3
Thermal bi-metallic ambient compensated (1 NO–1 NC)	4
Solid state overload (1 NO–1 NC)	(#)

(#) Select code for solid state overload amp rating from standard or optional ranges table below.
No overload is not available with 387, 487, 490, 492 and 494 product lines.

Solid state overload relay — standard range

		200–208 V		230–240 V		460–480 V		575–600 V	
NEMA size	OL range	Max. hp	Code	Max. hp	Code	Max. hp	Code	Max. hp	Code
0	0.8–1.7	–	–	–	–	¾	D	1	D
	1.6–3.4	½	E	¾	E	2	E	2	E
	3.2–6.8	1	F	2	F	3	F	5	F
	6.5–13.5	3	G	3	G	5	G	–	–
1	6.5–13.5	–	–	–	–	7½	G	10	G
	13–27	7½	H	7½	H	10	H	–	–
2	13–27		–	–	–	20	H	25	H
	25–50	10	J	15	J	25	J	–	–

Optional ranges

	NEMA size	
OL amp range	0 and 1	2
0.4–0.85	C	–
0.8–1.7	D	–
1.6–3.4	E	–
3.2–6.8	F	–
6.5–13.5	G	G
13–27	H	H
25–50	–	J
17–35	–	–
35–70	–	–
65–135	–	–

Step 5 (digit 13) select auxiliary contacts

Auxiliary contacts	Code
None	A
1 NO	B
1 NC	C
1 NO–1 NC	D
2 NO	E
2 NC	F
2 NO–1 NC	G
1 NO–2 NC	H

Step 5 (digit 13) select auxiliary contacts (continued)

Auxiliary contacts	Code
3 NO	J
3 NC	K
4 NO	L[2]
4 NC	M[2]
2 NO–2 NC	N[2]
3 NO–1 NC	P[2]
1 NO–3 NC	R[2]

[2]Exceeds maximum number of contacts for some pilot light selections.
See step 8 (digit 16).

Enclosed combination magnetic starters

CR308 non-reversing, disconnect switch

Part number configuration
Valid for NEMA sizes 0–2, type 1 standard enclosure

—

Step 6 (digit 14) select monitoring options

Device	Code
None[3]	A

[3]Phase failure relay is not available for CR308 series standard enclosures.
If this is required for your application, use CR408 series oversized enclosure.

—

Step 7 (digit 15) select pushbutton/selector switch

Pushbutton/selector switch — heavy duty	Code
None	A
Start/stop pushbutton	J
Hand-off-auto (HOA) selector switch	L
Off-on selector switch	M
HOA selector switch and start pushbutton	S
Keyed HOA selector switch, key removal center pos.	N

—

Step 8 (digit 16) select pilot device

Type	Color - functionality	Code
None		A
LED lights	Red — across coil	1
	Green — across coil	2
	Red — thru NO aux contact	3[4]
	Green — thru NC aux contact	4[4]
	Red — thru NO aux contact and green — thru NC aux contact	5[5]
	Red — across coil and green — thru NC aux contact	6[4]
	Red — across coil and green — thru NC aux contact and unwired amber	7[4]
Push-to-test lights	Red — across coil	R
	Green — across coil	S
	Red — thru NO aux contact	C[4]
	Green — thru NC aux contact	D[4]
	Red — thru NO aux contact and green — thru NC aux contact	E[5]
	Red — across coil and green — thru NC aux contact	V[4]
	Red — across coil and green — thru NC aux contact and unwired amber	Y[4]

[4]Maximum of 3 aux contacts may be added to Sizes 0 and 1.
[5]Maximum of 2 aux contacts may be added to Sizes 0 and 1. Maximum of 3 aux contacts may be added to sizes 2–4.
Note: Auxiliary contacts wired as part of pilot light selection are in addition to the auxiliary contacts selected from step 5 (digit 13), which are for customer/field connections.

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Step 9 (digit 17) select control options

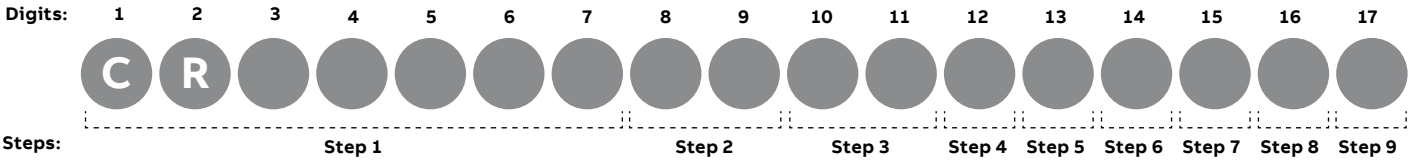
Device	Code
None	A

General note:
On NEMA size 3 and 4 starters, if selecting factory installed and wired operator devices (pushbuttons, selector switches and/or pilot lights), then control circuit fusing, a control power transformer or 120 V separate sourced control is required when the protective device is rated greater than 100 amps.

Enclosed combination magnetic starters

CR408 non-reversing, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–7) select NEMA size and enclosure

	NEMA type 1		NEMA type 3R		NEMA type 12		NEMA type 4/4X	
NEMA size	Standard enclosure	Oversized enclosure	Standard enclosure	Oversized enclosure	Standard enclosure	Oversized enclosure	Standard enclosure	Oversized enclosure
0	Use CR308	CR408B5	CR408B6	CR408BR	CR408B2	CR408B7	CR408B4	CR408BS
1	Use CR308	CR408C5	CR408C6	CR408CR	CR408C2	CR408C7	CR408C4	CR408CS
2	Use CR308	CR408D5	CR408D6	CR408DR	CR408D2	CR408D7	CR408D4	CR408DS
3	CR408E1	CR408E5[1]	CR408E6	CR408ER[1]	CR408E2	CR408E7[1]	CR408E4	CR408ES[1]
4[2]	CR408F1	–	CR408F6	–	CR408F2	–	CR408F4	–

Note: All enclosures include external overload reset buttons. NEMA 4 enclosures are stainless steel.
[1]Oversized enclosure provided as standard with 200 amp fusible disconnect.
[2]Oversized enclosure provided as standard with any NEMA size 4 fusible/non-fusible.

Step 2 (digits 8, 9) select control voltage (no CPT and standard size CPT)

Control circuit voltage and CPT	No CPT	Control fuses, no CPT	Standard size CPT
120 V with surge protector (SP)	01	F1	–
120 V	02	F2	–
240 V	03	F3	–
480 V	04	F4	–
600 V	05	F5	–
208 V	08	F8	–
24 V[3]	09	–	–
240 V/120 V with CPT	–	–	93
480 V/120 V with CPT	–	–	94
600 V/120 V with CPT	–	–	95
208 V/120 V with CPT	–	–	98
240 V/120 V with CPT and SP	–	–	33
480 V/120 V with CPT and SP	–	–	34
600 V/120 V with CPT and SP	–	–	35
208 V/120 V with CPT and SP	–	–	38
240 V/24 V with CPT[3]	–	–	S3
480 V/24 V with CPT[3]	–	–	S4
600 V/24 V with CPT[3]	–	–	S5
208 V/24 V with CPT[3]	–	–	S8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[3]24 V coils are not available for NEMA size 3 and above.

Enclosed combination magnetic starters

CR408 non-reversing, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

Step 3 (digits 10, 11) select protective device

Disconnect without fuse clips

NEMA size	Code
All	1A[2]

Disconnect with class H fuse clips — for use with non-time delay/single element class H fuses

	200–208 V			230–240 V			460–480 V			575–600 V		
NEMA size	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code
0	3	30	HA	3	30	HA	5	30	H3	5	30	H3
1	7½	60	HB	7½	60	HB	7½	30	H3	10	30	H3
	–	–	–	–	–	–	10	60	H6	–	60	H6
2	10	100	HC	15	100	HC	15	60	H6	20	60	H6
	–	–	–	–	–	–	25	100	H1	25	100	H1
3[1]	25	200	HD	30	200	HD	30	100	H1	30	100	H1
	–	–	–	–	–	–	50	200	H2	50	200	H2
4[2]	40	400	HE	50	400	HE	60	200	H2	60	200	H2
	–	–	–	–	–	–	100	400	H4	100	400	H4

[1]Oversized enclosure provided as standard with 200 amp fusible disconnect
[2]Oversized enclosure provided as standard with any NEMA size 4 fusible/non-fusible

Disconnect with class R fuse clips — for use with time delay/dual element class RK1/RK5 fuses

	200–208 V			230–240 V			460–480 V			575–600 V		
NEMA size	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code
0	3	30	RA	3	30	RA	5	30	R3	5	30	R3
1	5	30	RA	5	30	RA	10	30	R3	10	30	R3
	7½	60	RB	7½	60	RB	–	–	–	–	–	–
2	10	60	RB	15	60	RB	–	30	R3	15	30	R3
	–	–	–	–	–	–	25	60	R6	25	60	R6
3[1]	20	100	RC	25	100	RC	–	60	R6	30	60	R6
	25	200	RD	30	200	RD	50	100	R1	50	100	R1
4[2]	40	200	RD	50	200	RD	–	100	R1	60	100	R1
	–	–	–	–	–	–	100	200	R2	100	200	R2

[1]Oversized enclosure provided as standard with 200 amp fusible disconnect
[2]Oversized enclosure provided as standard with any NEMA size 4 fusible/non-fusible

Enclosed combination magnetic starters

CR408 non-reversing, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

Step 3 (digits 10, 11) select protective device (continued)

Disconnect with class J fuse clips — for use with time delay/dual element class J fuses

	200–208 V			230–240 V			460–480 V			575–600 V		
NEMA size	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code
0	3	30	J3	3	30	J3	5	30	J3	5	30	J3
1	5	30	J3	5	30	J3	10	30	J3	10	30	J3
	7½	60	J6	7½	60	J6	–	–	–	–	–	–
2	10	60	J6	15	60	J6	–	30	J3	15	30	J3
	–	–	–	–	–	–	25	60	J6	25	60	J6
3[1]	20	100	J2	25	100	J1	–	60	J6	30	60	J6
	25	200	J2	30	200	J2	50	100	J1	50	100	J1
4[2]	40	200	J2	50	200	J2	–	100	J1	60	100	J1
	–	–	–	–	–	–	100	200	J2	100	200	J2

[1]Oversized enclosure provided as standard with 200 amp fusible disconnect
[2]Oversized enclosure provided as standard with any NEMA size 4 fusible/non-fusible

Step 4 (digit 12) select overload relay

Overload relay	Code
No overload	Z
Thermal bi-metallic ambient compensated (1 NC)	3
Thermal bi-metallic ambient compensated (1 NO–1 NC)	4
Solid state overload (1 NO–1 NC)	(#)

(#) Select code for solid state overload amp rating from standard or optional ranges table at right and below. No overload is not available with 387, 487, 490, 492 and 494 product lines.

Solid state overload relay — standard range

		200–208 V		230–240 V		460–480 V		575–600 V	
NEMA size	OL range	Max. hp	Code	Max. hp	Code	Max. hp	Code	Max. hp	Code
0	0.8–1.7	–	–	–	–	¾	D	1	D
	1.6–3.4	1/2	E	3/4	E	2	E	2	E
	3.2–6.8	1	F	2	F	3	F	5	F
	6.5–13.5	3	G	3	G	5	G	–	–
1	6.5–13.5	–	–	–	–	7½	G	10	G
	13–27	7½	H	7½	H	10	H	–	–
2	13–27	–	–	–	–	20	H	25	H
	25–50	10	J	15	J	25	J	–	–
3	17–35	–	–	–	–	–	–	30	K
	35–70	20	L	25	L	50	L	50	L
	65–135	25	M	30	M	–	–	–	–
4	65–135	40	M	50	M	100	M	100	M

Solid state overload relay — optional ranges

	NEMA size		
OL amp range	0 and 1	2	3 and 4
0.4–0.85	C	–	–
0.8–1.7	D	–	–
1.6–3.4	E	–	–
3.2–6.8	F	–	–
6.5–13.5	G	G	–
13–27	H	H	–
25–50	–	J	–
17–35	–	–	K
35–70	–	–	L
65–135	–	–	M

Step 5 (digit 13) select auxiliary contacts

Auxiliary contacts	Code
None	A
1 NO	B
1 NC	C
1 NO–1 NC	D
2 NO	E
2 NC	F
2 NO-1 NC	G
1 NO-2 NC	H

Step 5 (digit 13) select auxiliary contacts (continued)

Auxiliary contacts	Code
3 NO	J
3 NC	K
4 NO	L[5]
4 NC	M[5]
2 NO-2 NC	N[5]
3 NO-1 NC	P[5]
1 NO-3 NC	R[5]

[5]Exceeds maximum number of contacts for some pilot light selections. See step 8 (digit 16).

Enclosed combination magnetic starters

CR408 non-reversing, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

—

Step 6 (digit 14) select monitoring options

Device	Code
None	A
Phase failure relay with undervoltage protection (panel mounted) — 190–480 V (PFR with UV)	C[2,7]
Phase failure relay with undervoltage protection (panel mounted) — 575 V (PFR with UV)	D[2,7]
Phase failure relay — 208 V (PFR)	E[4,7]
Phase failure relay — 240 V (PFR)	F[4,7]
Phase failure relay — 480 V (PFR)	G[4,7]
Phase failure relay — 575 V (PFR)	H[4,7]
Elapsed time meter (120 V/60 Hz) wired across coil (ETM)	1[2,6]
ETM + PFR w/UV (190–480 V)	L[2,6,7]
ETM + PFR w/UV (575 V)	N[2,6,7]
ETM + PFR (208 V)	P[2,4,6,7]
ETM + PFR (240 V)	Q[2,4,6,7]
ETM + PFR (480 V)	R[2,4,6,7]
ETM + PFR (575 V)	S[2,4,6,7]

[2]Requires oversized enclosure for NEMA sizes 0-2. Select proper NEMA size and enclosure type from step 1 (digits 1–7).
[4]Available for type 1 enclosure only.
[6]Requires 120 V control circuit voltage or CPT with 120 V secondary.
[7]Requires oversized enclosure for phase failure relay.

—

Step 7 (digit 15) select pushbutton/selector switch

Pushbutton/selector switch — heavy duty	code
None	A
Start/stop pushbutton	J
Hand-off-auto (HOA) selector switch	L
Off-on selector switch	M
HOA selector switch and start pushbutton	S
Keyed HOA selector switch, key removal center pos.	N

—

Step 8 (digit 16) select pilot device

Type	Color - functionality	Code
None		A
LED lights	Red — across coil	1
	Green — across coil	2
	Red — thru NO aux contact	3[9]
	Green — thru NC aux contact	4[9]
	Red — thru NO aux contact and green — thru NC aux contact	5[10]
	Red — across coil and green — thru NC aux contact	6[9]
	Red — across coil and green — thru NC aux contact and unwired amber	7[9]
Push-to-test lights	Red — across coil	R
	Green — across coil	S
	Red — thru NO aux contact	C[9]
	Green — thru NC aux contact	D[9]
	Red — thru NO aux contact and green — thru NC aux contact	E[10]
	Red — across coil and green — thru NC aux contact	V[9]
	Red — across coil and green — thru NC aux contact and unwired amber	Y[9]

[9]Maximum of 3 aux contacts may be added to sizes 0 and 1.
[10]Maximum of 2 aux contacts may be added to sizes 0 and 1. Maximum of 3 aux contacts may be added to sizes 2–4.
Note: Auxiliary contacts wired as part of pilot light selection are in addition to the auxiliary contacts selected from step 5 (digit 13), which are for customer/field connections.

Enclosed combination magnetic starters

CR408 non-reversing, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

—

9 (digit 14) select control options

Device	Code
None	A
DIN rail — for customer use	D[4]
12 point terminal strip — unwired (12 PT strip)	E[4]
Space heater with NC contact	H[4,12]
DIN rail + 12 PT strip + space heater	L[4,12]

[4]Requires oversized enclosure for NEMA sizes 0–2. Select proper NEMA size and enclosure type from step 1 (digits 1–7).
[12]Maximum number of auxiliary contacts shall be reduced by 1.

General note:
On NEMA size 3 and 4 starters, if selecting factory installed and wired operator devices (pushbuttons, selector switches and/or pilot lights), then control circuit fusing, a control power transformer or 120 V separate sourced control is required when the protective device is rated greater than 100 amps.

Enclosed combination magnetic starters

CR387, CR487 non-reversing, instantaneous trip circuit breaker



CR387

400 horsepower maximum
NEMA sizes 0–6
600 volts maximum 50/60 Hz

Application

The CR387/487 non-reversing starters are designed for more accurate fault protection for motor circuits by utilizing Tmax® XT motor circuit protectors.

Features

- Mechanism — always controls interrupting switch.
- Easy inspection, maintenance — performed from starter front.
- LED lights standard.
- Optional factory-installed control transformer.

Enclosed combination magnetic starters

CR387, CR487 non-reversing, instantaneous trip circuit breaker

200 horsepower maximum
NEMA sizes 0–5, instantaneous trip circuit breaker type
600 volts maximum 50/60 Hz

Standard features
Tmax® XT circuit breaker. Includes a holding interlock, pressure terminals for the line and load connections, plus a 3-leg block type ambient compensated overload relay with manual reset. All enclosures include external reset. NO/NC contacts on the overload relay are provided. LED lights standard.

CR387/487 instantaneous trip circuit breaker type

Voltage (60 Hz)	NEMA size	Max. hp	Continuous amp rating	CB rating (amps)	NEMA type 1 Product number	NEMA type 3R Product number	NEMA type 12 Product number	NEMA type 4/4X Product number
200–208	0	1	18	7	CR387BT08MB4AAAAA	CR487B608MB4AAAAA	CR487B208MB4AAAAA	CR487B408MB4AAAAA
200–208	0	3	18	15	CR387BT08MC4AAAAA	CR487B608MC4AAAAA	CR487B208MC4AAAAA	CR487B408MC4AAAAA
200–208	1	5	27	25	CR387CT08ME4AAAAA	CR487C608ME4AAAAA	CR487C208ME4AAAAA	CR487C408ME4AAAAA
200–208	1	7½	27	40	CR387CT08MG4AAAAA	CR487C608MG4AAAAA	CR487C208MG4AAAAA	CR487C408MG4AAAAA
200–208	2	10	45	50	CR387DT08MH4AAAAA	CR487D608MH4AAAAA	CR487D208MH4AAAAA	CR487D408MH4AAAAA
200–208	3	15	90	70	CR487E108MK4AAAAA	CR487E608MK4AAAAA	CR487E208MK4AAAAA	CR487E408MK4AAAAA
200–208	3	20	90	80	CR487E108ML4AAAAA	CR487E608ML4AAAAA	CR487E208ML4AAAAA	CR487E408ML4AAAAA
200–208	3	25	90	100	CR487E108MN4AAAAA	CR487E608MN4AAAAA	CR487E208MN4AAAAA	CR487E408MN4AAAAA
200–208	4	30	135	125	CR487F108MQ4AAAAA	CR487F608MQ4AAAAA	CR487F208MQ4AAAAA	CR487F408MQ4AAAAA
200–208	4	40	135	150	CR487F108MR4AAAAA	CR487F608MR4AAAAA	CR487F208MR4AAAAA	CR487F408MR4AAAAA
230–240	0	½	18	3	CR387BT03MA4AAAAA	CR487B603MA4AAAAA	CR487B203MA4AAAAA	CR487B403MA4AAAAA
230–240	0	1	18	7	CR387BT03MB4AAAAA	CR487B603MB4AAAAA	CR487B203MB4AAAAA	CR487B403MB4AAAAA
230–240	0	3	18	15	CR387BT03MC4AAAAA	CR487B603MC4AAAAA	CR487B203MC4AAAAA	CR487B403MC4AAAAA
230–240	1	5	27	25	CR387CT03ME4AAAAA	CR487C603ME4AAAAA	CR487C203ME4AAAAA	CR487C403ME4AAAAA
230–240	1	7½	27	30	CR387CT03MF4AAAAA	CR487C603MF4AAAAA	CR487C203MF4AAAAA	CR487C403MF4AAAAA
230–240	2	10	45	40	CR387DT03MG4AAAAA	CR487D603MG4AAAAA	CR487D203MG4AAAAA	CR487D403MG4AAAAA
230–240	2	15	45	60	CR387DT03MJ4AAAAA	CR487D603MJ4AAAAA	CR487D203MJ4AAAAA	CR487D403MJ4AAAAA
230–240	3	20	90	70	CR487E103MK4AAAAA	CR487E603MK4AAAAA	CR487E203MK4AAAAA	CR487E403MK4AAAAA
230–240	3	25	90	90	CR487E103MM4AAAAA	CR487E603MM4AAAAA	CR487E203MM4AAAAA	CR487E403MM4AAAAA
230–240	3	30	90	100	CR487E103MN4AAAAA	CR487E603MN4AAAAA	CR487E203MN4AAAAA	CR487E403MN4AAAAA
230–240	4	40	135	150	CR487F103MR4AAAAA	CR487F603MR4AAAAA	CR487F203MR4AAAAA	CR487F403MR4AAAAA
230–240	4	50	135	175	CR487F103MS4AAAAA	CR487F603MS4AAAAA	CR487F203MS4AAAAA	CR487F403MS4AAAAA
460–480	0	1	18	3	CR387BT04MA4AAAAA	CR487B604MA4AAAAA	CR487B204MA4AAAAA	CR487B404MA4AAAAA
460–480	0	3	18	7	CR387BT04MB4AAAAA	CR487B604MB4AAAAA	CR487B204MB4AAAAA	CR487B404MB4AAAAA
460–480	0	5	18	15	CR387BT04MC4AAAAA	CR487B604MC4AAAAA	CR487B204MC4AAAAA	CR487B404MC4AAAAA
460–480	1	7½	27	15	CR387CT04MC4AAAAA	CR487C604MC4AAAAA	CR487C204MC4AAAAA	CR487C404MC4AAAAA
460–480	1	10	27	20	CR387CT04MD4AAAAA	CR487C604MD4AAAAA	CR487C204MD4AAAAA	CR487C404MD4AAAAA
460–480	2	15	45	30	CR387DT04MF4AAAAA	CR487D604MF4AAAAA	CR487D204MF4AAAAA	CR487D404MF4AAAAA
460–480	2	20	45	40	CR387DT04MG4AAAAA	CR487D604MG4AAAAA	CR487D204MG4AAAAA	CR487D404MG4AAAAA
460–480	2	25	45	50	CR387DT04MH4AAAAA	CR487D604MH4AAAAA	CR487D204MH4AAAAA	CR487D404MH4AAAAA
460–480	3	30	90	50	CR487E104MH4AAAAA	CR487E604MH4AAAAA	CR487E204MH4AAAAA	CR487E404MH4AAAAA
460–480	3	40	90	70	CR487E104MK4AAAAA	CR487E604MK4AAAAA	CR487E204MK4AAAAA	CR487E404MK4AAAAA
460–480	3	50	90	90	CR487E104MM4AAAAA	CR487E604MM4AAAAA	CR487E204MM4AAAAA	CR487E404MM4AAAAA
460–480	4	60	135	100	CR487F104MN4AAAAA	CR487F604MN4AAAAA	CR487F204MN4AAAAA	CR487F404MN4AAAAA
460–480	4	75	135	125	CR487F104MQ4AAAAA	CR487F604MQ4AAAAA	CR487F204MQ4AAAAA	CR487F404MQ4AAAAA
460–480	4	100	135	175	CR487F104MS4AAAAA	CR487F604MS4AAAAA	CR487F204MS4AAAAA	CR487F404MS4AAAAA
575–600	0	1	18	3	CR387BT05MA4AAAAA	CR487B605MA4AAAAA	CR487B205MA4AAAAA	CR487B405MA4AAAAA
575–600	0	3	18	7	CR387BT05MB4AAAAA	CR487B605MB4AAAAA	CR487B205MB4AAAAA	CR487B405MB4AAAAA
575–600	0	5	18	15	CR387BT05MC4AAAAA	CR487B605MC4AAAAA	CR487B205MC4AAAAA	CR487B405MC4AAAAA

• Motor full load current should not exceed continuous ampere rating of starter.

Enclosed combination magnetic starters

CR387, CR487 non-reversing, instantaneous trip circuit breaker

200 horsepower maximum
NEMA sizes 0–5, instantaneous trip circuit breaker type
600 volts maximum 50/60 Hz

Standard features
Tmax® XT circuit breaker. Includes a holding interlock, pressure terminals for the line and load connections, plus a 3-leg block type ambient compensated overload relay with manual reset. All enclosures include external reset. NO/NC contacts on the overload relay are provided. LED lights standard.

CR387/487 instantaneous trip circuit breaker type (continued)

Voltage (60 Hz)	NEMA size	Max. hp	Continuous amp rating	CB rating (amps)	NEMA type 1 Product number	NEMA type 3R Product number	NEMA type 12 Product number	NEMA type 4/4X Product number
575–600	1	10	27	15	CR387CT05MC4AAAAA	CR487C605MC4AAAAA	CR487C205MC4AAAAA	CR487C405MC4AAAAA
575–600	2	15	45	25	CR387DT05ME4AAAAA	CR487D605ME4AAAAA	CR487D205ME4AAAAA	CR487D405ME4AAAAA
575–600	2	20	45	30	CR387DT05MF4AAAAA	CR487D605MF4AAAAA	CR487D205MF4AAAAA	CR487D405MF4AAAAA
575–600	2	25	45	40	CR387DT05MG4AAAAA	CR487D605MG4AAAAA	CR487D205MG4AAAAA	CR487D405MG4AAAAA
575–600	3	30	90	40	CR487E105MG4AAAAA	CR487E605MG4AAAAA	CR487E205MG4AAAAA	CR487E405MG4AAAAA
575–600	3	40	90	60	CR487E105MJ4AAAAA	CR487E605MJ4AAAAA	CR487E205MJ4AAAAA	CR487E405MJ4AAAAA
575–600	3	50	90	70	CR487E105MK4AAAAA	CR487E605MK4AAAAA	CR487E205MK4AAAAA	CR487E405MK4AAAAA
575–600	4	60	135	80	CR487F105ML4AAAAA	CR487F605ML4AAAAA	CR487F205ML4AAAAA	CR487F405ML4AAAAA
575–600	4	75	135	100	CR487F105MN4AAAAA	CR487F605MN4AAAAA	CR487F205MN4AAAAA	CR487F405MN4AAAAA
575–600	4	100	135	150	CR487F105MR4AAAAA	CR487F605MR4AAAAA	CR487F205MR4AAAAA	CR487F405MR4AAAAA

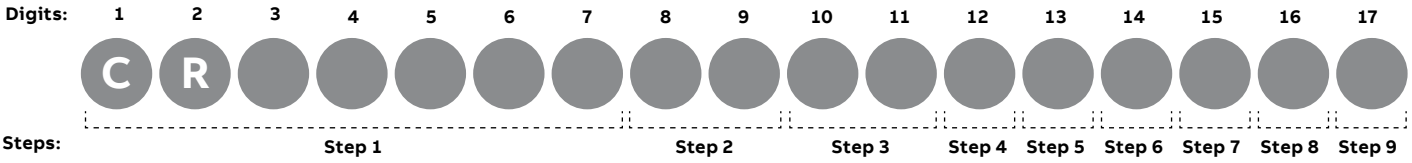
• Motor full load current should not exceed continuous ampere rating of starter.

Enclosed combination magnetic starters

CR387 non-reversing, instantaneous trip circuit breaker

Part number configuration

Valid for NEMA sizes 0–2, type 1 standard enclosure



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–7) select NEMA size and enclosure

	NEMA type 1
NEMA size	Standard enclosure
0	CR387BT
1	CR387CT
2	CR387DT

Note: All enclosures include external overload reset buttons.

Step 2 (digits 8, 9) select control voltage

Control circuit voltage and CPT	No CPT	Control fuses, no CPT	Standard size CPT	Standard size CPT + 100 VA
120 V with surge protector (SP)	01	F1	–	–
120 V	02	F2	–	–
240 V	03	F3	–	–
480 V	04	F4	–	–
600 V	05	F5	–	–
208 V	08	F8	–	–
24 V	09	–	–	–
240 V/120 V with CPT	–	–	93	13
480 V/120 V with CPT	–	–	94	14
600 V/120 V with CPT	–	–	95	15
208 V/120 V with CPT	–	–	98	18
240 V/120 V with CPT and SP	–	–	33	53
480 V/120 V with CPT and SP	–	–	34	54
600 V/120 V with CPT and SP	–	–	35	55
208 V/120 V with CPT and SP	–	–	38	58
240 V/24 V with CPT	–	–	S3	A3
480 V/24 V with CPT	–	–	S4	A4
600 V/24 V with CPT	–	–	S5	A5
208 V/24 V with CPT	–	–	S8	A8

Note: CPT includes 2 primary fuses and 1 secondary fuse.

Enclosed combination magnetic starters

CR387 non-reversing, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–2, type 1 standard enclosure

Step 3 (digits 10, 11) select protective device

Instantaneous trip circuit breaker

	208 V			240 V			480 V			600 V		
NEMA size	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code
0	0.5	3	MA	0.5	3	MA	1	3	MA	1	3	MA
	1	7	MB	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	3	7	MB	3	7	MB
	3	15	MC	1	7	MB	–	–	–	–	–	–
	–	–	–	3	15	MC	5	15	MC	5	15	MC
1	5	25	ME	5	25	ME	7½	25	ME	10	25	ME
	–	–	–	–	–	–	10	25	ME	–	–	–
	7½	40	MG	7½	40	MG	–	–	–	–	–	–
2	–	–	–	–	–	–	15	40	MG	15	40	MG
	10	60	MJ	10	60	MJ	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	20	40	MG
	–	–	–	15	60	MJ	20	60	MJ	–	–	–
	–	–	–	–	–	–	25	60	MJ	25	60	MJ
3	–	–	–	–	–	–	30	60	MJ	30	60	MJ
	15	100	MN	20	100	MN	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	40	60	MJ
	20	100	MN	25	100	MN	40	100	MN	–	–	–
	25	100	MN	30	100	MN	50	100	MN	50	100	MN
4	30	150	MR	–	–	–	60	100	MN	60	100	MN
	–	–	–	40	175	MS	–	–	–	–	–	–
	–	–	–	–	–	–	75	150	MR	75	150	MR
	–	–	–	–	–	–	–	–	–	100	150	MR
	40	175	MS	50	175	MS	100	175	MS	–	–	–

Step 4 (digit 12) select overload relay

Overload relay	Code
Thermal bi-metallic ambient compensated (1 NC)	3
Thermal bi-metallic ambient compensated (1 NO–1 NC)	4
Solid state overload (1 NO–1 NC)	(#)

(#) Select code for solid state overload amp rating from standard or optional ranges table below.

Solid state overload relay — standard range

		200–208 V		230–240 V		460–480 V		575–600 V	
NEMA size	OL range	Max. hp	Code	Max. hp	Code	Max. hp	Code	Max. hp	Code
0	0.8–1.7	–	–	–	–	¾	D	1	D
	1.6–3.4	½	E	¾	E	2	E	2	E
	3.2–6.8	1	F	2	F	3	F	5	F
	6.5–13.5	3	G	3	G	5	G	–	–
1	6.5–13.5	–	–	–	–	7½	G	10	G
	13–27	7½	H	7½	H	10	H	–	–
2	13–27	–	–	–		20	H	25	H
	25–50	10	J	15	J	25	J	–	–

Optional ranges

	NEMA size	
OL amp range	0 and 1	2
0.4–0.85	C	–
0.8–1.7	D	–
1.6–3.4	E	–
3.2–6.8	F	–
6.5–13.5	G	G
13–27	H	H
25–50	–	J
17–35	–	–
35–70	–	–
65–135	–	–

Enclosed combination magnetic starters

CR387 non-reversing, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–2, type 1 standard enclosure

—

Step 5 (digit 13) select auxiliary contacts

Auxiliary contacts	Code
None	A
1 NO	B
1 NC	C
1 NO–1 NC	D
2 NO	E
2 NC	F
2 NO–1 NC	G
1 NO–2 NC	H
3 NO	J
3 NC	K
4 NO	L[1]
4 NC	M[1]
2 NO–2 NC	N[1]
3 NO–1 NC	P[1]
1 NO–3 NC	R[1]

[1]Exceeds maximum number of contacts for some pilot light selections. See step 8 (digit 16).

—

Step 6 (digit 14) select monitoring options

Device	Code
None[2]	A

[2]Phase failure relay is not available for CR387 series standard enclosures. If this is required for your application, use CR487 series oversized enclosure.

—

Step 7 (digit 15) select pushbutton/ selector switch

Pushbutton/selector switch - heavy duty	Code
None	A
Start/stop pushbutton	J
Hand-off-auto (HOA) selector switch	L
Off-on selector switch	M
HOA selector switch and start pushbutton	S
Keyed HOA selector switch, key removal center pos.	N

—

Step 8 (digit 16) select pilot device

Pilot light (heavy duty) type	Color — functionality	Code
None		A
LED lights	Red — across coil	1
	Green — across coil	2
	Red — thru NO aux contact	3[3]
	Green — thru NC aux contact	4[3]
	Red — thru NO aux contact and green — thru NC aux contact	5[4]
	Red — across coil and green — thru NC aux contact	6[3]
	Red — across coil and green — thru NC aux contact and unwired amber	7[3]
Push-to-test lights	Red — across coil	R
	Green — across coil	S
	Red — thru NO aux contact	C[3]
	Green — thru NC aux contact	D[3]
	Red — thru NO aux contact and green — thru NC aux contact	E[4]
	Red — across coil and green — thru NC aux contact	V[3]
	Red — across coil and green — thru NC aux contact and unwired amber	Y[3]

[3]Maximum of 3 aux contacts may be added to sizes 0 and 1.
[4]Maximum of 2 aux contacts may be added to sizes 0 and 1. Maximum of 3 aux contacts may be added to sizes 2–4.
Note: Auxiliary contacts wired as part of pilot light selection are in addition to the auxiliary contacts selected from step 5 (digit 13), which are for customer/field connections.

—

Step 9 (digit 17) select control options

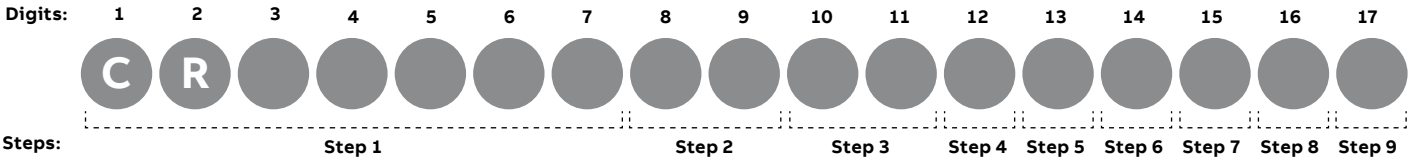
Device	Code
None	A

General note:
If selecting factory installed and wired operator devices (pushbuttons, selector switches and/or pilot lights), control circuit fusing, a control power transformer or 24 V/120 V separate sourced control is required, regardless of protective device rating.

Enclosed combination magnetic starters

CR487 non-reversing, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–7) select NEMA size and enclosure

	NEMA type 1		NEMA type 3R		NEMA type 12		NEMA type 4/4X	
NEMA size	Standard enclosure	Oversized enclosure	Standard enclosure	Oversized enclosure	Standard enclosure	Oversized enclosure	Standard enclosure	Oversized enclosure
0	Use CR387	CR487B5	CR487B6	CR487BR	CR487B2	CR487B7	CR487B4	CR487BS
1	Use CR387	CR487C5	CR487C6	CR487CR	CR487C2	CR487C7	CR487C4	CR487CS
2	Use CR387	CR487D5	CR487D6	CR487DR	CR487D2	CR487D7	CR487D4	CR487DS
3	CR487E1	CR487E5	CR487E6	CR487ER	CR487E2	CR487E7	CR487E4	CR487ES
4	CR487F1	CR487F5	CR487F6	CR487FR	CR487F2	CR487F7	CR487F4	CR487FS

Note: All enclosures include external overload reset buttons. NEMA 4 enclosures are stainless steel.

Step 2 (digits 8, 9) select control voltage (no CPT and standard size CPT)

Control circuit voltage and CPT	No CPT	Control fuses, no CPT	Standard size CPT
120 V with surge protector (SP)	01	F1	–
120 V	02	F2	–
240 V	03	F3	–
480 V	04	F4	–
600 V	05	F5	–
208 V	08	F8	–
24 V[1]	09	–	–
240 V/120 V with CPT	–	–	93
480 V/120 V with CPT	–	–	94
600 V/120 V with CPT	–	–	95
208 V/120 V with CPT	–	–	98
240 V/120 V with CPT and SP	–	–	33
480 V/120 V with CPT and SP	–	–	34
600 V/120 V with CPT and SP	–	–	35
208 V/120 V with CPT and SP	–	–	38
240 V/24 V with CPT[1]	–	–	S3
480 V/24 V with CPT[1]	–	–	S4
600 V/24 V with CPT[1]	–	–	S5
208 V/24 V with CPT[1]	–	–	S8

[1]24 V coils not available for NEMA size 3 and 4.

Step 2 (digits 8, 9) select control voltage (extra capacity CPT + 100 VA and 200 VA)

Control circuit voltage and CPT	Standard size CPT + 100 VA	Standard size CPT + 200 VA
120 V with surge protector (SP)	–	–
120 V	–	–
240 V	–	–
480 V	–	–
600 V	–	–
208 V	–	–
24 V[1]	–	–
240 V/120 V with CPT	13	23
480 V/120 V with CPT	14	24
600 V/120 V with CPT	15	25
208 V/120 V with CPT	18	28
240 V/120 V with CPT and SP	53	63
480 V/120 V with CPT and SP	54	64
600 V/120 V with CPT and SP	55	65
208 V/120 V with CPT and SP	58	68
240 V/24 V with CPT[1]	A3	B3
480 V/24 V with CPT[1]	A4	B4
600 V/24 V with CPT[1]	A5	B5
208 V/24 V with CPT[1]	A8	B8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.
[2]Requires oversized enclosure for NEMA sizes 0–2. Select proper NEMA size and enclosure type from step 1 (digits 1–7) table, above.

Enclosed combination magnetic starters

CR487 non-reversing, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 3 (digits 10, 11) select protective device

Instantaneous trip circuit breaker

	208 V			240 V			480 V			600 V		
NEMA size	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code
0	0.5	3	MA	0.5	3	MA	1	3	MA	1	3	MA
	1	7	MB	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	3	7	MB	3	7	MB
	3	15	MC	1	7	MB	–	–	–	–	–	–
	–	–	–	3	15	MC	5	15	MC	5	15	MC
1	5	25	ME	5	25	ME	7½	25	ME	10	25	ME
	–	–	–	–	–	–	10	25	ME	–	–	–
	7½	40	MG	7½	40	MG	–	–	–	–	–	–
2	–	–	–	–	–	–	15	40	MG	15	40	MG
	10	60	MJ	10	60	MJ	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	20	40	MG
	–	–	–	15	60	MJ	20	60	MJ	–	–	–
	–	–	–	–	–	–	25	60	MJ	25	60	MJ
3	–	–	–	–	–	–	30	60	MJ	30	60	MJ
	15	100	MN	20	100	MN	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	40	60	MJ
	20	100	MN	25	100	MN	40	100	MN	–	–	–
	25	100	MN	30	100	MN	50	100	MN	50	100	MN
4	30	150	MR	–	–	–	60	100	MN	60	100	MN
	–	–	–	40	175	MS	–	–	–	–	–	–
	–	–	–	–	–	–	75	150	MR	75	150	MR
	–	–	–	–	–	–	–	–	–	100	150	MR
	40	175	MS	50	175	MS	100	175	MS	–	–	–

Enclosed combination magnetic starters

CR487 non-reversing, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 4 (digit 12) select overload relay

Overload relay	Code
Thermal bi-metallic ambient compensated (1 NC)	3
Thermal bi-metallic ambient compensated (1 NO–1 NC)	4
Solid state overload (1 NO–1 NC)	(#)

(#) Select code for solid state overload amp rating from standard or optional ranges table.

Solid state overload relay — standard range

		200–208 V		230–240 V		460–480 V		575–600 V	
NEMA size	OL range	Max. hp	Code	Max. hp	Code	Max. hp	Code	Max. hp	Code
0	0.8 - 1.7	–	–	–	–	¾	D	1	D
	1.6 - 3.4	½	E	¾	E	2	E	2	E
	3.2 - 6.8	1	F	2	F	3	F	5	F
	6.5 - 13.5	3	G	3	G	5	G	–	–
1	6.5 - 13.5	–	–	–	–	7½	G	10	G
	13 - 27	7½	H	7½	H	10	H	–	–
2	13 - 27	–	–	–	–	20	H	25	H
	25 - 50	10	J	15	J	25	J	–	–
3	17 - 35	–	–	–	–	–	–	30	K
	35 - 70	20	L	25	L	50	L	50	L
	65 - 135	25	M	30	M	–	–	–	–
4	65 - 135	40	M	50	M	100	M	100	M

Optional ranges

	NEMA size		
OL amp range	0 and 1	2	3 and 4
0.4–0.85	C	–	–
0.8–1.7	D	–	–
1.6–3.4	E	–	–
3.2–6.8	F	–	–
6.5–13.5	G	G	–
13–27	H	H	–
25–50	–	J	–
17–35	–	–	K
35–70	–	–	L
65–135	–	–	M

Step 5 (digit 13) select auxiliary contacts

Auxiliary contacts	Code
None	A
1 NO	B
1 NC	C
1 NO–1 NC	D
2 NO	E
2 NC	F
2 NO–1 NC	G
1 NO–2 NC	H
3 NO	J
3 NC	K
4 NO	L[3]
4 NC	M[3]
2 NO–2 NC	N[3]
3 NO–1 NC	P[3]
1 NO–3 NC	R[3]

[3]Exceeds maximum number of contacts for some pilot light selections. See step 8 (digit 16). .

Step 6 (digit 14) select monitoring options

Device	Code
None	A
Phase failure relay with undervoltage protection (panel mounted) — 190-480V (PFR with UV)	C[2]
Phase failure relay with undervoltage protection (panel mounted) — 575V (PFR with UV)	D[2]
Phase failure relay — 208 V (PFR)	E[4,6]
Phase failure relay — 240 V (PFR)	F[4,6]
Phase failure relay — 480 V (PFR)	G[4,6]
Phase failure relay — 575 V (PFR)	H[4,6]
Elapsed time meter (120 V/60 Hz) wired across coil (ETM)	1[2,5]
ETM + PFR with UV (190–480 V)	L[2,5,6]
ETM + PFR with UV (575 V)	N[2,5,6]
ETM + PFR (208 V)	P[2,4,5,6]
ETM + PFR (240 V)	Q[2,4,5,6]
ETM + PFR (480 V)	R[2,4,5,6]
ETM + PFR (575 V)	S[2,4,5,6]

[2]Requires oversized enclosure for NEMA sizes 0–2. Select proper NEMA size and enclosure type from step 1 (digits 1–7).
[4]Available for type 1 enclosure only.
[5]Requires 120 V control circuit voltage or CPT with 120 V secondary.
[6]Requires oversized enclosure for phase failure relay.

Enclosed combination magnetic starters

CR487 non-reversing, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 7 (digit 15) select pushbutton/selector switch

Pushbutton/selector switch — heavy duty	Code
None	A
Start/stop pushbutton	J
Hand-off-auto (HOA) selector switch	L
Off-on selector switch	M
HOA selector switch and start pushbutton	S
Keyed HOA selector switch, key removal center pos.	N

Step 8 (digit 16) select pilot device

Pilot light (heavy duty) type	Color — functionality	Code
None		A
LED lights	Red–across coil	1
	Green–across coil	2
	Red–thru NO aux contact	3[7]
	Green–thru NC aux contact	4[7]
	Red–thru NO aux contact and green–thru NC aux contact	5[8]
	Red–across coil and green–thru NC aux contact	6[7]
	Red–across coil and green–thru NC aux contact and unwired amber	7[7]
Push-to-test lights	Red–across coil	R
	Green–across coil	S
	Red–thru NO aux contact	C[7]
	Green–thru NC aux contact	D[7]
	Red–thru NO aux contact and green–thru NC aux contact	E[8]
	Red–across coil and green–thru NC aux contact	V[7]
	Red–across coil and green–thru NC aux contact and unwired amber	Y[7]

[7]Maximum of 3 aux contacts may be added to sizes 0 and 1.
[8]Maximum of 2 aux contacts may be added to sizes 0 and 1. Maximum of 3 aux contacts may be added to sizes 2–4.
Note: Auxiliary contacts wired as part of pilot light selection are in addition to the auxiliary contacts selected from step 5 (digit 13), which are for customer/field connections.

Step 9 (digit 17) select control options

Device	Code
None	A
1 relay, 2 NO-2 NC, 24/120 V coil — unwired	B[2,9]
2 relays, 24/120 V coil — unwired	C[2,9]
DIN rail — for customer use	D[2]
12 point terminal strip — unwired (12 PT strip)	E[2]
Space heater with NC contact	H[2,10]
1 relay + 12 PT strip	J[2,9]
2 relays + 12 PT strip	K[2,9]
DIN rail + 12 PT strip + space heater	L[2,10]
2 relays + 12 PT strip + space heater	M[2,9,10]
Time delay on relay, 24/120 V coil — unwired (TD)	N[2,9]
Time delay off relay, 24/120 V coil — unwired (TD)	P[2,9]
12 PT strip + TD on	R[2,9]
12 PT strip + TD off	S[2,9]
12 PT strip + space heater + TD on	T[2,9,10]
12 PT strip + space heater + TD off	U[2,9,10]

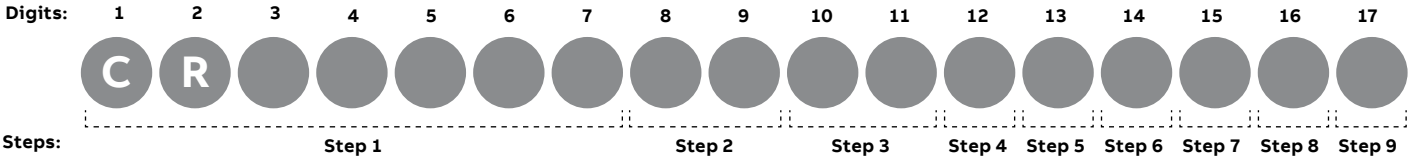
[2]Requires oversized enclosure for NEMA sizes 0–2. Select proper NEMA size and enclosure type from step 1 (digits 1–7).
[9]Relay/timer coil voltage is equivalent to CPT secondary voltage. Requires minimum 100 extra VA CPT option.
[10]Maximum number of auxiliary contacts shall be reduced by 1.

General note:
If selecting factory installed and wired operator devices (pushbuttons, selector switches and/or pilot lights), control circuit fusing, a control power transformer or 24 V/120 V separate sourced control is required, regardless of protective device rating.

Enclosed combination magnetic starters

CR410 reversing, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1-7) select NEMA size and enclosure

NEMA size	NEMA type 1 Standard enclosure	NEMA type 3R Standard enclosure	NEMA type 12 Standard enclosure	NEMA type 4 Standard enclosure
0	CR410B1	CR410B6	CR410B2	CR410B4
1	CR410C1	CR410C6	CR410C2	CR410C4
2	CR410D1	CR410D6	CR410D2	CR410D4
3	CR410E1	CR410E6	CR410E2	CR410E4
4	CR410F1	CR410F6	CR410F2	CR410F4

Note: All enclosures include external overload reset buttons. NEMA 4 enclosures are stainless steel.

Step 2 (digits 8, 9) select control voltage (no CPT and standard size CPT)

Control circuit voltage and CPT	No CPT	Control fuses, no CPT	Standard size CPT
120 V with surge protector (SP)	01	F1	–
120 V	02	F2	–
240 V	03	F3	–
480 V	04	F4	–
600 V	05	F5	–
208 V	08	F8	–
24 V[1]	09	–	–
240 V/120 V with CPT	–	–	93
480 V/120 V with CPT	–	–	94
600 V/120 V with CPT	–	–	95
208 V/120 V with CPT	–	–	98
240 V/120 V with CPT and SP	–	–	33
480 V/120 V with CPT and SP	–	–	34
600 V/120 V with CPT and SP	–	–	35
208 V/120 V with CPT and SP	–	–	38
240 V/24 V with CPT[1]	–	–	S3
480 V/24 V with CPT[1]	–	–	S4
600 V/24 V with CPT[1]	–	–	S5
208 V/24 V with CPT[1]	–	–	S8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Enclosed combination magnetic starters

CR410 reversing, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 2 (digits 8, 9) select control voltage (extra capacity CPT + 100 VA and 200 VA)

Control circuit voltage and CPT	Standard size CPT + 100 VA	Standard size CPT + 200 VA
120 V with surge protector (SP)	–	–
120 V	–	–
240 V	–	–
480 V	–	–
600 V	–	–
208 V	–	–
24 V[1]	–	–
240 V/120 V with CPT	13	23
480 V/120 V with CPT	14	24
600 V/120 V with CPT	15	25
208 V/120 V with CPT	18	28
240 V/120 V with CPT and SP	53	63
480 V/120 V with CPT and SP	54	64
600 V/120 V with CPT and SP	55	65
208 V/120 V with CPT and SP	58	68
240 V/24 V with CPT[1]	A3	B3
480 V/24 V with CPT[1]	A4	B4
600 V/24 V with CPT[1]	A5	B5
208 V/24 V with CPT[1]	A8	B8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Step 3 (digits 10, 11) select protective device

Thermal-magnetic circuit breaker

	200–208 V			240 V			480 V			600 V		
NEMA size	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code
0	2	15	TC	3	15	TC	5	15	TC	5	15	TC
	3	15	TC	–	–	–	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	7½	15	TC
	5	25	TE	5	25	TE	7½	25	TE	–	–	–
	–	–	–	–	–	–	–	–	–	10	25	TE
	7½	40	TG	7½	40	TG	10	25	TE	10	20	TD
2	–	–	–	–	–	–	15	40	TG	15	40	TG
	10	60	TJ	10	60	TJ	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	20	40	TG
	–	–	–	15	60	TJ	20	60	TJ	–	–	–
	–	–	–	–	–	–	25	60	TJ	25	60	TJ
3	–	–	–	–	–	–	30	60	TJ	30	60	TJ
	15	100	TN	20	100	TN	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	40	60	TJ
	20	100	TN	25	100	TN	40	100	TN	–	–	–
	–	–	–	–	–	–	50	100	TN	50	100	TN
	25	125	TQ	30	125	TQ	–	–	–	–	–	–
4	30	150	TR	–	–	–	60	150	TR	60	150	TR
	–	–	–	40	200	TT	–	–	–	–	–	–
	–	–	–	–	–	–	75	150	TR	75	150	TR
	40	200	TT	50	200	TT	–	–	–	–	–	–
	–	–	–	–	–	–	100	200	TT	100	200	TT

Enclosed combination magnetic starters

CR410 reversing, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 4 (digit 12) select overload relay

Overload relay	Code
No overload	Z
Thermal bi-metallic ambient compensated (1 NC)	3
Thermal bi-metallic ambient compensated (1 NO–1 NC)	4
Solid state overload (1 NO–1 NC)	(#)

(#) Select code for solid state overload amp rating from standard or optional ranges table below.
No overload is not available with 387, 487, 490, 492 and 494 product lines.

Step 4 (digit 12) select overload relay (continued)

Solid state overload relay — standard range

		200–208 V		230–240 V		460–480 V		575–600 V	
NEMA size	OL range	Max. hp	Code	Max. hp	Code	Max. hp	Code	Max. hp	Code
0	0.8–1.7	–	–	–	–	¾	D	1	D
	1.6–3.4	½	E	¾	E	2	E	2	E
	3.2–6.8	1	F	2	F	3	F	5	F
	6.5–13.5	3	G	3	G	5	G	–	–
1	6.5–13.5	–	–	–	–	7½	G	10	G
	13–27	7½	H	7½	H	10	H	–	–
2	13–27	–	–	–	–	20	H	25	H
	25–50	10	J	15	J	25	J	–	–
3	17–35	–	–	–	–	–	–	30	K
	35–70	20	L	25	L	50	L	50	L
	65–135	25	M	30	M	–	–	–	–
4	65–135	40	M	50	M	100	M	100	M

Optional ranges

	NEMA size		
OL amp range	0 and 1	2	3 and 4
0.4–0.85	C	–	–
0.8–1.7	D	–	–
1.6–3.4	E	–	–
3.2–6.8	F	–	–
6.5–13.5	G	G	–
13–27	H	H	–
25–50	–	J	–
17–35	–	–	K
35–70	–	–	L
65–135	–	–	M

Step 5 (digit 13) select auxiliary contacts

Auxiliary contacts (per contactor)	Code
None	A
1 NO	B
1 NC	C
1 NO–1 NC	D
2 NO	E
2 NC	F

Step 6 (digit 14) select monitoring options

Device	Code
None	A
Phase failure relay with undervoltage protection (panel mounted) — 190–480 V (PFR with UV)	C
Phase failure relay with undervoltage protection (panel mounted) — 575 V (PFR with UV)	D
Phase failure relay — 208 V (PFR)	E[2]
Phase failure relay — 240 V (PFR)	F[2]
Phase failure relay — 480 V (PFR)	G[2]
Phase failure relay — 575 V (PFR)	H[2]
Elapsed time meter (120 V/60 Hz) wired across coil (ETM)	1[3]
ETM + PFR with UV (190–480 V)	L[3]
ETM + PFR with UV (575 V)	N[3]
ETM + PFR (208 V)	P[2,3]
ETM + PFR (240 V)	Q[2,3]
ETM + PFR (480 V)	R[2,3]
ETM + PFR (575 V)	S[2,3]

[2]Available for type 1 enclosure only.
[3]Requires 120 V control circuit voltage or CPT with 120 V secondary.

Enclosed combination magnetic starters

CR410 reversing, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 7 (digit 15) select pushbutton/selector switch

Pushbutton/selector switch — heavy duty	Code
None	A
Fwd/rev/stop pushbutton	J
Up/down/stop pushbutton	K
Open/CLS/stop pushbutton	L
HOA and fwd-rev selector switch	P
Fwd-off-rev selector switch	T

Step 8 (digit 16) select pilot device

Pilot light (heavy duty CR104P style) type	Color — functionality	Code
None		A
LED lights	Red and amber across coils	2
	Red and green across coils	3
	Red and amber across coils and unwired green	5
Push-to-test lights	Red and amber across coils	S
	Red and green across coils	T
	Red and amber across coils and unwired green	Y

Step 9 (digit 17) select control options

Device	Code
None	A
1 relay, 2 NO-2 NC, 24/120 V coil — unwired	B[4]
2 relays, 24/120 V coil — unwired	C[4]
DIN rail - for customer use	D
12 point terminal strip — unwired (12 PT strip)	E
Space heater with NC contact	H[5]
1 relay + 12 PT strip	J[4]
2 relays + 12 PT strip	K[4]
DIN rail + 12 PT strip + space heater	L[5]
2 relays + 12 PT strip + space heater	M[4,5]
Time delay on relay, 24/120 V coil — unwired (TD)	N[4]
Time delay off relay, 24/120 V coil — unwired (TD)	P[4]
12 PT strip + TD ON	R[4]
12 PT strip + TD OFF	S[4]
12 PT strip + space heater + TD ON	T[4,5]
12 PT strip + space heater + TD OFF	U[4,5]

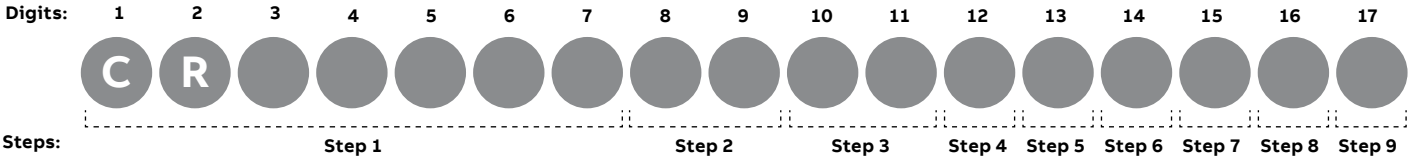
[4]Relay/timer coil voltage is equivalent to CPT secondary voltage. Requires minimum 100 extra VA CPT option.
[5]Maximum number of auxiliary contacts shall be reduced by 1.

General note:
On NEMA size 3 and 4 starters, if selecting factory installed and wired operator devices (pushbuttons, selector switches and/or pilot lights), then control circuit fusing, a control power transformer or 120 V separate sourced control is required when the protective device is rated greater than 100 amps.

Enclosed combination magnetic starters

CR411 reversing, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–7) select NEMA size and enclosure

NEMA size	NEMA type 1 Standard enclosure	NEMA type 3R Standard enclosure	NEMA type 12 Standard enclosure	NEMA type 4 Standard enclosure
0	CR411B1	CR411B6	CR411B2	CR411B4
1	CR411C1	CR411C6	CR411C2	CR411C4
2	CR411D1	CR411D6	CR411D2	CR411D4
3	CR411E1	CR411E6	CR411E2	CR411E4
4	CR411F1	CR411F6	CR411F2	CR411F4

Note: All enclosures include external overload reset buttons. NEMA 4 enclosures are stainless steel.

Step 2 (digits 8, 9) select control voltage (no CPT and standard size CPT)

Control circuit voltage and CPT	No CPT	Control fuses, no CPT	Standard size CPT
120 V with surge protector (SP)	01	F1	–
120 V	02	F2	–
240 V	03	F3	–
480 V	04	F4	–
600 V	05	F5	–
208 V	08	F8	–
24 V[1]	09	–	–
240 V/120 V with CPT	–	–	93
480 V/120 V with CPT	–	–	94
600 V/120 V with CPT	–	–	95
208 V/120 V with CPT	–	–	98
240 V/120 V with CPT and SP	–	–	33
480 V/120 V with CPT and SP	–	–	34
600 V/120 V with CPT and SP	–	–	35
208 V/120 V with CPT and SP	–	–	38
240 V/24 V with CPT[1]	–	–	S3
480 V/24 V with CPT[1]	–	–	S4
600 V/24 V with CPT[1]	–	–	S5
208 V/24 V with CPT[1]	–	–	S8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Enclosed combination magnetic starters

CR411 reversing, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

Step 2 (digits 8, 9) select control voltage (extra capacity CPT + 100 VA and 200 VA)

Control circuit voltage and CPT	Standard size CPT + 100 VA	Standard size CPT + 200 VA
120 V with surge protector (SP)	–	–
120 V	–	–
240 V	–	–
480 V	–	–
600 V	–	–
208 V	–	–
24 V[1]	–	–
240 V/120 V with CPT	13	23
480 V/120 V with CPT	14	24
600 V/120 V with CPT	15	25
208 V/120 V with CPT	18	28
240 V/120 V with CPT and SP	53	63
480 V/120 V with CPT and SP	54	64
600 V/120 V with CPT and SP	55	65
208 V/120 V with CPT and SP	58	68
240 V/24 V with CPT[1]	A3	B3
480 V/24 V with CPT[1]	A4	B4
600 V/24 V with CPT[1]	A5	B5
208 V/24 V with CPT[1]	A8	B8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Step 3 (digits 10, 11) select protective device

Disconnect without fuse clips

NEMA size	Code
All	1A

Disconnect with class H fuse clips — for use with non-time delay/single element class H fuses

	200–208 V			230–240 V			460–480 V			575–600 V		
NEMA size	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code
0	3	30	HA	3	30	HA	5	30	H3	5	30	H3
1	–	–	–	–	–	–	7½	30	H3	10	30	H3
	7½	60	HB	7½	60	HB	10	60	H6	–	60	H6
2	–	–	–	–	–	–	15	60	H6	20	60	H6
	10	100	HC	15	100	HC	25	100	H1	25	100	H1
3	–	–	–	–	–	–	30	100	H1	30	100	H1
	25	200	HD	30	200	HD	50	200	H2	50	200	H2
4	–	–	–	–	–	–	60	200	H2	60	200	H2
	40	400	HE	50	400	HE	100	400	H4	100	400	H4

Enclosed combination magnetic starters

CR411 reversing, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

Step 3 (digits 10, 11) select protective device (continued)

Disconnect with class R fuse clips — for use with time delay/dual element class RK1/RK5 fuses

	200–208 V			230–240 V			460–480 V			575–600 V		
NEMA size	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code
0	3	30	RA	3	30	RA	5	30	R3	5	30	R3
1	5	30	RA	5	30	RA	10	30	R3	10	30	R3
	7½	60	RB	7½	60	RB	–	–	–	–	–	–
2		–	–	–	–	–	–	30	R3	15	30	R3
	10	60	RB	15	60	RB	25	60	R6	25	60	R6
3	–	–	–	–	–	–	–	60	R6	30	60	R6
	20	100	RC	25	100	RC	50	100	R1	50	100	R1
	25	200	RD	30	200	RD	–	–	–	–	–	–
4	–	–	–	–	–	–	–	100	R1	60	100	R1
	400	200	RD	50	200	RD	100	200	R2	100	200	R2

Disconnect with class J fuse clips — for use with time delay/dual element class J fuses

	200–208 V			230–240 V			460–480 V			575–600 V		
NEMA size	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code
0	3	30	J3	3	30	J3	5	30	J3	5	30	J3
1	5	30	J3	5	30	J3	10	30	J3	10	30	J3
	7½	60	J6	7½	60	J6	–	–	–	–	–	–
2	–	–	–	–	–	–	–	30	J3	15	30	J3
	10	60	J6	15	60	J6	25	60	J6	25	60	J6
3	–							60	J6	30	60	J6
	20	100	J1	25	100	J1	50	100	J1	50	100	J1
	25	200	J2	30	200	J2	–	–	–	–	–	–
4	–	–	–	–	–	–	–	100	J1	60	100	J1
	40	200	J2	50	200	J2	100	200	J2	100	200	J2

Step 4 (digit 12) select overload relay

Overload relay	Code
No overload	Z
Thermal bi-metallic ambient compensated (1 NC)	3
Thermal bi-metallic ambient compensated (1 NO–1 NC)	4
Solid state overload (1 NO–1 NC)	(#)

(#) Select code for solid state overload amp rating from standard or optional ranges table at right.
No overload is not available with 387, 487, 490, 492 and 494 product lines.

Solid state overload relay — standard range

		200–208 V		230–240 V		460–480 V		575–600 V	
NEMA size	OL range	Max. hp	Code	Max. hp	Code	Max. hp	Code	Max. hp	Code
0	0.8–1.7	–	–	–	–	¾	D	1	D
	1.6–3.4	½	E	¾	E	2	E	2	E
	3.2–6.8	1	F	2	F	3	F	5	F
	6.5–13.5	3	G	3	G	5	G	–	–
1	6.5–13.5	–	–	–	–	7½	G	10	G
	13–27	7½	H	7½	H	10	H	–	–
2	13–27	–	–	–	–	20	H	25	H
	25–50	10	J	15	J	25	J	–	–
3	17–35	–	–	–	–	–	–	30	K
	35–70	20	L	25	L	50	L	50	L
	65–135	25	M	30	M	–	–	–	–
4	65–135	40	M	50	M	100	M	100	M

Optional ranges

OL amp range	NEMA size 0 and 1	2	3 and 4
0.4–0.85	C	–	–
0.8–1.7	D	–	–
1.6–3.4	E	–	–
3.2–6.8	F	–	–
6.5–13.5	G	G	–
13–27	H	H	–
25–50	–	J	–
17–35	–	–	K
35–70	–	–	L
65–135	–	–	M

Enclosed combination magnetic starters

CR411 reversing, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

Step 5 (digit 13) select auxiliary contacts

Auxiliary contacts (per contactor)	Code
None	A
1 NO	B
1 NC	C
1 NO–1 NC	D
2 NO	E
2 NC	F

Step 6 (digit 14) select monitoring options

Device	Code
None	A
Phase failure relay with undervoltage protection (panel mounted) — 190-480 V (PFR with UV)	C
Phase failure relay with undervoltage protection (panel mounted) — 575 V (PFR with UV)	D
Phase failure relay — 208 V (PFR)	E[2]
Phase failure relay — 240 V (PFR)	F[2]
Phase failure relay — 480 V (PFR)	G[2]
Phase failure relay — 575 V (PFR)	H[2]
Elapsed time meter (120 V/60 Hz) wired across coil (ETM)	1[3]
ETM + PFR with UV (190–480 V)	L[3]
ETM + PFR with UV (575 V)	N[3]
ETM + PFR (208 V)	P[2,3]
ETM + PFR (240 V)	Q[2,3]
ETM + PFR (480 V)	R[2,3]
ETM + PFR (575 V)	S[2,3]

[2]Available for type 1 enclosure only.
[3]Requires 120 V control circuit voltage or CPT with 120 V secondary.

Step 7 (digit 15) select pushbutton/selector switch

Pushbutton/selector switch — heavy duty	Code
None	A
Fwd/rev/stop pushbutton	J
Up/down/stop pushbutton	K
Open/CLS/stop pushbutton	L
Hand-off-auto and fwd-rev selector switch	P
Fwd-off-rev selector switch	T

Enclosed combination magnetic starters

CR411 reversing, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

—

Step 8 (digit 16) select pilot device

Pilot light (heavy duty CR104P style) type	Color — functionality	Code
None		A
LED lights	Red and amber across coils	2
	Red and green across coils	3
	Red and amber across coils and unwired green	5
Push-to-test lights	Red and amber across coils	S
	Red and green across coils	T
	Red and amber across coils and unwired green	Y

—

Step 9 (digit 17) select control options

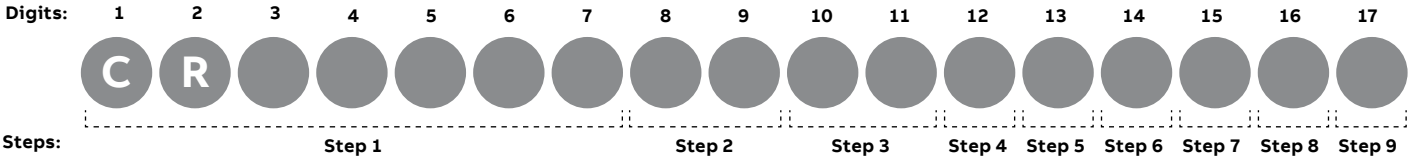
Device	Code
None	A
1 relay, 2NO-2NC, 24/120 V coil — unwired	B[4]
2 relays, 24/120 V coil — unwired	C[4]
DIN rail — for customer use	D
12 point terminal strip — unwired (12 PT strip)	E
Space heater with NC contact	H[5]
1 relay + 12 PT strip	J[4]
2 relays + 12 PT strip	K[4]
DIN rail + 12 PT strip + space heater	L[5]
2 relays + 12 PT strip + space heater	M[4,5]
Time delay on relay, 24/120 V coil — unwired (TD)	N[4]
Time delay off relay, 24/120 V coil — unwired (TD)	P[4]
12 PT strip + TD ON	R[4]
12 PT strip + TD OFF	S[4]
12 PT strip + space heater + TD ON	T[4,5]
12 PT strip + space heater + TD OFF	U[4,5]

General note:
On NEMA size 3 and 4 starters, if selecting factory installed and wired operator devices (pushbuttons, selector switches and/or pilot lights), then control circuit fusing, a control power transformer or 120 V separate sourced control is required when the protective device is rated greater than 100 amps.

Enclosed combination magnetic starters

CR490 reversing, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–7) select NEMA size and enclosure

NEMA size	NEMA type 1 Standard enclosure	NEMA type 3R Standard enclosure	NEMA type 12 Standard enclosure	NEMA type 4 Standard enclosure
0	CR490B1	CR490B6	CR490B2	CR490B4
1	CR490C1	CR490C6	CR490C2	CR490C4
2	CR490D1	CR490D6	CR490D2	CR490D4
3	CR490E1	CR490E6	CR490E2	CR490E4
4	CR490F1	CR490F6	CR490F2	CR490F4

Note: All enclosures include external overload reset buttons. NEMA 4 enclosures are stainless steel.

Step 2 (digits 8, 9) select control voltage (no CPT and standard size CPT)

Control circuit voltage and CPT	No CPT	Control fuses, no CPT	Standard size CPT
120 V with surge protector (SP)	01	F1	–
120 V	02	F2	–
240 V	03	F3	–
480 V	04	F4	–
600 V	05	F5	–
208 V	08	F8	–
24 V[1]	09	–	–
240 V/120 V with CPT	–	–	93
480 V/120 V with CPT	–	–	94
600 V/120 V with CPT	–	–	95
208 V/120 V with CPT	–	–	98
240 V/120 V with CPT and SP	–	–	33
480 V/120 V with CPT and SP	–	–	34
600 V/120 V with CPT and SP	–	–	35
208 V/120 V with CPT and SP	–	–	38
240 V/24 V with CPT[1]	–	–	S3
480 V/24 V with CPT[1]	–	–	S4
600 V/24 V with CPT[1]	–	–	S5
208 V/24 V with CPT[1]	–	–	S8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Enclosed combination magnetic starters

CR490 reversing, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 2 (digits 8, 9) select control voltage (extra capacity CPT + 100 VA and 200 VA)

Control circuit voltage and CPT	Standard size CPT + 100 VA	Standard size CPT + 200 VA
120 V with surge protector (SP)	–	–
120 V	–	–
240 V	–	–
480 V	–	–
600 V	–	–
208 V	–	–
24 V[1]	–	–
240 V/120 V with CPT	13	23
480 V/120 V with CPT	14	24
600 V/120 V with CPT	15	25
208 V/120 V with CPT	18	28
240 V/120 V with CPT and SP	53	63
480 V/120 V with CPT and SP	54	64
600 V/120 V with CPT and SP	55	65
208 V/120 V with CPT and SP	58	68
240 V/24 V with CPT[1]	A3	B3
480 V/24 V with CPT[1]	A4	B4
600 V/24 V with CPT[1]	A5	B5
208 V/24 V with CPT[1]	A8	B8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Step 3 (digits 10, 11) select protective device

Instantaneous trip circuit breaker

	208 V			240 V			480 V			600 V		
NEMA size	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code
0	0.5	3	MA	0.5	3	MA	1	3	MA	1	3	MA
	1	7	MB	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	3	7	MB	3	7	MB
	3	15	MC	1	7	MB	–	–	–	–	–	–
	–	–	–	3	15	MC	5	15	MC	5	15	MC
1	5	25	ME	5	25	ME	7½	25	ME	10	25	ME
	–	–	–	–	–	–	10	25	ME	–	–	–
	7½	40	MG	7½	40	MG	–	–	–	–	–	–
2	–	–	–	–	–	–	15	40	MG	15	40	MG
	10	60	MJ	10	60	MJ	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	20	40	MG
	–	–	–	15	60	MJ	20	60	MJ	–	–	–
	–	–	–	–	–	–	25	60	MJ	25	60	MJ
3	–	–	–	–	–	–	30	60	MJ	30	60	MJ
	15	100	MN	20	100	MN	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	40	60	MJ
	20	100	MN	25	100	MN	40	100	MN	–	–	–
	25	100	MN	30	100	MN	50	100	MN	50	100	MN
4	30	150	MR	–	–	–	60	100	MN	60	100	MN
	–	–	–	40	175	MS	–	–	–	–	–	–
	–	–	–	–	–	–	75	150	MR	75	150	MR
	–	–	–	–	–	–	–	–	–	100	150	MR
	40	175	MS	50	175	MS	100	175	MS	–	–	–

Enclosed combination magnetic starters

CR490 reversing, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 4 (digit 12) select overload relay

Overload relay	Code
Thermal bi-metallic ambient compensated (1 NC)	3
Thermal bi-metallic ambient compensated (1 NO–1 NC)	4
Solid state overload (1 NO–1 NC)	(#)

(#) Select code for solid state overload amp rating from standard or optional ranges table below.

Solid state overload relay — standard range

		200–208 V		230–240 V		460–480 V		575–600 V	
NEMA size	OL range	Max. hp	Code	Max. hp	Code	Max. hp	Code	Max. hp	Code
0	0.8–1.7	–	–	–	–	¾	D	1	D
	1.6–3.4	½	E	¾	E	2	E	2	E
	3.2–6.8	1	F	2	F	3	F	5	F
	6.5–13.5	3	G	3	G	5	G	–	–
1	6.5–13.5	–	–	–	–	7½	G	10	G
	13–27	7½	H	7½	H	10	H	–	–
2	13–27	–	–	–	–	20	H	25	H
	25–50	10	J	15	J	25	J	–	–
3	17–35	–	–	–	–	–	–	30	K
	35–70	20	L	25	L	50	L	50	L
	65–135	25	M	30	M	–	–	–	–
4	65–135	40	M	50	M	100	M	100	M

Optional ranges

	NEMA size		
OL amp range	0 and 1	2	3 and 4
0.4–0.85	C	–	–
0.8–1.7	D	–	–
1.6–3.4	E	–	–
3.2–6.8	F	–	–
6.5–13.5	G	G	–
13–27	H	H	–
25–50	–	J	–
17–35	–	–	K
35–70	–	–	L
65–135	–	–	M

Step 5 (digit 13) select auxiliary contacts

Aux contacts	Code
None	A
1 NO	B
1 NC	C
1 NO–1 NC	D
2 NO	E
2 NC	F

Step 6 (digit 14) select monitoring options

Device	Code
None	A
Phase failure relay with undervoltage protection (panel mounted) — 190-480 V (PFR with UV)	C
Phase failure relay with undervoltage protection (panel mounted) — 575 V (PFR with UV)	D
Phase failure relay — 208 V (PFR)	E[2]
Phase failure relay — 240 V (PFR)	F[2]
Phase failure relay — 480 V (PFR)	G[2]
Phase failure relay — 575 V (PFR)	H[2]
Elapsed time meter (120 V/60 Hz) wired across coil (ETM)	1[3]
ETM + PFR with UV (190–480 V)	L[3]
ETM + PFR with UV (575 V)	N[3]
ETM + PFR (208 V)	P[2,3]
ETM + PFR (240 V)	Q[2,3]
ETM + PFR (480 V)	R[2,3]
ETM + PFR (575 V)	S[2,3]

[2]Available for type 1 enclosure only.
[3]Requires 120 V control circuit voltage or CPT with 120 V secondary.

Enclosed combination magnetic starters

CR490 reversing, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

—

Step 7 (digit 15) select pushbutton/selector switch

Pushbutton/selector switch — heavy duty	Code
None	A
Fwd/rev/stop pushbutton	J
Up/down/stop pushbutton	K
Open/CLS/stop pushbutton	L
Hand-off-auto and fwd-rev selector switch	P
Fwd-off-rev selector switch	T

—

Step 8 (digit 16) select pilot device

Pilot light (heavy duty CR104P style) type	Color — functionality	Code
None		A
LED lights	Red and amber across coils	2
	Red and green across coils	3
	Red and amber across coils and unwired green	5
Push-to-test lights	Red and amber across coils	S
	Red and green across coils	T
	Red and amber across coils and unwired green	Y

—

Step 9 (digit 17) select control options

Device	Code
None	A
1 relay, 2 NO-2 NC, 24/120 V coil — unwired	B[4]
2 relays, 24/120 V coil — unwired	C[4]
DIN rail — for customer use	D
12 point terminal strip — unwired (12 PT strip)	E
Space heater with NC contact	H[5]
1 relay + 12 PT strip	J[4]
2 relays + 12 PT strip	K[4]
DIN rail + 12 PT strip + space heater	L[5]
2 relays + 12 PT strip + space heater	M[4,5]
Time delay on relay, 24/120 V coil — unwired (TD)	N[4]
Time delay off relay, 24/120 V coil — unwired (TD)	P[4]
12 PT strip + TD ON	R[4]
12 PT strip + TD OFF	S[4]
12 PT strip + space heater + TD ON	T[4,5]
12 PT strip + space heater + TD OFF	U[4,5]

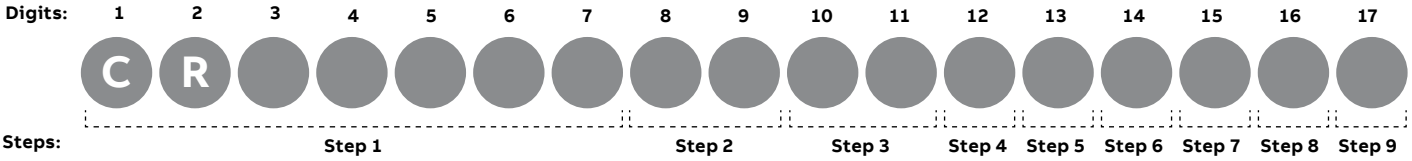
[4]Relay/timer coil voltage is equivalent to CPT secondary voltage. Requires minimum 100 extra VA CPT option.
[5]Maximum number of auxiliary contacts shall be reduced by 1.

General note:
If selecting factory installed and wired operator devices (pushbuttons, selector switches and/or pilot lights), control circuit fusing, a control power transformer or 24 V/120 V separate sourced control is required, regardless of protective device rating.

Enclosed combination magnetic starters

CR412 2-speed/1-winding, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–7) select NEMA size and enclosure

NEMA size	NEMA type 1 Standard enclosure	NEMA type 3R Standard enclosure	NEMA type 12 Standard enclosure	NEMA type 4 Standard enclosure
0	CR412B1	CR412B6	CR412B2	CR412B4
1	CR412C1	CR412C6	CR412C2	CR412C4
2	CR412D1	CR412D6	CR412D2	CR412D4
3	CR412E1	CR412E6	CR412E2	CR412E4
4	CR412F1	CR412F6	CR412F2	CR412F4

Note: All enclosures include external overload reset buttons. NEMA 4 enclosures are stainless steel.

Step 2 (digits 8, 9) select control voltage (no CPT and standard size CPT)

Control circuit voltage and CPT	No CPT	Control fuses, no CPT	Standard size CPT
120 V with surge protector (SP)	01	F1	–
120 V	02	F2	–
240 V	03	F3	–
480 V	04	F4	–
600 V	05	F5	–
208 V	08	F8	–
24 V[1]	09	–	–
240 V/120 V with CPT	–	–	93
480 V/120 V with CPT	–	–	94
600 V/120 V with CPT	–	–	95
208 V/120 V with CPT	–	–	98
240 V/120 V with CPT and SP	–	–	33
480 V/120 V with CPT and SP	–	–	34
600 V/120 V with CPT and SP	–	–	35
208 V/120 V with CPT and SP	–	–	38
240 V/24 V with CPT[1]	–	–	S3
480 V/24 V with CPT[1]	–	–	S4
600 V/24 V with CPT[1]	–	–	S5
208 V/24 V with CPT[1]	–	–	S8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Enclosed combination magnetic starters

CR412 2-speed/1-winding, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 2 (digits 8, 9) select control voltage (extra capacity CPT + 100 VA and 200 VA)

Control circuit voltage and CPT	Standard size CPT + 100 VA	Standard size CPT + 200 VA
120 V with surge protector (SP)	–	–
120 V	–	–
240 V	–	–
480 V	–	–
600 V	–	–
208 V	–	–
24 V[1]	–	–
240 V/120 V with CPT	13	23
480 V/120 V with CPT	14	24
600 V/120 V with CPT	15	25
208 V/120 V with CPT	18	28
240 V/120 V with CPT and SP	53	63
480 V/120 V with CPT and SP	54	64
600 V/120 V with CPT and SP	55	65
208 V/120 V with CPT and SP	58	68
240 V/24 V with CPT[1]	A3	B3
480 V/24 V with CPT[1]	A4	B4
600 V/24 V with CPT[1]	A5	B5
208 V/24 V with CPT[1]	A8	B8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Step 3 (digits 10, 11) select protective device

Thermal-magnetic circuit breaker

	200–208 V			240 V			480 V			600 V		
NEMA size	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code
0	2	15	TC	3	15	TC	5	15	TC	5	15	TC
	3	15	TC	–	–	–	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	7½	15	TC
	5	25	TE	5	25	TE	7½	25	TE	–	–	–
	–	–	–	–	–	–	–	–	–	10	25	TE
	7½	40	TG	7½	40	TG	10	25	TE	10	20	TD
2	–	–	–	–	–	–	15	40	TG	15	40	TG
	10	60	TJ	10	60	TJ	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	20	40	TG
	–	–	–	15	60	TJ	20	60	TJ	–	–	–
	–	–	–	–	–	–	25	60	TJ	25	60	TJ
3	–	–	–	–	–	–	30	60	TJ	30	60	TJ
	15	100	TN	20	100	TN	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	40	60	TJ
	20	100	TN	25	100	TN	40	100	TN	–	–	–
	–	–	–	–	–	–	50	100	TN	50	100	TN
	25	125	TQ	30	125	TQ	–	–	–	–	–	–
4	30	150	TR	–	–	–	60	150	TR	60	150	TR
	–	–	–	40	200	TT	–	–	–	–	–	–
	–	–	–	–	–	–	75	150	TR	75	150	TR
	40	200	TT	50	200	TT	–	–	–	–	–	–
	–	–	–	–	–	–	100	200	TT	100	200	TT

Enclosed combination magnetic starters

CR412 2-speed/1-winding, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 4 (digit 12) select overload relay

Overload relay	Code
No overload	Z
Thermal bi-metallic ambient compensated (1 NC)	3
Thermal bi-metallic ambient compensated (1 NO–1 NC)	4
Solid state overload (1 NO–1 NC)	(#)

(#) Select code for solid state overload amp rating from standard or optional ranges table below.
No overload is not available with 387, 487, 490, 492 and 494 product lines.

2-speed solid state overload ranges

	NEMA size					
	0 and 1		2		3 and 4	
Code	Hi amp	Lo amp	Hi amp	Lo amp	Hi amp	Lo amp
c	0.4–0.85	0.4–0.85	6.5–13.5	6.5–13.5	17–35	17–35
D	0.8–1.7	0.4–0.85	13–27	6.5–13.5	35–70	17–35
E	0.8–1.7	0.8–1.7	13–27	13–27	35–70	35–70
F	1.6–3.4	0.4–0.85	25–50	6.5 -13.5	65–135	17–35
G	1.6–3.4	0.8–1.7	25–50	13–27	65–135	35–70
H	1.6–3.4	1.6–3.4	25–50	25–50	65–135	65–135
U	3.2–6.8	0.8–1.7	–	–	–	–
K	3.2–6.8	1.6–3.4	–	–	–	–
L	3.2–6.8	3.2–6.8	–	–	–	–
M	6.5–13.5	1.6–3.4	–	–	–	–
V	6.5–13.5	3.2–6.8	–	–	–	–
W	6.5–13.5	6.5–13.5	–	–	–	–
R	13–27	3.2–6.8	–	–	–	–
S	13–27	6.5–13.5	–	–	–	–
T	13–27	13–27	–	–	–	–

Step 5 (digit 13) select auxiliary contacts

Auxiliary contacts (per contactor)	Code
None	A
1 NO	B
1 NC	C
1 NO–1 NC	D[2]
2 NO	E[2]
2 NC	F[2]

[2]Not available on 2 speed – 1 winding sizes 0–1.

Step 6 (digit 14) select monitoring options

Device	Code
None	A
Phase failure relay with undervoltage protection (panel mounted) — 190-480 V (PFR with UV)	C
Phase failure relay with undervoltage protection (panel mounted) — 575 V (PFR with UV)	D
Phase failure relay — 208 V (PFR)	E[3]
Phase failure relay — 240 V (PFR)	F[3]
Phase failure relay — 480 V (PFR)	G[3]
Phase failure relay — 575 V (PFR)	H[3]
Elapsed time meter (120 V/60 Hz) wired across coil (ETM)	1[4]
ETM + PFR with UV (190–480 V)	L[4]
ETM + PFR with UV (575 V)	N[4]
ETM + PFR (208 V)	P[3,4]
ETM + PFR (240 V)	Q[3,4]
ETM + PFR (480 V)	R[3,4]
ETM + PFR (575 V)	S[3,4]

[3]Available for type 1 enclosure only.
[4]Requires 120 V control circuit voltage or CPT with 120 V secondary.

Enclosed combination magnetic starters

CR412 2-speed/1-winding, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

—

Step 7 (digit 15) select pushbutton/selector switch

Pushbutton/selector switch — heavy duty	Code
None	A
Fast/slow/stop pushbutton	J
High/low/off pushbutton	K
High/low pushbutton and hand-off-auto (HOA) selector switch	L
Fast/slow pushbutton and hand-off-auto (HOA) selector switch	M
Hand-off-auto (HOA) and slow/fast selector switches	P
Hand-off-auto (HOA) and low/high selector switches	R
Slow-off-fast selector switch	T
Low-off-high selector switch	U
Fast-slow-off-auto selector switch	V
High-low-off-auto selector switch	W

—

Step 8 (digit 16) select pilot device

Pilot light (heavy duty CR104P style) type	Color — functionality	Code
None		A
LED lights	Red and amber across coils	2
	Red and green across coils	3
	Red and amber across coils and unwired green	5
Push-to-test lights	Red and amber across coils	S
	Red and green across coils	T
	Red and amber across coils and unwired green	Y

—

Step 9 (digit 17) select control options

Device	Code
None	A
1 relay, 2 NO-2 NC, 24/120 V coil — unwired	B[5]
2 relays, 24/120 V coil — unwired	C[5]
DIN rail — for customer use	D
12 point terminal strip — unwired (12 PT strip)	E
Space heater with NC contact	H[6]
1 relay + 12 PT strip	J[5]
2 relays + 12 PT strip	K[5]
DIN rail + 12 PT strip + space heater	L[6]
2 relays + 12 PT strip + space heater	M[5,6]
Time delay on relay, 24/120 V coil — unwired (TD)	N[5]
Time delay off relay, 24/120 V coil — unwired (TD)	P[5]
12 PT strip + TD ON	R[5]
12 PT strip + TD OFF	S[5]
12 PT strip + space heater + TD ON	T[5,6]
12 PT strip + space heater + TD OFF	U[5,6]

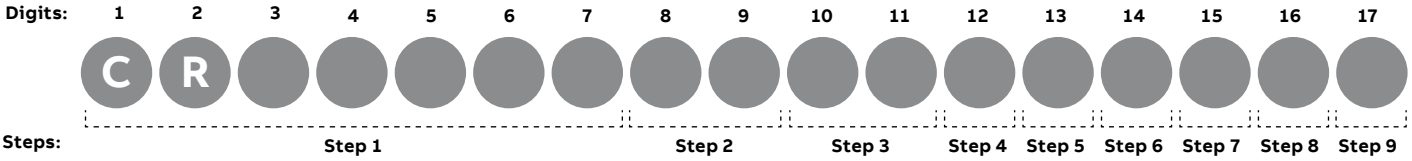
[5]Relay/timer coil voltage is equivalent to CPT secondary voltage. Requires minimum 100 extra VA CPT option.
[6]Maximum number of auxiliary contacts shall be reduced by 1.

General note:
On NEMA size 3 and 4 starters, if selecting factory installed and wired operator devices (pushbuttons, selector switches and/or pilot lights), then control circuit fusing, a control power transformer or 120 V separate sourced control is required when the protective device is rated greater than 100 amps.

Enclosed combination magnetic starters

CR413 2-speed/1-winding, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–7) select NEMA size and enclosure

	NEMA type 1	NEMA type 3R	NEMA type 12	NEMA type 4
NEMA size	Standard enclosure	Standard enclosure	Standard enclosure	Standard enclosure
0	CR413B1	CR413B6	CR413B2	CR413B4
1	CR413C1	CR413C6	CR413C2	CR413C4
2	CR413D1	CR413D6	CR413D2	CR413D4
3	CR413E1	CR413E6	CR413E2	CR413E4
4	CR413F1	CR413F6	CR413F2	CR413F4

Note: All enclosures include external overload reset buttons. NEMA 4 enclosures are stainless steel.

Step 2 (digits 8, 9) select control voltage (no CPT and standard size CPT)

Control circuit voltage and CPT	No CPT	Control fuses, no CPT	Standard size CPT
120 V with surge protector (SP)	01	F1	–
120 V	02	F2	–
240 V	03	F3	–
480 V	04	F4	–
600 V	05	F5	–
208 V	08	F8	–
24 V[1]	09	–	–
240 V/120 V with CPT	–	–	93
480 V/120 V with CPT	–	–	94
600 V/120 V with CPT	–	–	95
208 V/120 V with CPT	–	–	98
240 V/120 V with CPT and SP	–	–	33
480 V/120 V with CPT and SP	–	–	34
600 V/120 V with CPT and SP	–	–	35
208 V/120 V with CPT and SP	–	–	38
240 V/24 V with CPT[1]	–	–	S3
480 V/24 V with CPT[1]	–	–	S4
600 V/24 V with CPT[1]	–	–	S5
208 V/24 V with CPT[1]	–	–	S8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Step 2 (digits 8, 9) select control voltage (extra capacity CPT + 100 VA and 200 VA)

Control circuit voltage and CPT	Standard size CPT + 100 VA	Standard size CPT + 200 VA
120 V with surge protector (SP)	–	–
120 V	–	–
240 V	–	–
480 V	–	–
600 V	–	–
208 V	–	–
24 V[1]	–	–
240 V/120 V with CPT	13	23
480 V/120 V with CPT	14	24
600 V/120 V with CPT	15	25
208 V/120 V with CPT	18	28
240 V/120 V with CPT and SP	53	63
480 V/120 V with CPT and SP	54	64
600 V/120 V with CPT and SP	55	65
208 V/120 V with CPT and SP	58	68
240 V/24 V with CPT[1]	A3	B3
480 V/24 V with CPT[1]	A4	B4
600 V/24 V with CPT[1]	A5	B5
208 V/24 V with CPT[1]	A8	B8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Enclosed combination magnetic starters

CR413 2-speed/1-winding, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

—

Step 3 (digits 10, 11) select protective device

—

Disconnect without fuse clips

NEMA size	Code
All	1A

—

Disconnect with class H fuse clips — for use with non-time delay/single element class H fuses

	200–208 V			230–240 V			460–480 V			575–600 V		
NEMA size	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code
0	3	30	HA	3	30	HA	5	30	H3	5	30	H3
1	–	–	–	–	–	–	7½	30	H3	10	30	H3
	7½	60	HB	7½	60	HB	10	60	H6	–	60	H6
2	–	–	–	–	–	–	15	60	H6	20	60	H6
	10	100	HC	15	100	HC	25	100	H1	25	100	H1
3	–	–	–	–	–	–	30	100	H1	30	100	H1
	25	200	HD	30	200	HD	50	200	H2	50	200	H2
4	–	–	–	–	–	–	60	200	H2	60	200	H2
	40	400	HE	50	400	HE	100	400	H4	100	400	H4

—

Disconnect with class R fuse clips — for use with time delay/dual element class RK1/RK5 fuses

	200–208 V			230–240 V			460–480 V			575–600 V		
NEMA size	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code
0	3	30	RA	3	30	RA	5	30	R3	5	30	R3
1	5	30	RA	5	30	RA	10	30	R3	10	30	R3
	7½	60	RB	7½	60	RB	–	–	–	–	–	–
2		–	–	–	–	–	–	30	R3	15	30	R3
	10	60	RB	15	60	RB	25	60	R6	25	60	R6
3	–	–	–	–	–	–	–	60	R6	30	60	R6
	20	100	RC	25	100	RC	50	100	R1	50	100	R1
	25	200	RD	30	200	RD	–	–	–	–	–	–
4	–	–	–	–	–	–	–	100	R1	60	100	R1
	400	200	RD	50	200	RD	100	200	R2	100	200	R2

Enclosed combination magnetic starters

CR413 2-speed/1-winding, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

Step 3 (digits 10, 11) select protective device (continued)

Disconnect with class J fuse clips — for use with time delay/dual element class J fuses

	200–208 V			230–240 V			460–480 V			575–600 V		
NEMA size	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code
0	3	30	J3	3	30	J3	5	30	J3	5	30	J3
1	5	30	J3	5	30	J3	10	30	J3	10	30	J3
	7½	60	J6	7½	60	J6	–	–	–	–	–	–
2	–	–	–	–	–	–	–	30	J3	15	30	J3
	10	60	J6	15	60	J6	25	60	J6	25	60	J6
3	–							60	J6	30	60	J6
	20	100	J1	25	100	J1	50	100	J1	50	100	J1
4	25	200	J2	30	200	J2	–	–	–	–	–	–
	–	–	–	–	–	–	–	100	J1	60	100	J1
	40	200	J2	50	200	J2	100	200	J2	100	200	J2

Step 4 (digit 12) select overload relay

Overload relay	Code
No overload	Z
Thermal bi-metallic ambient compensated (1 NC)	3
Thermal bi-metallic ambient compensated (1 NO–1 NC)	4
Solid state overload (1 NO–1 NC)	(#)

(#) Select code for solid state overload amp rating from standard or optional ranges table below.
No overload is not available with 387, 487, 490, 492 and 494 product lines.

2-speed solid state overload ranges

	NEMA size					
	0 and 1		2		3 and 4	
Code	Hi amp	Lo amp	Hi amp	Lo amp	Hi amp	Lo amp
C	0.4–0.85	0.4–0.85	6.5–13.5	6.5–13.5	17–35	17–35
D	0.8–1.7	0.4–0.85	13–27	6.5–13.5	35–70	17–35
E	0.8–1.7	0.8–1.7	13–27	13–27	35–70	35–70
F	1.6–3.4	0.4–0.85	25–50	6.5 -13.5	65–135	17–35
G	1.6–3.4	0.8–1.7	25–50	13–27	65–135	35–70
H	1.6–3.4	1.6–3.4	25–50	25–50	65–135	65–135
U	3.2–6.8	0.8–1.7	–	–	–	–
K	3.2–6.8	1.6–3.4	–	–	–	–
L	3.2–6.8	3.2–6.8	–	–	–	–
M	6.5–13.5	1.6–3.4	–	–	–	–
V	6.5–13.5	3.2–6.8	–	–	–	–
W	6.5–13.5	6.5–13.5	–	–	–	–
R	13–27	3.2–6.8	–	–	–	–
S	13–27	6.5–13.5	–	–	–	–
T	13–27	13–27	–	–	–	–

Enclosed combination magnetic starters

CR413 2-speed/1-winding, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

—

Step 5 (digit 13) select auxiliary contacts

Auxiliary contacts (per contactor)	Code
None	A
1 NO	B
1 NC	C
1 NO–1 NC	D[2]
2 NO	E[2]
2 NC	F[2]

[2]Not available on 2 speed — 1 winding sizes 0–1.

—

Step 6 (digit 14) select monitoring options

Device	Code
None	A
Phase failure relay with undervoltage protection (panel mounted) — 190–480 V (PFR with UV)	C
Phase failure relay with undervoltage protection (panel mounted) — 575 V (PFR with UV)	D
Phase failure relay — 208 V (PFR)	E[3]
Phase failure relay — 240 V (PFR)	F[3]
Phase failure relay — 480 V (PFR)	G[3]
Phase failure relay — 575 V (PFR)	H[3]
Elapsed time meter (120 V/60 Hz) wired across coil (ETM)	1[4]
ETM + PFR with UV (190–480 V)	L[4]
ETM + PFR with UV (575 V)	N[4]
ETM + PFR (208 V)	P[3,4]
ETM + PFR (240 V)	Q[3,4]
ETM + PFR (480 V)	R[3,4]
ETM + PFR (575 V)	S[3,4]

[3]Available for type 1 enclosure only.
[4]Requires 120 V control circuit voltage or CPT with 120 V secondary.

—

Step 7 (digit 15) select pushbutton/selector switch

Pushbutton/selector switch — heavy duty	Code
None	A
Fast/slow/stop stop pushbutton	J
High/low/off pushbutton	K
High/low pushbutton and hand-off-auto (HOA) selector switch	L
Fast/slow pushbutton and hand-off-auto (HOA) selector switch	M
Hand-off-auto (HOA) and slow/fast selector switches	P
Hand-off-auto (HOA) and low/high selector switches	R
Slow-off-fast selector switch	T
Low-off-high selector switch	U
Fast-slow-off-auto selector switch	V
High-low-off-auto selector switch	W

Enclosed combination magnetic starters

CR413 2-speed/1-winding, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

Step 8 (digit 16) select pilot device

Pilot light (heavy duty CR104P style) type	Color — functionality	Code
None		A
LED lights	Red and amber across coils	2
	Red and green across coils	3
	Red and amber across coils and unwired green	5
Push-to-test lights	Red and amber across coils	S
	Red and green across coils	T
	Red and amber across coils and unwired green	Y

Step 9 (digit 17) select control options

Device	Code
None	A
1 relay, 2 NO-2 NC, 24/120 V coil — unwired	B[5]
2 relays, 24/120 V coil — unwired	C[5]
DIN rail — for customer use	D
12 point terminal strip — unwired (12 PT strip)	E
Space heater with NC contact	H[6]
1 relay + 12 PT strip	J[5]
2 relays + 12 PT strip	K[5]
DIN rail + 12 PT strip + space heater	L[6]
2 relays + 12 PT strip + space heater	M[5,6]
Time delay on relay, 24/120 V coil — unwired (TD)	N[5]
Time delay off relay, 24/120 V coil — unwired (TD)	P[5]
12 PT strip + TD ON	R[5]
12 PT strip + TD OFF	S[5]
12 PT strip + space heater + TD ON	T[5,6]
12 PT strip + space heater + TD OFF	U[5,6]

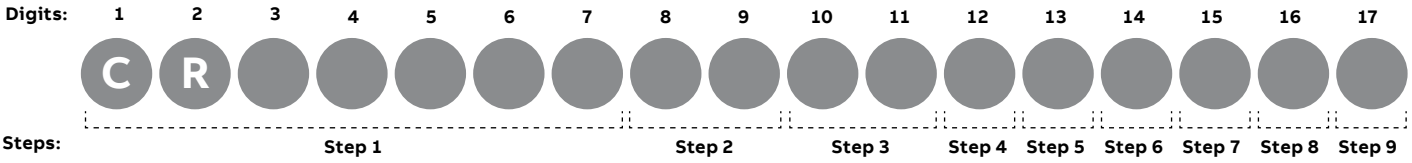
[5]Relay/timer coil voltage is equivalent to CPT secondary voltage. Requires minimum 100 extra VA CPT option.
[6]Maximum number of auxiliary contacts shall be reduced by 1.

General note:
On NEMA size 3 and 4 starters, if selecting factory installed and wired operator devices (pushbuttons, selector switches and/or pilot lights), then control circuit fusing, a control power transformer or 120 V separate sourced control is required when the protective device is rated greater than 100 amps.

Enclosed combination magnetic starters

CR492 2-speed/1-winding, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–7) select NEMA size and enclosure

NEMA size	NEMA type 1 Standard enclosure	NEMA type 3R Standard enclosure	NEMA type 12 Standard enclosure	NEMA type 4 Standard enclosure
0	CR492B1	CR492B6	CR492B2	CR492B4
1	CR492C1	CR492C6	CR492C2	CR492C4
2	CR492D1	CR492D6	CR492D2	CR492D4
3	CR492E1	CR492E6	CR492E2	CR492E4
4	CR492F1	CR492F6	CR492F2	CR492F4

Note: All enclosures include external overload reset buttons. NEMA 4 enclosures are stainless steel.

Step 2 (digits 8, 9) select control voltage (no CPT and standard size CPT)

Control circuit voltage and CPT	No CPT	Control fuses, no CPT	Standard size CPT
120 V with surge protector (SP)	01	F1	–
120 V	02	F2	–
240 V	03	F3	–
480 V	04	F4	–
600 V	05	F5	–
208 V	08	F8	–
24 V[1]	09	–	–
240 V/120 V with CPT	–	–	93
480 V/120 V with CPT	–	–	94
600 V/120 V with CPT	–	–	95
208 V/120 V with CPT	–	–	98
240 V/120 V with CPT and SP	–	–	33
480 V/120 V with CPT and SP	–	–	34
600 V/120 V with CPT and SP	–	–	35
208 V/120 V with CPT and SP	–	–	38
240 V/24 V with CPT[1]	–	–	S3
480 V/24 V with CPT[1]	–	–	S4
600 V/24 V with CPT[1]	–	–	S5
208 V/24 V with CPT[1]	–	–	S8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Enclosed combination magnetic starters

CR492 2-speed/1-winding, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 2 (digits 8, 9) select control voltage (extra capacity CPT + 100 VA and 200 VA)

Control circuit voltage and CPT	Standard size CPT + 100 VA	Standard size CPT + 200 VA
120 V with surge protector (SP)	–	–
120 V	–	–
240 V	–	–
480 V	–	–
600 V	–	–
208 V	–	–
24 V[1]	–	–
240 V/120 V with CPT	13	23
480 V/120 V with CPT	14	24
600 V/120 V with CPT	15	25
208 V/120 V with CPT	18	28
240 V/120 V with CPT and SP	53	63
480 V/120 V with CPT and SP	54	64
600 V/120 V with CPT and SP	55	65
208 V/120 V with CPT and SP	58	68
240 V/24 V with CPT[1]	A3	B3
480 V/24 V with CPT[1]	A4	B4
600 V/24 V with CPT[1]	A5	B5
208 V/24 V with CPT[1]	A8	B8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Step 3 (digits 10, 11) select protective device

Instantaneous trip circuit breaker

	208 V			240 V			480 V			600 V		
NEMA size	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code
0	0.5	3	MA	0.5	3	MA	1	3	MA	1	3	MA
	1	7	MB	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	3	7	MB	3	7	MB
	3	15	MC	1	7	MB	–	–	–	–	–	–
	–	–	–	3	15	MC	5	15	MC	5	15	MC
1	5	25	ME	5	25	ME	7½	25	ME	10	25	ME
	–	–	–	–	–	–	10	25	ME	–	–	–
	7½	40	MG	7½	40	MG	–	–	–	–	–	–
2	–	–	–	–	–	–	15	40	MG	15	40	MG
	10	60	MJ	10	60	MJ	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	20	40	MG
	–	–	–	15	60	MJ	20	60	MJ	–	–	–
	–	–	–	–	–	–	25	60	MJ	25	60	MJ
3	–	–	–	–	–	–	30	60	MJ	30	60	MJ
	15	100	MN	20	100	MN	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	40	60	MJ
	20	100	MN	25	100	MN	40	100	MN	–	–	–
	25	100	MN	30	100	MN	50	100	MN	50	100	MN
4	30	150	MR	–	–	–	60	100	MN	60	100	MN
	–	–	–	40	175	MS	–	–	–	–	–	–
	–	–	–	–	–	–	75	150	MR	75	150	MR
	–	–	–	–	–	–	–	–	–	100	150	MR
	40	175	MS	50	175	MS	100	175	MS	–	–	–

Enclosed combination magnetic starters

CR492 2-speed/1-winding, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 4 (digit 12) select overload relay

Overload relay	Code
Thermal bi-metallic ambient compensated (1 NC)	3
Thermal bi-metallic ambient compensated (1 NO–1 NC)	4
Solid state overload (1 NO–1 NC)	(#)

(#) Select code for solid state overload amp rating from ranges table below.

2-speed solid state overload ranges

					NEMA size	
		0 and 1		2		3 and 4
Code	Hi Amp	Lo amp	Hi amp	Lo amp	Hi amp	Lo amp
c	0.4–0.85	0.4–0.85	6.5–13.5	6.5–13.5	17–35	17–35
D	0.8–1.7	0.4–0.85	13–27	6.5–13.5	35–70	17–35
E	0.8–1.7	0.8–1.7	13–27	13–27	35–70	35–70
F	1.6–3.4	0.4–0.85	25–50	6.5 -13.5	65–135	17–35
G	1.6–3.4	0.8–1.7	25–50	13–27	65–135	35–70
H	1.6–3.4	1.6–3.4	25–50	25–50	65–135	65–135
U	3.2–6.8	0.8–1.7	–	–	–	–
K	3.2–6.8	1.6–3.4	–	–	–	–
L	3.2–6.8	3.2–6.8	–	–	–	–
M	6.5–13.5	1.6–3.4	–	–	–	–
V	6.5–13.5	3.2–6.8	–	–	–	–
W	6.5–13.5	6.5–13.5	–	–	–	–
R	13–27	3.2–6.8	–	–	–	–
S	13–27	6.5–13.5	–	–	–	–
T	13–27	13–27	–	–	–	–

Step 5 (digit 13) select auxiliary contacts

Auxiliary contacts (per contactor)	Code
None	A
1 NO	B
1 NC	C
1 NO–1 NC	D[2]
2 NO	E[2]
2 NC	F[2]

[2]Not available on 2 speed – 1 winding sizes 0-1.

Step 6 (digit 14) select monitoring options

Device	Code
None	A
Phase failure relay with undervoltage protection (panel mounted) — 190-480 V (PFR with UV)	C
Phase failure relay with undervoltage protection (panel mounted) — 575 V (PFR with UV)	D
Phase failure relay — 208 V (PFR)	E[3]
Phase failure relay — 240 V (PFR)	F[3]
Phase failure relay — 480 V (PFR)	G[3]
Phase failure relay — 575 V (PFR)	H[3]
Elapsed time meter (120 V/60 Hz) wired across coil (ETM)	1[4]
ETM + PFR with UV (190-480 V)	L[4]
ETM + PFR with UV (575 V)	N[4]
ETM + PFR (208 V)	P[3,4]
ETM + PFR (240 V)	Q[3,4]
ETM + PFR (480 V)	R[3,4]
ETM + PFR (575 V)	S[3,4]

[3]Available for type 1 enclosure only.
[4]Requires 120 V control circuit voltage or CPT with 120 V secondary.

Enclosed combination magnetic starters

CR492 2-speed/1-winding, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

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Step 7 (digit 15) select pushbutton/selector switch

Pushbutton/selector switch — heavy duty	Code
None	A
Fast/slow/stop pushbutton	J
High/low/off pushbutton	K
High/low pushbutton and hand-off-auto (HOA) selector switch	L
Fast/slow pushbutton and hand-off-auto (HOA) selector switch	M
Hand-off-auto (HOA) and slow/fast selector switches	P
Hand-off-auto (HOA) and low/high selector switches	R
Slow-off-fast selector switch	T
Low-off-high selector switch	U
Fast-slow-off-auto selector switch	V
High-low-off-auto selector switch	W

—

Step 8 (digit 16) select pilot device

Pilot light (heavy duty CR104P style) type	Color — functionality	Code
None		A
LED lights	Red and amber across coils	2
	Red and green across coils	3
	Red and amber across coils and unwired green	5
Push-to-test lights	Red and amber across coils	S
	Red and green across coils	T
	Red and amber across coils and unwired green	Y

—

Step 9 (digit 17) select control options

Device	Code
None	A
1 relay, 2 NO-2 NC, 24/120 V coil — unwired	B[5]
2 relays, 24/120 V coil — unwired	C[5]
DIN rail — for customer use	D
12 point terminal strip — unwired (12 PT strip)	E
Space heater with NC contact	H[6]
1 relay + 12 PT strip	J[5]
2 relays + 12 PT strip	K[5]
DIN rail + 12 PT strip + space heater	L[6]
2 relays + 12 PT strip + space heater	M[5,6]
Time delay on relay, 24/120 V coil — unwired (TD)	N[5]
Time delay off relay, 24/120 V coil — unwired (TD)	P[5]
12 PT strip + TD ON	R[5]
12 PT strip + TD OFF	S[5]
12 PT strip + space heater + TD ON	T[5,6]
12 PT strip + space heater + TD OFF	U[5,6]

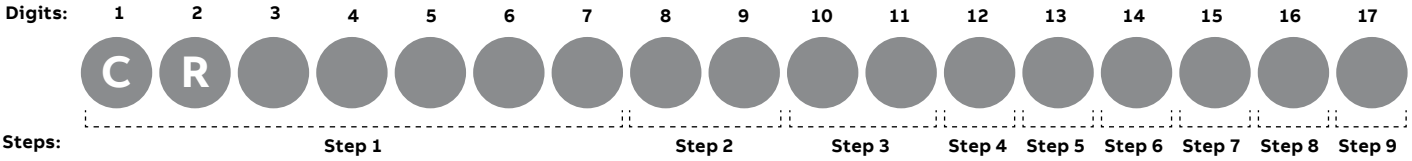
[5]Relay/timer coil voltage is equivalent to CPT secondary voltage. Requires minimum 100 extra VA CPT option.
[6]Maximum number of auxiliary contacts shall be reduced by 1.

General note:
If selecting factory installed and wired operator devices (pushbuttons, selector switches and/or pilot lights), control circuit fusing, a control power transformer or 24 V/120 V separate sourced control is required, regardless of protective device rating.

Enclosed combination magnetic starters

CR414 2-speed/2-winding, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–7) select NEMA size and enclosure

	NEMA type 1	NEMA type 3R	NEMA type 12	NEMA type 4
NEMA size	Standard enclosure	Standard enclosure	Standard enclosure	Standard enclosure
0	CR414B1	CR414B6	CR414B2	CR414B4
1	CR414C1	CR414C6	CR414C2	CR414C4
2	CR414D1	CR414D6	CR414D2	CR414D4
3	CR414E1	CR414E6	CR414E2	CR414E4
4	CR414F1	CR414F6	CR414F2	CR414F4

Note: All enclosures include external overload reset buttons. NEMA 4 enclosures are stainless steel.

Step 2 (digits 8, 9) select control voltage (no CPT and standard size CPT)

Control circuit voltage and CPT	No CPT	Control fuses, no CPT	Standard size CPT
120 V with surge protector (SP)	01	F1	–
120 V	02	F2	–
240 V	03	F3	–
480 V	04	F4	–
600 V	05	F5	–
208 V	08	F8	–
24 V[1]	09	–	–
240 V/120 V with CPT	–	–	93
480 V/120 V with CPT	–	–	94
600 V/120 V with CPT	–	–	95
208 V/120 V with CPT	–	–	98
240 V/120 V with CPT and SP	–	–	33
480 V/120 V with CPT and SP	–	–	34
600 V/120 V with CPT and SP	–	–	35
208 V/120 V with CPT and SP	–	–	38
240 V/24 V with CPT[1]	–	–	S3
480 V/24 V with CPT[1]	–	–	S4
600 V/24 V with CPT[1]	–	–	S5
208 V/24 V with CPT[1]	–	–	S8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Enclosed combination magnetic starters

CR414 2-speed/2-winding, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 2 (digits 8, 9) select control voltage (extra capacity CPT + 100 VA and 200 VA)

Control circuit voltage and CPT	Standard size CPT + 100 VA	Standard size CPT + 200 VA
120 V with surge protector (SP)	–	–
120 V	–	–
240 V	–	–
480 V	–	–
600 V	–	–
208 V	–	–
24 V[1]	–	–
240 V/120 V with CPT	13	23
480 V/120 V with CPT	14	24
600 V/120 V with CPT	15	25
208 V/120 V with CPT	18	28
240 V/120 V with CPT and SP	53	63
480 V/120 V with CPT and SP	54	64
600 V/120 V with CPT and SP	55	65
208 V/120 V with CPT and SP	58	68
240 V/24 V with CPT[1]	A3	B3
480 V/24 V with CPT[1]	A4	B4
600 V/24 V with CPT[1]	A5	B5
208 V/24 V with CPT[1]	A8	B8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Step 3 (digits 10, 11) select protective device

Thermal-magnetic circuit breaker

	200–208 V			240 V			480 V			600 V		
NEMA size	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code
0	2	15	TC	3	15	TC	5	15	TC	5	15	TC
	3	15	TC	–	–	–	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	7½	15	TC
	5	25	TE	5	25	TE	7½	25	TE	–	–	–
	–	–	–	–	–	–	–	–	–	10	25	TE
	7½	40	TG	7½	40	TG	10	25	TE	10	20	TD
2	–	–	–	–	–	–	15	40	TG	15	40	TG
	10	60	TJ	10	60	TJ	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	20	40	TG
	–	–	–	15	60	TJ	20	60	TJ	–	–	–
	–	–	–	–	–	–	25	60	TJ	25	60	TJ
3	–	–	–	–	–	–	30	60	TJ	30	60	TJ
	15	100	TN	20	100	TN	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	40	60	TJ
	20	100	TN	25	100	TN	40	100	TN	–	–	–
	–	–	–	–	–	–	50	100	TN	50	100	TN
	25	125	TQ	30	125	TQ	–	–	–	–	–	–
4	30	150	TR	–	–	–	60	150	TR	60	150	TR
	–	–	–	40	200	TT	–	–	–	–	–	–
	–	–	–	–	–	–	75	150	TR	75	150	TR
	40	200	TT	50	200	TT	–	–	–	–	–	–
	–	–	–	–	–	–	100	200	TT	100	200	TT

Enclosed combination magnetic starters

CR414 2-speed/2-winding, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 4 (digit 12) select overload relay

Overload relay	Code
No overload	Z
Thermal bi-metallic ambient compensated (1 NC)	3
Thermal bi-metallic ambient compensated (1 NO–1 NC)	4
Solid state overload (1 NO–1 NC)	(#)

(#) Select code for solid state overload amp rating from ranges table below.
No overload is not available with 387, 487, 490, 492 and 494 product lines.

2-speed solid state overload ranges

					NEMA size	
		0 and 1		2		3 and 4
Code	Hi amp	Lo amp	Hi amp	Lo amp	Hi amp	Lo amp
C	0.4–0.85	0.4–0.85	6.5–13.5	6.5–13.5	17–35	17–35
D	0.8–1.7	0.4–0.85	13–27	6.5–13.5	35–70	17–35
E	0.8–1.7	0.8–1.7	13–27	13–27	35–70	35–70
F	1.6–3.4	0.4–0.85	25–50	6.5 -13.5	65–135	17–35
G	1.6–3.4	0.8–1.7	25–50	13–27	65–135	35–70
H	1.6–3.4	1.6–3.4	25–50	25–50	65–135	65–135
U	3.2–6.8	0.8–1.7	–	–	–	–
K	3.2–6.8	1.6–3.4	–	–	–	–
L	3.2–6.8	3.2–6.8	–	–	–	–
M	6.5–13.5	1.6–3.4	–	–	–	–
V	6.5–13.5	3.2–6.8	–	–	–	–
W	6.5–13.5	6.5–13.5	–	–	–	–
R	13–27	3.2–6.8	–	–	–	–
S	13–27	6.5–13.5	–	–	–	–
T	13–27	13–27	–	–	–	–

Step 5 (digit 13) select auxiliary contacts

Auxiliary contacts (per contactor)	Code
None	A
1 NO	B
1 NC	C
1 NO–1 NC	D[2]
2 NO	E[2]
2 NC	F[2]

[2]Not available on 2 speed — 2 winding sizes 0-1.

Step 6 (digit 14) select monitoring options

Device	Code
None	A
Phase failure relay with undervoltage protection (panel mounted) — 190–480 V (PFR with UV)	C
Phase failure relay with undervoltage protection (panel mounted) — 575 V (PFR with UV)	D
Phase failure relay — 208 V (PFR)	E[3]
Phase failure relay — 240 V (PFR)	F[3]
Phase failure relay — 480 V (PFR)	G[3]
Phase failure relay — 575 V (PFR)	H[3]
Elapsed time meter (120 V/60 Hz) wired across coil (ETM)	1[4]
ETM + PFR with UV (190–480 V)	L[4]
ETM + PFR with UV (575 V)	N[4]
ETM + PFR (208 V)	P[3,4]
ETM + PFR (240 V)	Q[3,4]
ETM + PFR (480 V)	R[3,4]
ETM + PFR (575 V)	S[3,4]

[3]Available for type 1 enclosure only.
[4]Requires 120 V control circuit voltage or CPT with 120 V secondary.

Enclosed combination magnetic starters

CR414 2-speed/2-winding, thermal magnetic circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

—

Step 7 (digit 15) select pushbutton/selector switch

Pushbutton/selector switch — heavy duty	Code
None	A
Fast/slow/stop pushbutton	J
High/low/off pushbutton	K
High/low pushbutton and hand-off-auto (HOA) selector switch	L
Fast/slow pushbutton and hand-off-auto (HOA) selector switch	M
Hand-off-auto (HOA) and slow/fast selector switches	P
Hand-off-auto (HOA) and low/high selector switches	R
Slow-off-fast selector switch	T
Low-off-high selector switch	U
Fast-slow-off-auto selector switch	V
High-low-off-auto selector switch	W

—

Step 8 (digit 16) select pilot device

Pilot light (heavy duty CR104P style) type	Color — functionality	Code
None		A
LED lights	Red and amber across coils	2
	Red and green across coils	3
	Red and amber across coils and unwired green	5
Push-to-test lights	Red and amber across coils	S
	Red and green across coils	T
	Red and amber across coils and unwired green	Y

—

Step 9 (digit 17) select control options

Device	Code
None	A
1 relay, 2 NO–2 NC, 24/120 V coil — unwired	B[5]
2 relays, 24/120 V coil — unwired	C[5]
DIN rail — for customer use	D
12 point terminal strip — unwired (12 PT strip)	E
Space heater with NC contact	H[6]
1 relay + 12 PT strip	J[5]
2 relays + 12 PT strip	K[5]
DIN rail + 12 PT strip + space heater	L[6]
2 relays + 12 PT strip + space heater	M[5,6]
Time delay on relay, 24/120 V coil — unwired (TD)	N[5]
Time delay off relay, 24/120 V coil — unwired (TD)	P[5]
12 PT strip + TD ON	R[5]
12 PT strip + TD OFF	S[5]
12 PT strip + space heater + TD ON	T[5,6]
12 PT strip + space heater + TD OFF	U[5,6]

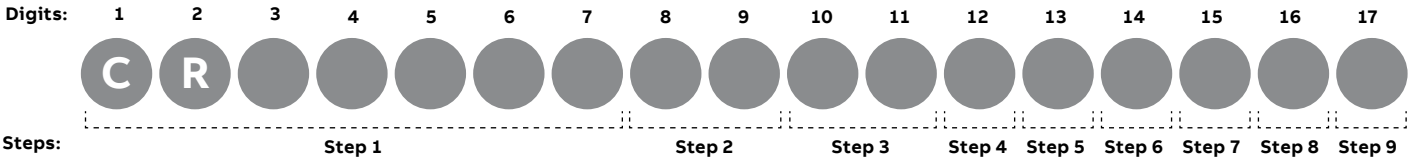
[5]Relay/timer coil voltage is equivalent to CPT secondary voltage. Requires minimum 100 extra VA CPT option.
[6]Maximum number of auxiliary contacts shall be reduced by 1.

General note:
On NEMA size 3 and 4 starters, if selecting factory installed and wired operator devices (pushbuttons, selector switches and/or pilot lights), then control circuit fusing, a control power transformer or 120 V separate sourced control is required when the protective device is rated greater than 100 amps.

Enclosed combination magnetic starters

CR415 2-speed/2-winding, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–7) select NEMA size and enclosure

NEMA size	NEMA type 1 Standard enclosure	NEMA type 3R Standard enclosure	NEMA type 12 Standard enclosure	NEMA type 4 Standard enclosure
0	CR415B1	CR415B6	CR415B2	CR415B4
1	CR415C1	CR415C6	CR415C2	CR415C4
2	CR415D1	CR415D6	CR415D2	CR415D4
3	CR415E1	CR415E6	CR415E2	CR415E4
4	CR415F1	CR415F6	CR415F2	CR415F4

Note: All enclosures include external overload reset buttons. NEMA 4 enclosures are stainless steel.

Step 2 (digits 8, 9) select control voltage (no CPT and standard size CPT)

Control circuit voltage and CPT	No CPT	Control fuses, no CPT	Standard size CPT
120 V with surge protector (SP)	01	F1	–
120 V	02	F2	–
240 V	03	F3	–
480 V	04	F4	–
600 V	05	F5	–
208 V	08	F8	–
24 V[1]	09	–	–
240 V/120 V with CPT	–	–	93
480 V/120 V with CPT	–	–	94
600 V/120 V with CPT	–	–	95
208 V/120 V with CPT	–	–	98
240 V/120 V with CPT and SP	–	–	33
480 V/120 V with CPT and SP	–	–	34
600 V/120 V with CPT and SP	–	–	35
208 V/120 V with CPT and SP	–	–	38
240 V/24 V with CPT[1]	–	–	S3
480 V/24 V with CPT[1]	–	–	S4
600 V/24 V with CPT[1]	–	–	S5
208 V/24 V with CPT[1]	–	–	S8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Enclosed combination magnetic starters

CR415 2-speed/2-winding, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

Step 2 (digits 8, 9) select control voltage (extra capacity CPT + 100 VA and 200 VA)

Control circuit voltage and CPT	Standard size CPT + 100 VA	Standard size CPT + 200 VA
120 V with surge protector (SP)	–	–
120 V	–	–
240 V	–	–
480 V	–	–
600 V	–	–
208 V	–	–
24 V[1]	–	–
240 V/120 V with CPT	13	23
480 V/120 V with CPT	14	24
600 V/120 V with CPT	15	25
208 V/120 V with CPT	18	28
240 V/120 V with CPT and SP	53	63
480 V/120 V with CPT and SP	54	64
600 V/120 V with CPT and SP	55	65
208 V/120 V with CPT and SP	58	68
240 V/24 V with CPT[1]	A3	B3
480 V/24 V with CPT[1]	A4	B4
600 V/24 V with CPT[1]	A5	B5
208 V/24 V with CPT[1]	A8	B8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Step 3 (digits 10, 11) select protective device

Disconnect without fuse clips

NEMA size	Code
All	1A

Disconnect with class H fuse clips — for use with non-time delay/single element class H fuses

	200–208 V			230–240 V			460–480 V			575–600 V		
NEMA size	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code
0	3	30	HA	3	30	HA	5	30	H3	5	30	H3
1	–	–	–	–	–	–	7½	30	H3	10	30	H3
	7½	60	HB	7½	60	HB	10	60	H6	–	60	H6
2	–	–	–	–	–	–	15	60	H6	20	60	H6
	10	100	HC	15	100	HC	25	100	H1	25	100	H1
3	–	–	–	–	–	–	30	100	H1	30	100	H1
	25	200	HD	30	200	HD	50	200	H2	50	200	H2
4	–	–	–	–	–	–	60	200	H2	60	200	H2
	40	400	HE	50	400	HE	100	400	H4	100	400	H4

Enclosed combination magnetic starters

CR415 2-speed/2-winding, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

Step 3 (digits 10, 11) select protective device (continued)

Disconnect with class R fuse clips — for use with time delay/dual element class RK1/RK5 fuses

	200–208 V			230–240 V			460–480 V			575–600 V		
NEMA size	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code
0	3	30	RA	3	30	RA	5	30	R3	5	30	R3
1	5	30	RA	5	30	RA	10	30	R3	10	30	R3
	7½	60	RB	7½	60	RB	–	–	–	–	–	–
2		–	–	–	–	–	–	30	R3	15	30	R3
	10	60	RB	15	60	RB	25	60	R6	25	60	R6
3	–	–	–	–	–	–	–	60	R6	30	60	R6
	20	100	RC	25	100	RC	50	100	R1	50	100	R1
	25	200	RD	30	200	RD	–	–	–	–	–	–
4	–	–	–	–	–	–	–	100	R1	60	100	R1
	400	200	RD	50	200	RD	100	200	R2	100	200	R2

Disconnect with class J fuse clips — for use with time delay/dual element class J fuses

	200–208 V			230–240 V			460–480 V			575–600 V		
NEMA size	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code	Max. hp	Fuse clip (amps)	Code
0	3	30	J3	3	30	J3	5	30	J3	5	30	J3
1	5	30	J3	5	30	J3	10	30	J3	10	30	J3
	7½	60	J6	7½	60	J6	–	–	–	–	–	–
2	–	–	–	–	–	–	–	30	J3	15	30	J3
	10	60	J6	15	60	J6	25	60	J6	25	60	J6
3	–							60	J6	30	60	J6
	20	100	J1	25	100	J1	50	100	J1	50	100	J1
4	25	200	J2	30	200	J2	–	–	–	–	–	–
	–	–	–	–	–	–	–	100	J1	60	100	J1
	40	200	J2	50	200	J2	100	200	J2	100	200	J2

Step 4 (digit 12) select overload relay

Overload relay	Code
No overload	Z
Thermal bi-metallic ambient Compensated (1 NC)	3
Thermal bi-metallic ambient compensated (1 NO–1 NC)	4
Solid state overload (1 NO–1 NC)	(#)

(#) Select code for solid state overload amp rating from ranges table on following page.
No overload is not available with 387, 487, 490, 492 and 494 product lines.

Enclosed combination magnetic starters

CR415 2-speed/2-winding, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

2-speed solid state overload ranges

	NEMA size					
		0 and 1		2		3 and 4
Code	Hi amp	Lo amp	Hi amp	Lo amp	Hi amp	Lo amp
C	0.4–0.85	0.4–0.85	6.5–13.5	6.5–13.5	17–35	17–35
D	0.8–1.7	0.4–0.85	13–27	6.5–13.5	35–70	17–35
E	0.8–1.7	0.8–1.7	13–27	13–27	35–70	35–70
F	1.6–3.4	0.4–0.85	25–50	6.5 -13.5	65–135	17–35
G	1.6–3.4	0.8–1.7	25–50	13–27	65–135	35–70
H	1.6–3.4	1.6–3.4	25–50	25–50	65–135	65–135
U	3.2–6.8	0.8–1.7	-	-	-	-
K	3.2–6.8	1.6–3.4	-	-	-	-
L	3.2–6.8	3.2–6.8	-	-	-	-
M	6.5–13.5	1.6–3.4	-	-	-	-
V	6.5–13.5	3.2–6.8	-	-	-	-
W	6.5–13.5	6.5–13.5	-	-	-	-
R	13–27	3.2–6.8	-	-	-	-
S	13–27	6.5–13.5	-	-	-	-
T	13–27	13–27	-	-	-	-

Step 5 (digit 13) select auxiliary contacts

Auxiliary contacts (per contactor)	Code
None	A
1 NO	B
1 NC	C
1 NO–1 NC	D[2]
2 NO	E[2]
2 NC	F[2]

[2]Not available on 2 speed — 2 winding sizes 0–1.

Step 6 (digit 14) select monitoring options

Device	Code
None	A
Phase failure relay with undervoltage protection (panel mounted) — 190–480 V (PFR with UV)	C
Phase failure relay with undervoltage protection (panel mounted) — 575 V (PFR with UV)	D
Phase failure relay — 208 V (PFR)	E[3]
Phase failure relay — 240 V (PFR)	F[3]
Phase failure relay — 480 V (PFR)	G[3]
Phase failure relay — 575 V (PFR)	H[3]
Elapsed time meter (120 V/60 Hz) wired across coil (ETM)	1[4]
ETM + PFR with UV (190–480 V)	L[4]
ETM + PFR with UV (575 V)	N[4]
ETM + PFR (208 V)	P[3,4]
ETM + PFR (240 V)	Q[3,4]
ETM + PFR (480 V)	R[3,4]
ETM + PFR (575 V)	S[3,4]

[3]Available for type 1 enclosure only.
[4]Requires 120 V control circuit voltage or CPT with 120 V secondary.

Enclosed combination magnetic starters

CR415 2-speed/2-winding, disconnect switch

Part number configuration
Valid for NEMA sizes 0–4

—

Step 7 (digit 15) select pushbutton/selector switch

Pushbutton/selector switch — heavy duty	Code
None	A
Fast/slow/stop pushbutton	J
High/low/off pushbutton	K
High/low pushbutton and hand-off-auto (HOA) selector switch	L
Fast/slow pushbutton and hand-off-auto (HOA) selector switch	M
Hand-off-auto (HOA) and slow/fast selector switches	P
Hand-off-auto (HOA) and low/high selector switches	R
Slow-off-fast selector switch	T
Low-off-high selector switch	U
Fast-slow-off-auto selector switch	V
High-low-off-auto selector switch	W

—

Step 8 (digit 16) select pilot device

Pilot light (heavy duty CR104P style) type	Color — functionality	Code
None		A
LED lights	Red and amber across coils	2
	Red and green across coils	3
	Red and amber across coils and unwired green	5
Push-to-test lights	Red and amber across coils	S
	Red and green across coils	T
	Red and amber across coils and unwired green	Y

—

Step 9 (digit 17) select control options

Device	Code
None	A
1 relay, 2 NO–2 NC, 24/120 V coil — unwired	B[5]
2 relays, 24/120 V coil — unwired	C[5]
DIN rail — for customer use	D
12 point terminal strip — unwired (12 PT strip)	E
Space heater with NC contact	H[6]
1 relay + 12 PT strip	J[5]
2 relays + 12 PT strip	K[5]
DIN rail + 12 PT strip + space heater	L[6]
2 relays + 12 PT strip + space heater	M[5,6]
Time delay on relay, 24/120 V coil — unwired (TD)	N[5]
Time delay off relay, 24/120 V coil — unwired (TD)	P[5]
12 PT strip + TD ON	R[5]
12 PT strip + TD OFF	S[5]
12 PT strip + space heater + TD ON	T[5,6]
12 PT strip + space heater + TD OFF	U[5,6]

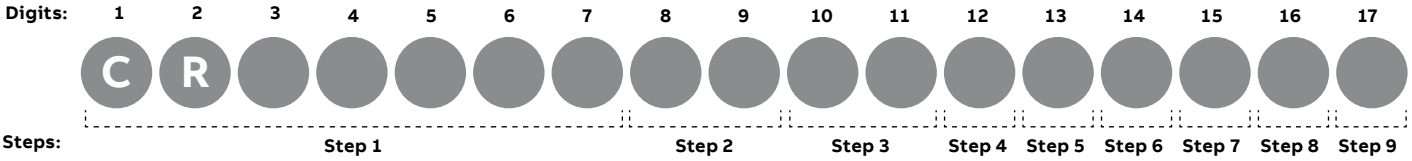
[5]Relay/timer coil voltage is equivalent to CPT secondary voltage. Requires minimum 100 extra VA CPT option.
[6]Maximum number of auxiliary contacts shall be reduced by 1.

General note:
On NEMA size 3 and 4 starters, if selecting factory installed and wired operator devices (pushbuttons, selector switches and/or pilot lights), then control circuit fusing, a control power transformer or 120 V separate sourced control is required when the protective device is rated greater than 100 amps.

Enclosed combination magnetic starters

CR494 2-speed/2-winding, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–7) select NEMA size and enclosure

NEMA size	NEMA type 1 Standard enclosure	NEMA type 3R Standard enclosure	NEMA type 12 Standard enclosure	NEMA type 4 Standard enclosure
0	CR494B1	CR494B6	CR494B2	CR494B4
1	CR494C1	CR494C6	CR494C2	CR494C4
2	CR494D1	CR494D6	CR494D2	CR494D4
3	CR494E1	CR494E6	CR494E2	CR494E4
4	CR494F1	CR494F6	CR494F2	CR494F4

Note: All enclosures include external overload reset buttons. NEMA 4 enclosures are stainless steel.

Step 2 (digits 8, 9) select control voltage (no CPT and standard size CPT)

Control circuit voltage and CPT	No CPT	Control fuses, no CPT	Standard size CPT
120 V with surge protector (SP)	01	F1	–
120 V	02	F2	–
240 V	03	F3	–
480 V	04	F4	–
600 V	05	F5	–
208 V	08	F8	–
24 V[1]	09	–	–
240 V/120 V with CPT	–	–	93
480 V/120 V with CPT	–	–	94
600 V/120 V with CPT	–	–	95
208 V/120 V with CPT	–	–	98
240 V/120 V with CPT and SP	–	–	33
480 V/120 V with CPT and SP	–	–	34
600 V/120 V with CPT and SP	–	–	35
208 V/120 V with CPT and SP	–	–	38
240 V/24 V with CPT[1]	–	–	S3
480 V/24 V with CPT[1]	–	–	S4
600 V/24 V with CPT[1]	–	–	S5
208 V/24 V with CPT[1]	–	–	S8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Enclosed combination magnetic starters

CR494 2-speed/2-winding, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 2 (digits 8, 9) select control voltage (extra capacity CPT + 100 VA and 200 VA)

Control circuit voltage and CPT	Standard size CPT + 100 VA	Standard size CPT + 200 VA
120 V with surge protector (SP)	–	–
120 V	–	–
240 V	–	–
480 V	–	–
600 V	–	–
208 V	–	–
24 V[1]	–	–
240 V/120 V with CPT	13	23
480 V/120 V with CPT	14	24
600 V/120 V with CPT	15	25
208 V/120 V with CPT	18	28
240 V/120 V with CPT and SP	53	63
480 V/120 V with CPT and SP	54	64
600 V/120 V with CPT and SP	55	65
208 V/120 V with CPT and SP	58	68
240 V/24 V with CPT[1]	A3	B3
480 V/24 V with CPT[1]	A4	B4
600 V/24 V with CPT[1]	A5	B5
208 V/24 V with CPT[1]	A8	B8

Note: CPT includes 2 primary fuses and 1 secondary fuse.
[1]24 V coils not available for NEMA size 3 and 4.

Step 3 (digits 10, 11) select protective device

instantaneous trip circuit breaker

	208 V			240 V			480 V			600 V		
NEMA size	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code	Max. hp	CB rating (amps)	Code
0	0.5	3	MA	0.5	3	MA	1	3	MA	1	3	MA
	1	7	MB	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	3	7	MB	3	7	MB
	3	15	MC	1	7	MB	–	–	–	–	–	–
	–	–	–	3	15	MC	5	15	MC	5	15	MC
1	5	25	ME	5	25	ME	7½	25	ME	10	25	ME
	–	–	–	–	–	–	10	25	ME	–	–	–
	7½	40	MG	7½	40	MG	–	–	–	–	–	–
2	–	–	–	–	–	–	15	40	MG	15	40	MG
	10	60	MJ	10	60	MJ	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	20	40	MG
	–	–	–	15	60	MJ	20	60	MJ	–	–	–
	–	–	–	–	–	–	25	60	MJ	25	60	MJ
3	–	–	–	–	–	–	30	60	MJ	30	60	MJ
	15	100	MN	20	100	MN	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	40	60	MJ
	20	100	MN	25	100	MN	40	100	MN	–	–	–
	25	100	MN	30	100	MN	50	100	MN	50	100	MN
4	30	150	MR	–	–	–	60	100	MN	60	100	MN
	–	–	–	40	175	MS	–	–	–	–	–	–
	–	–	–	–	–	–	75	150	MR	75	150	MR
	–	–	–	–	–	–	–	–	–	100	150	MR
	40	175	MS	50	175	MS	100	175	MS	–	–	–

Enclosed combination magnetic starters

CR494 2-speed/2-winding, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 4 (digit 12) select overload relay

Overload relay	Code
Thermal bi-metallic ambient compensated (1 NC)	3
Thermal bi-metallic ambient compensated (1 NO–1 NC)	4
Solid state overload (1 NO–1 NC)	(#)

(#) Select code for solid state overload amp rating from ranges table below.

2-speed solid state overload ranges

					NEMA size	
	0 and 1		2		3 and 4	
Code	Hi amp	Lo amp	Hi amp	Lo amp	Hi amp	Lo amp
c	0.4–0.85	0.4–0.85	6.5–13.5	6.5–13.5	17–35	17–35
D	0.8–1.7	0.4–0.85	13–27	6.5–13.5	35–70	17–35
E	0.8–1.7	0.8–1.7	13–27	13–27	35–70	35–70
F	1.6–3.4	0.4–0.85	25–50	6.5 -13.5	65–135	17–35
G	1.6–3.4	0.8–1.7	25–50	13–27	65–135	35–70
H	1.6–3.4	1.6–3.4	25–50	25–50	65–135	65–135
U	3.2–6.8	0.8–1.7	–	–	–	–
K	3.2–6.8	1.6–3.4	–	–	–	–
L	3.2–6.8	3.2–6.8	–	–	–	–
M	6.5–13.5	1.6–3.4	–	–	–	–
V	6.5–13.5	3.2–6.8	–	–	–	–
W	6.5–13.5	6.5–13.5	–	–	–	–
R	13–27	3.2–6.8	–	–	–	–
S	13–27	6.5–13.5	–	–	–	–
T	13–27	13–27	–	–	–	–

Step 5 (digit 13) select auxiliary contacts

Auxiliary contacts (per contactor)	Code
None	A
1 NO	B
1 NC	C
1 NO–1 NC	D[2]
2 NO	E[2]
2 NC	F[2]

[2]Not available on 2 speed – 2 winding sizes 0-1.

Step 6 (digit 14) select monitoring options

Device	Code
None	A
Phase failure relay with undervoltage protection (panel mounted) — 190–480 V (PFR with UV)	C
Phase failure relay with undervoltage protection (panel mounted) — 575 V (PFR with UV)	D
Phase failure relay — 208 V (PFR)	E[3]
Phase failure relay — 240 V (PFR)	F[3]
Phase failure relay — 480 V (PFR)	G[3]
Phase failure relay — 575 V (PFR)	H[3]
Elapsed time meter (120 V/60 Hz) wired across coil (ETM)	1[4]
ETM + PFR with UV (190–480 V)	L[4]
ETM + PFR with UV (575 V)	N[4]
ETM + PFR (208 V)	P[3,4]
ETM + PFR (240 V)	Q[3,4]
ETM + PFR (480 V)	R[3,4]
ETM + PFR (575 V)	S[3,4]

[3]Available for type 1 enclosure only.
[4]Requires 120 V control circuit voltage or CPT with 120 V secondary.

Enclosed combination magnetic starters

CR494 2-speed/2-winding, instantaneous trip circuit breaker

Part number configuration
Valid for NEMA sizes 0–4

Step 7 (digit 15) select pushbutton/selector switch

Pushbutton/selector switch — heavy duty	Code
None	A
Fast/slow/stop pushbutton	J
High/low/off pushbutton	K
High/low pushbutton and hand-off-auto (HOA) selector switch	L
Fast/slow pushbutton and hand-off-auto (HOA) selector switch	M
Hand-off-auto (HOA) and slow/fast selector switches	P
Hand-off-auto (HOA) and low/high selector switches	R
Slow-off-fast selector switch	T
Low-off-high selector switch	U
Fast-slow-off-auto selector switch	V
High-low-off-auto selector switch	W

Step 8 (digit 16) select pilot device

Pilot light (heavy duty CR104P style) type	Color — functionality	Code
None		A
LED lights	Red and amber across coils	2
	Red and green across coils	3
	Red and amber across coils and unwired green	5
Push-to-test lights	Red and amber across coils	S
	Red and green across coils	T
	Red and amber across coils and unwired green	Y

Step 9 (digit 17) select control options

Device	Code
None	A
1 relay, 2 NO-2 NC, 24/120 V coil — unwired	B[5]
2 relays, 24/120 V coil — unwired	C[5]
DIN rail — for customer use	D
12 point terminal strip — unwired (12 PT strip)	E
Space heater with NC contact	H[6]
1 relay + 12 PT strip	J[5]
2 relays + 12 PT strip	K[5]
DIN rail + 12 PT strip + space heater	L[6]
2 relays + 12 PT strip + space heater	M[5,6]
Time delay on relay, 24/120 V coil — unwired (TD)	N[5]
Time delay off relay, 24/120 V coil — unwired (TD)	P[5]
12 PT strip + TD ON	R[5]
12 PT strip + TD OFF	S[5]
12 PT strip + space heater + TD ON	T[5,6]
12 PT strip + space heater + TD OFF	U[5,6]

[5]Relay/timer coil voltage is equivalent to CPT secondary voltage. Requires minimum 100 extra VA CPT option.
[6]Maximum number of auxiliary contacts shall be reduced by 1.

General note:
If selecting factory installed and wired operator devices ((pushbuttons, selector switches and/or pilot lights), control circuit fusing, a control power transformer or 24 V/120 V separate sourced control is required, regardless of protective device rating.

Field-installed starter modification kits

Auxiliary contacts

NEMA sizes 0–6



CR305X100A

Application

Auxiliary contacts can add to the versatility of magnetic starters by providing additional control circuits to do a variety of jobs without adding to the width of the starter.

Kits make it easy to add contacts to control accessory equipment such as indicating lights; to control sequencing of other motor starters; and in conjunction with a standard reversing starter and plugging switch, to plug-stop motors. Auxiliary contacts can be added to all across-the-line magnetic starters, combination magnetic starters, reversing and multi-speed starters.

Each auxiliary contact is rated 10 amperes AC, resistive load, NEMA “A600,” and is suitable for either right or left side mounting. An insulating shield is also provided between each auxiliary contact unit and the starter. Auxiliary contacts are furnished in the basic block design or as an adder block.

Each contact is marked NO or NC on the block and is not convertible.

Logic reed contacts suitable for low energy level circuits are also available. These are designed for applications on low-voltage control circuits (24 volts and below), such as inputs to computers and programmable starters.

Product number selection instructions

1. Order by quantity and complete product number.
   Example: Three CR305X300A

Field-installed starter modification kits

Auxiliary contacts

For 300-line starters

Auxiliary contact kits — basic blocks

NEMA size	Contact configuration	Block design	Product number
0,1	1 NO	Basic	CR305X100A
0,1	1 NC	Basic	CR305X100B
0,1	1 NO–1 NC	Basic	CR305X100C
2	1 NO	Basic	CR305X200A
2	1 NC	Basic	CR305X200B
2	1 NO–1 NC	Basic	CR305X200C
3,4	1 NO	Basic	CR305X300A
3,4	1 NC	Basic	CR305X300B
3,4	1 NO–1 NC	Basic	CR305X300C
5,6	1 NO	Basic	CR305X500A
5,6	1 NC	Basic	CR305X500B
5,6	1 NO–1 NC	Basic	CR305X500C

Auxiliary contact kits — adder blocks

NEMA size	Contact configuration	Block design	Product number
0–6	1 NO	Adder	CR305X100D[1]

Logic reed switch auxiliary contacts[2]

NEMA size	Contact configuration	Product number
00, 0, 1	1 NO–0 NC	CR305X100RA
00, 0, 1	0 NO–1 NC	CR305X100RB
00, 0, 1	1 NO–1 NC	CR305X100RC
2	1 NO–0 NC	CR305X200RA
2	0 NO–1 NC	CR305X200RB
2	1 NO–1 NC	CR305X200RC
3, 4	1 NO–0 NC	CR305X300RA
3, 4	0 NO–1 NC	CR305X300RB
3, 4	1 NO–1 NC	CR305X300RC
5, 6	1 NO–0 NC	CR305X500RA
5, 6	0 NO–1 NC	CR305X500RB
5, 6	1 NO–1 NC	CR305X500RC

Contact ratings — basic blocks

Standard block

AC volts	Continuous current amperes	Inrush current amperes
115	6.0	60
230	3.0	30
460	1.5	15
575	1.2	12

High fidelity contact basic block

120 V AC maximum 0.15 A maximum, 8 VA maximum resistive.
30 V DC maximum 0.15 A maximum, 4.5 VA maximum resistive.

Standard block

DC volts	Continuous current amperes	Inrush current amperes
125	1.1	–
250	0.5	–
–	–	–
–	–	–

[1]First adder block must be mounted to a basic block. A second adder block can be added to the first adder block on size 2 through size 9 starters.
Four extra auxiliary contacts (not blocks) is the maximum that can be added to either a NEMA size 0 or 1 starter while five is the maximum extra auxiliary contacts that can be added to NEMA size 2 through 6 devices.
[2]CR305X logic reed switch auxiliary contacts may be ordered as a factory-installed modification. Order by description.

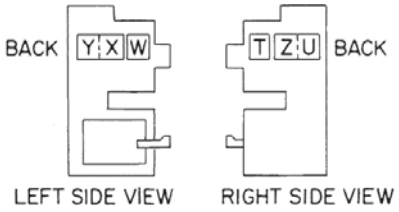
Field-installed starter modification kits

Auxiliary contacts

Selection and installation guides

02

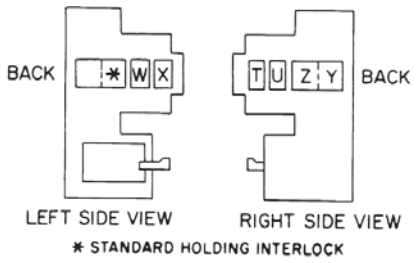
Extra auxiliary contact table
For NEMA size 0 and 1, AC coils only



NEMA sizes 0 and 1, single-speed, non-reversing 2- and 3-pole and starters (side views)

Contact location 5 contacts maximum						Kits for field modification order in quantities shown				
						CR305 X100A	CR305 X100B	CR305 X100C[1]	CR305 X100D	CR305 X100E
W	X	Y	T	Z	U	Basic blocks				Adder blocks
	⊣⊢					1				
		⫫					1			
	⊣⊢	⫫						1		
⊣⊢	⊣⊢					1			1	
⫫		⫫								1
⊣⊢	⊣⊢	⫫						1	1	
⫫	⊣⊢	⫫						1		1
⊣⊢	⊣⊢			⊣⊢		2			1	
⫫		⫫	⊣⊢		⫫		2			1
⊣⊢	⊣⊢		⫫	⊣⊢		2			2	
⫫		⫫			⫫		2			2
	⊣⊢	⫫		⊣⊢	⫫			2		
⊣⊢	⊣⊢	⫫		⊣⊢		1		1	1	
⫫	⊣⊢	⫫			⫫		1	1		1

Extra auxiliary contact table
For NEMA size 2, 3 and 4, AC coils only



NEMA sizes 2, 3 and 4, single-speed, non-reversing starters (side views)

Contact location 5 contacts maximum						Kits for field modification order in quantities shown				
						For size 2				
						CR305 X200A	CR305 X200B	CR305 X200C[1]	CR305 X100D	CR305 X100E
						For sizes 3, 4				
						CR305 X300A	CR305 X300B	CR305 X300C[1]	CR305 X100D	CR305 X100E
W	X	Y	T	Z	U	Basic blocks				Adder blocks
⊣⊢									1	
⫫										1
		⫫	⊣⊢					1		
⊣⊢	⊣⊢								2	
⫫	⫫									2
⊣⊢		⫫	⊣⊢					1	1	
⫫		⫫	⊣⊢					1		1
⊣⊢	⊣⊢		⊣⊢			1			2	
⫫	⫫	⫫					1			2
⊣⊢	⊣⊢		⊣⊢		⊣⊢	1			3	
⫫	⫫	⫫			⫫		1			3
⫫	⊣⊢	⫫	⊣⊢					1	1	1
⊣⊢	⊣⊢	⫫	⊣⊢					1	2	
⫫	⫫	⫫	⊣⊢					1		2
⫫	⊣⊢	⫫	⊣⊢		⊣⊢			1	2	1
⫫	⊣⊢	⫫	⊣⊢		⫫			1	1	2
⊣⊢	⊣⊢	⫫	⊣⊢		⊣⊢			1	3	
⫫	⫫	⫫	⊣⊢		⫫			1		3
⊣⊢	⊣⊢		⊣⊢	⊣⊢		1		1	4	
⫫	⫫	⫫		⫫	⫫		1			4

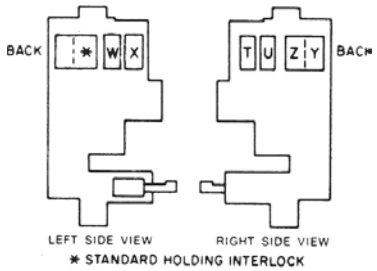
Field-installed starter modification kits

Auxiliary contacts

Selection and installation guides

Extra auxiliary contact table

Contact location 5 contacts maximum						Kits for field modification order in quantities shown				
						CR305 X500A	CR305 X500B	CR305 X500C[1]	CR305 X100D	CR305 X100E
W	X	Y	T	Z	U	Basic blocks			Adder blocks	
⊣⊢									1	
⊣/⊢										1
		⊣/⊢	⊣⊢					1		
⊣⊢	⊣⊢								2	
⊣/⊢	⊣/⊢									2
⊣⊢		⊣/⊢	⊣⊢					1	1	
⊣/⊢		⊣/⊢	⊣⊢					1		1
⊣⊢	⊣⊢		⊣⊢			1			2	
⊣/⊢	⊣/⊢	⊣/⊢					1			2
⊣⊢	⊣⊢		⊣⊢		⊣⊢	1			3	
⊣/⊢	⊣/⊢	⊣/⊢			⊣/⊢		1			3
⊣/⊢	⊣⊢	⊣/⊢	⊣⊢					1	1	1
⊣⊢	⊣⊢	⊣/⊢	⊣⊢					1	2	
⊣/⊢	⊣/⊢	⊣/⊢	⊣⊢					1		2
⊣/⊢	⊣⊢	⊣/⊢	⊣⊢		⊣⊢			1	2	1
⊣/⊢	⊣⊢	⊣/⊢	⊣⊢		⊣/⊢			1	1	2
⊣⊢	⊣⊢	⊣/⊢	⊣⊢		⊣⊢			1	3	
⊣/⊢	⊣/⊢	⊣/⊢	⊣⊢		⊣/⊢			1		3
⊣⊢	⊣⊢		⊣⊢	⊣⊢	⊣⊢	1			4	
⊣/⊢	⊣/⊢	⊣/⊢		⊣/⊢	⊣/⊢		1			4



NEMA sizes 5 and 6 single-speed, non-reversing starters (side views)

[1]Both NO and NC contacts must be wired for same polarity

Field-installed starter modification kits

Surge suppression and control circuit fuses

NEMA sizes 00–6

Surge suppression kit

To be connected in parallel with operating coil where the demands of solid-state circuitry necessitate prevention of undesirable reactions in logic circuits. For use on 120 volt AC only.

	NEMA size	Product number
 CR305X146C	0–6	CR305X146C

Control circuit fuse kits

Control circuit fuse kits are designed for installation on NEMA size 00–5 across-the-line contactors and starters. They install on the side of the contactor and provide fuse protection for control circuit wiring.

These kits incorporate one or two 10 ampere 600 volt fuse holders for use with KTK or KTK-R fuses (or equivalent). The fuses are easily accessible with the starter enclosure covers open, and each kit contains instructions and hardware for easy installation. Instructions: GEH-4822.

NEMA size	No. of fuses	Fuse type	Product number
00–1	1	KTK	CR305X141A
00–1	2	KTK	CR305X141B
2	1	KTK	CR305X241A
2	2	KTK	CR305X241B
3, 4	1	KTK	CR305X341A
3, 4	2	KTK	CR305X341B
5, 6	1	KTK	CR305X541A
5, 6	2	KTK	CR305X541B
00–1	1	KTK-R	CR305X141C
00–1	2	KTK-R	CR305X141D
2	1	KTK-R	CR305X241C
2	2	KTK-R	CR305X241D
3, 4	1	KTK-R	CR305X341C
3, 4	2	KTK-R	CR305X341D
5, 6	1	KTK-R	CR305X541C
5, 6	2	KTK-R	CR305X541D

Field-installed starter modification kits

Combination starter transformers

Combination starter transformer kit

To be installed in CR307, CR308 and CR387 size 0–6 combination starter. It supplies low voltage control for such a device.

Standard capacity

	VA capacity	NEMA size	Product number
 CR305X146C	50	0, 1	CR308XT1**A
	100	2	CR308XT2**A
	250	3	CR308XT3**A
	250	4	CR308XT4**A
	–	5	CR308XT5**A[1]

Extra capacity (100 watts)

VA capacity	NEMA size	Product number
150	0, 1	CR308XT1**B
150	2	CR308XT2**B
300	3	CR308XT3**B
300	4	CR308XT4**B
–	5	CR308XT5**B[2]

****Voltage and frequency suffixes (60 Hz)**

Suffix	
04	220–230–240/440–460–480-volt dual primary reconnectable, 110–115–120 volt secondary
05	550–575–600-volt primary, 110–115–120 volt secondary
23	200–208-volt primary, 115–120 volt secondary

Field-installed starter modification kits

Control amplifier and space heater

Control amplifier

The ABB CR305X control amplifier is suitable for applications with low level 24 volt DC outputs. It allows the low level signals from a programmable control, microprocessor or photoelectric cell to operate ABB's 300-line starters while their control coils operate at the line voltage. The control amplifier is UL listed and CSA certified, and forms are available for NEMA sizes 00 through 5.

	Operation type	NEMA size	Product number
	Non-reversing	00, 0, and 1	CR305X112A
	Non-reversing	2	CR305X212A
	Non-reversing	3 and 4	CR305X312A
	Reversing	00, 0, 1, 2, 3 and 4	CR305X112P[3]

Space heater kits

CR305X701 and CR305X702 space heater kits (50 watts, except size 5 and 6 at 100 watts) come complete with one NC auxiliary contact, necessary hardware and ready for installation on any NEMA size 0 through 6 enclosed starter, CR306, CR307, CR308, and CR309.

	NEMA size	Operating voltage	Product number
	0–1	115	CR305X701D[4]
	0–1	230	CR305X701A
	0–1	460	CR305X701B
	0–1	600	CR305X701C
	2, 3, 4	115	CR305X702D
	2, 3, 4	230	CR305X702A
	2, 3, 4	460	CR305X702B
	2, 3, 4	600	CR305X702C
CR305X702B	5, 6	115	CR305X705D[4]
	5, 6	230	CR305X705A
	5, 6	460	CR305X705B
	5, 6	600	CR305X705C

[1]Consists of a 50 VA transformer and a relay. Use primary voltage for starter/contactor coil.
[2]Consists of a 150 VA transformer and a relay. Use primary voltage for starter/contactor coil.
[3]A quantity of two panel mount CR305X112P is required for use with reversing starters.
[4]If connected to control circuit transformer, 115-volt heater requires an extra-capacity transformer.
Contact nearest ABB Representative for additional information.

Field-installed starter modification kits

Mechanical interlocks

Mechanical interlock kits

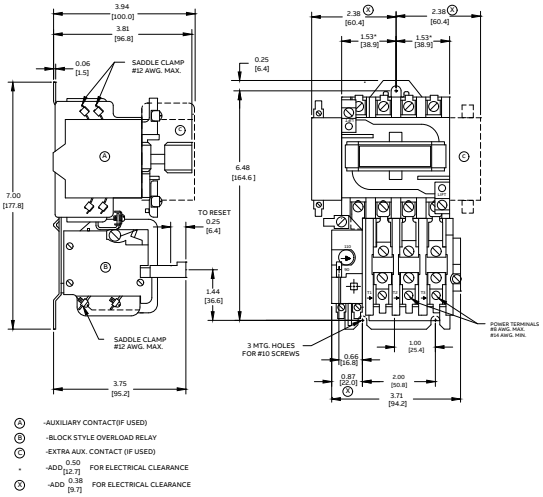
To be installed on open CR306 starters unless otherwise noted. If kit will not interlock starter you need, order a mechanically interlocked starter assembled complete at the factory. Kits include all parts to mechanically interlock 2 devices.

NEMA size	Mounting position	Baseplate	Product number
0–1	Horizontal	No	CR309X100B
2	Horizontal	No	CR309X200D
3–4	Horizontal	No	CR309X300B
5	Horizontal	Yes	CR309X501K
0–1	Vertical	Yes	CR309X102B
2	Vertical	Yes	CR309X202B
3–4	Vertical	Yes	CR309X302B

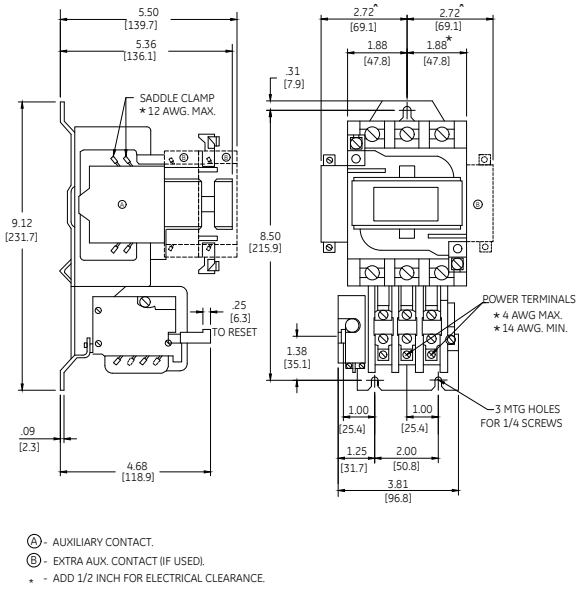
Open non-combination magnetic starters

CR306 non-reversing drawings/diagrams

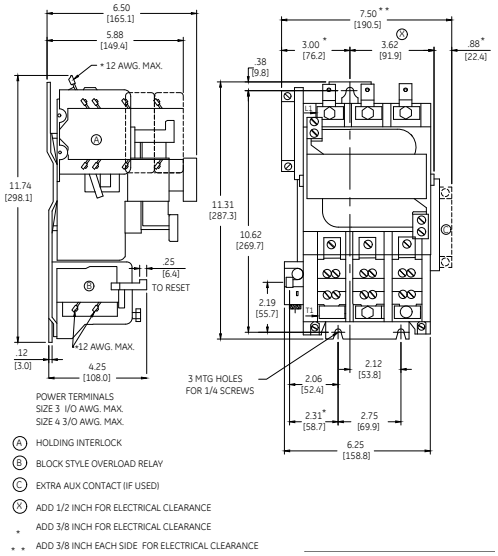
200 horsepower maximum
NEMA sizes 00–6
600 volts maximum



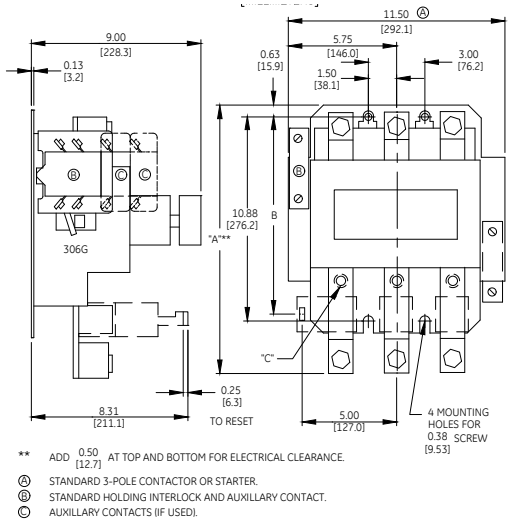
Open type, NEMA sizes 00-1 (3 3/4 lbs.)



Open type, NEMA size 2 (8 lbs.)



Open type, NEMA sizes 3 (19 lbs.) and 4 (20 lbs.)



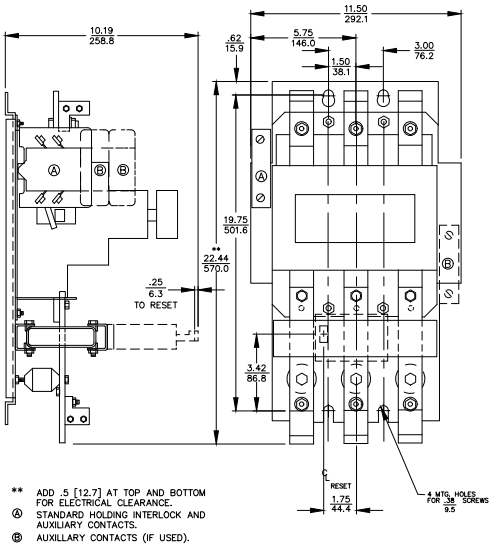
Open type, NEMA size 5 (55 lbs.)

Outlines, dimensions ($\frac{\text{in.}}{\text{mm}}$) and weights (for estimating only)

Open non-combination magnetic starters

CR306 non-reversing drawings/diagrams

200 horsepower maximum
NEMA sizes 00–6
600 volts maximum



CR306 open type, NEMA size 6

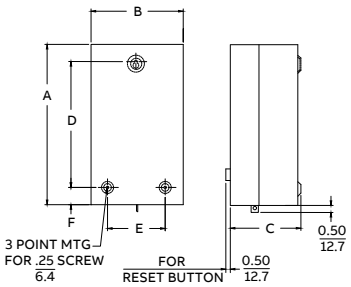
Outlines, dimensions (in. / mm) and weights (for estimating only)

Enclosed non-combination magnetic starters

CR306 non-reversing drawings/diagrams

200 horsepower maximum
NEMA sizes 00–4
600 volts maximum

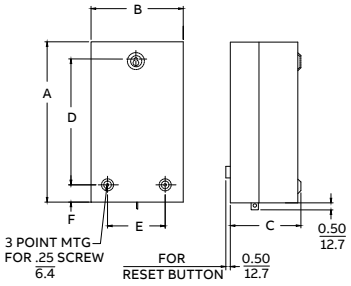
CR306 NEMA type 1 lift-off cover without CPT size 00–4



Type 1, NEMA sizes 00–4
Drawing no. 55-200202S1

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Approx. shipping wt. (lbs)
00	10.00 (254.0)	6.00 (152.4)	4.63 (117.5)	8.00 (203.2)	4.00 (101.6)	1.00 (25.4)	10
0	10.00 (254.0)	6.00 (152.4)	4.63 (117.5)	8.00 (203.2)	4.00 (101.6)	1.00 (25.4)	10
1	10.00 (254.0)	6.00 (152.4)	4.63 (117.5)	8.00 (203.2)	4.00 (101.6)	1.00 (25.4)	10
2	13.25 (336.6)	7.38 (187.3)	6.13 (155.6)	11.00 (279.4)	5.00 (127)	1.13 (28.7)	15
3	20.25 (514.4)	8.75 (222.2)	7.31 (185.7)	17.00 (431.8)	5.75 (146.0)	1.88 (47.6)	35
4	25.00 (635.0)	8.75 (222.2)	7.31 (185.7)	22.00 (558.8)	5.75 (146.0)	1.50 (38.1)	40

CR306 NEMA type 1 lift-off cover with CPT size 00–2



Type 1, NEMA sizes 00–2
Drawing no. 55-200202S1

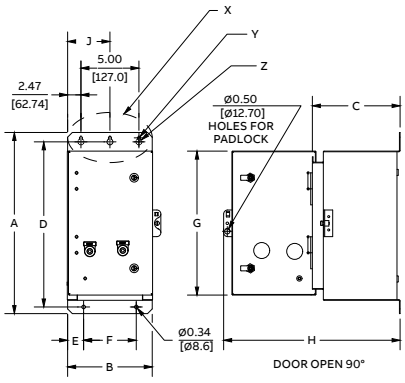
NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Approx. shipping wt. (lbs)
00	10.00 (254.0)	10.00 (254.0)	4.62 (117.3)	8.00 (203.2)	8.00 (203.2)	1.00 (25.4)	15
0	10.00 (254.0)	10.00 (254.0)	4.62 (117.3)	8.00 (203.2)	8.00 (203.2)	1.00 (25.4)	15
1	10.00 (254.0)	10.00 (254.0)	4.62 (117.3)	8.00 (203.2)	8.00 (203.2)	1.00 (25.4)	15
2	13.25 (336.5)	12.00 (304.8)	6.13 (155.7)	11.00 (279.4)	9.00 (228.6)	1.13 (28.7)	30

Enclosed non-combination magnetic starters

CR306 non-reversing drawings/diagrams

200 horsepower maximum
NEMA sizes 00–5
600 volts maximum

CR306 NEMA type 1 hinged cover without CPT size 00–4



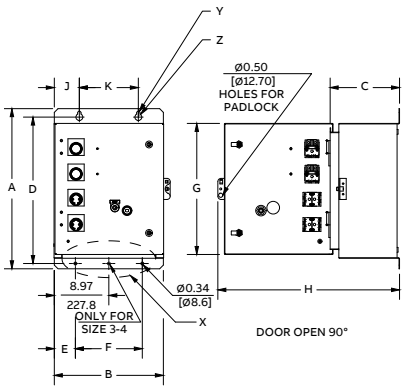
Type 1, NEMA sizes 00–4
Drawing no. 270A7282P1_1

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
0	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
1	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
2	17.00 (431.8)	7.94 (201.6)	8.23 (209.0)	15.49 (393.4)	1.50 (38.1)	4.94 (125.4)	13.51 (343.1)	16.55 (420.3)	3.97 (100.8)	25
3	30.0 (762)	9.94 (252.4)	8.23 (209.0)	28.37 (720.5)	2.00 (50.8)	5.94 (150.8)	26.55 (674.3)	18.55 (471.1)	–	50
4	30.0 (762)	9.94 (252.4)	8.23 (209.0)	28.37 (720.5)	2.00 (50.8)	5.94 (150.8)	26.55 (674.3)	18.55 (471.1)	–	50

Mounting details

NEMA size	No. of top holes X	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	2	0.40 (10.2)	0.82 (20.8)

CR306 NEMA type 1 hinged cover with CPT size 00–4



Type 1, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

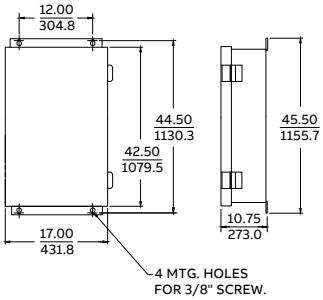
Enclosed non-combination magnetic starters

CR306 non-reversing drawings/diagrams

200 horsepower maximum
NEMA sizes 00–4
600 volts maximum

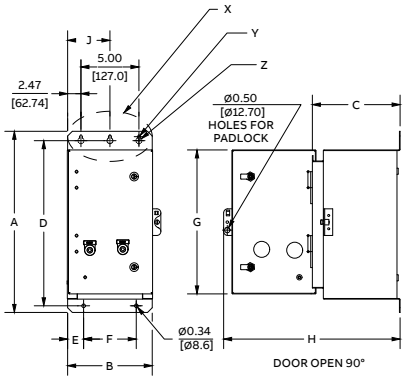
CR306 NEMA type 1 size 5

See diagram for dimensions



NEMA type 1, size 5 (134 lbs.)
Drawing no. 55-209746S1

CR306 NEMA type 12 hinged cover without CPT size 00–4



NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
0	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
1	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
2	17.00 (431.8)	7.94 (201.6)	8.23 (209.0)	15.49 (393.4)	1.50 (38.1)	4.94 (125.4)	13.51 (343.1)	16.55 (420.3)	3.97 (100.8)	25
3	30.0 (762)	9.94 (252.4)	8.23 (209.0)	28.37 (720.5)	2.00 (50.8)	5.94 (150.8)	26.55 (674.3)	18.55 (471.1)	–	50
4	30.0 (762)	9.94 (252.4)	8.23 (209.0)	28.37 (720.5)	2.00 (50.8)	5.94 (150.8)	26.55 (674.3)	18.55 (471.1)	–	50

Mounting details

NEMA size	No. of top holes X	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	2	0.40 (10.2)	0.82 (20.8)

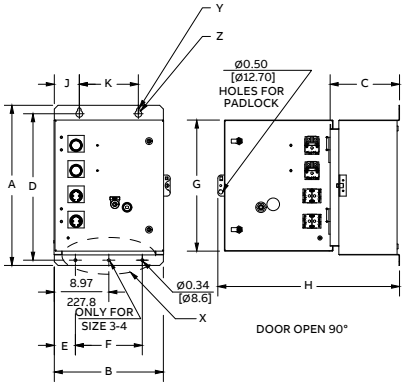
Type 12, NEMA sizes 00–4
Drawing no. 270A7282P1_1

Enclosed non-combination magnetic starters

CR306 non-reversing drawings/diagrams

200 horsepower maximum
NEMA sizes 00–5
600 volts maximum

CR306 NEMA type 12 hinged cover with CPT size 00–4



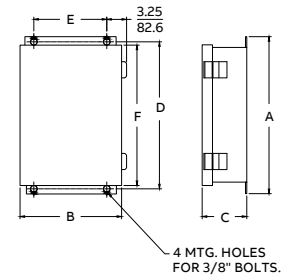
Type 12, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR306 NEMA type 12 size 5



Type 12, NEMA size 5
Drawing no. 55-209746S1

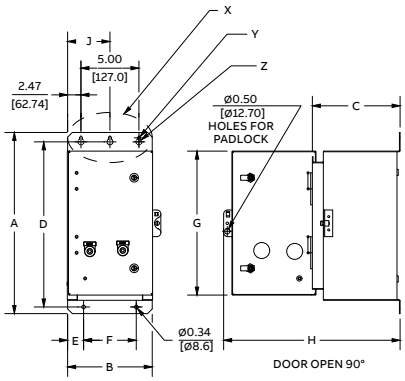
NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Shipping weight (lbs)
5	45.50 (1155.7)	17.00 (431.8)	10.25 (260.4)	44.50 (1130.3)	12.00 (304.8)	42.75 (1085.9)	154

Enclosed non-combination magnetic starters

CR306 non-reversing drawings/diagrams

200 horsepower maximum
NEMA sizes 00–5
600 volts maximum

CR306 NEMA type 3R hinged cover without CPT size 00–4



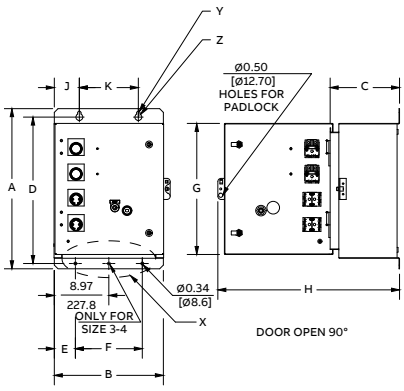
Type 3R, NEMA sizes 00–4
Drawing no. 270A7282P1_1

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
0	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
1	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.5 (88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
2	17.00 (431.8)	7.94 (201.6)	8.23 (209.0)	15.49 (393.4)	1.50 (38.1)	4.94 (125.4)	13.51 (343.1)	16.55 (420.3)	3.97 (100.8)	25
3	30.0 (762)	9.94 (252.4)	8.23 (209.0)	28.37 (720.5)	2.00 (50.8)	5.94 (150.8)	26.55 (674.3)	18.55 (471.1)	–	50
4	30.0 (762)	9.94 (252.4)	8.23 (209.0)	28.37 (720.5)	2.00 (50.8)	5.94 (150.8)	26.55 (674.3)	18.55 (471.1)	–	50

Mounting details

NEMA size	No. of top holes X	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	2	0.40 (10.2)	0.82 (20.8)

CR306 NEMA type 3R hinged cover with CPT size 00–4



Type 3R, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

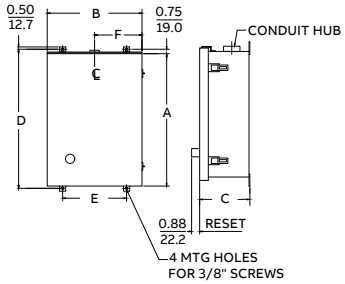
Enclosed non-combination magnetic starters

CR306 non-reversing drawings/diagrams

200 horsepower maximum
NEMA sizes 00–5
600 volts maximum

CR306 NEMA type 3R size 5

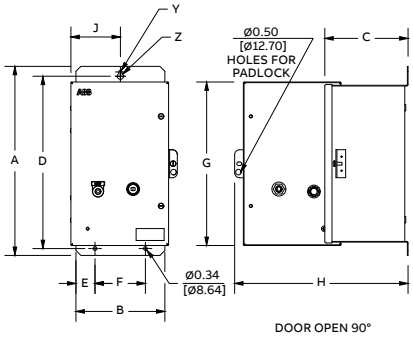
NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Shipping weight (lbs)
5	42.00 (1066.8)	22.00 (558.8)	10.25 (260.4)	43.50 (1104.9)	16.00 (406.0)	11.0 (279.4)	157



Type 3R, NEMA size 5
Drawing no. 55-210106

CR306 NEMA type 4/4X hinged cover without CPT size 00–4

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	12.88 (327.1)	5.94 (150.8)	6.18 (156.9)	11.39 (289.3)	0.97 (24.6)	4.00 (101.6)	10.6 (269.2)	12.36 (313.9)	2.97 (75.4)	15
0	12.88 (327.1)	5.94 (150.8)	6.18 (156.9)	11.39 (289.3)	0.97 (24.6)	4.00 (101.6)	10.6 (269.2)	12.36 (313.9)	2.97 (75.4)	15
1	12.88 (327.1)	5.94 (150.8)	6.18 (156.9)	11.39 (289.3)	0.97 (24.6)	4.00 (101.6)	10.6 (269.2)	12.36 (313.9)	2.97 (75.4)	15
2	16.88 (428.7)	7.94 (201.6)	7.30 (185.4)	15.39 (390.9)	1.70 (43.1)	4.50 (114.3)	14.60 (370.8)	15.48 (393.19)	3.97 (100.8)	20
3	29.88 (758.9)	9.94 (252.4)	8.20 (208.2)	28.27 (718.0)	2.35 (59.6)	5.50 (139.7)	27.60 (701.0)	18.38 (466.8)	4.97 (126.2)	50
4	29.88 (758.9)	9.94 (252.4)	8.20 (208.2)	28.27 (718.0)	2.35 (59.6)	5.50 (139.7)	27.60 (701.0)	18.38 (466.8)	4.97 (126.2)	50



Type 4/4X, NEMA sizes 00–4
Drawing no. 270A7290P1_3

Mounting details

NEMA size	No. of top holes	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	1	2	0.40 (10.2)	0.82 (20.8)

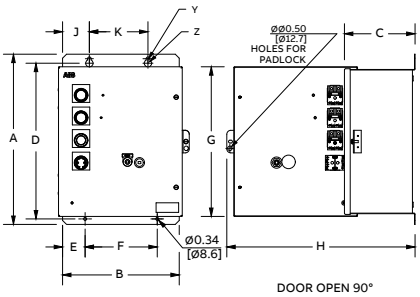
Enclosed non-combination magnetic starters

CR306 non-reversing drawings/diagrams

200 horsepower maximum
NEMA sizes 00–6
600 volts maximum

02

CR306 NEMA type 4/4X hinged cover with CPT size 00–4



Type 4/4X, NEMA sizes 00–4
Drawing no. 270A7291P1_4

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
0	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
1	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
2	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
3	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55
4	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55

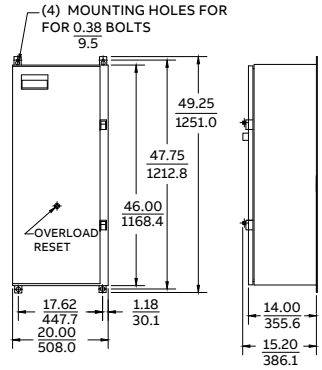
Mounting details

NEMA size	No. of top holes	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2,3, 4	2	2	0.40 (10.2)	0.82 (20.8)

CR306 NEMA type 4/4X size 5

NEMA size	Dimension A	Dimension B	Dimension C	Shipping weight (lbs)
5	44.50 (1130.3)	22.00 (558.8)	10.25 (260.4)	135

CR306 NEMA type 1 and 12 size 6



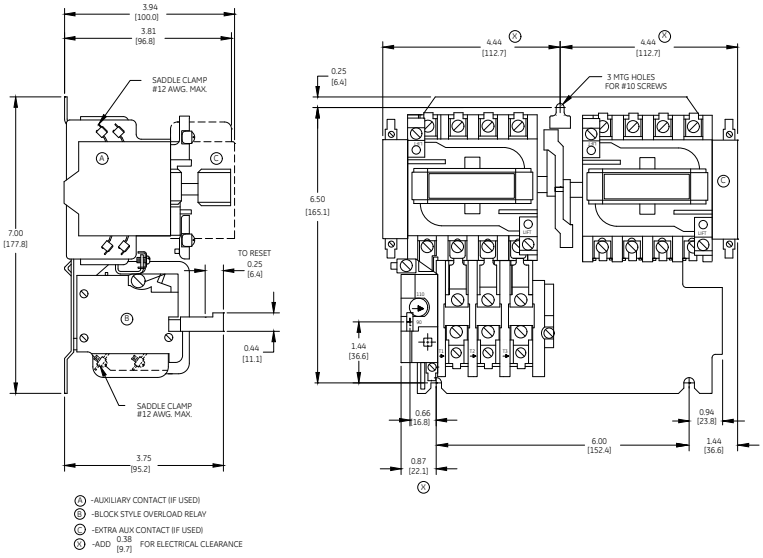
Type 1 and 12, size 6
Drawing no. 55-186660

See diagram for dimensions

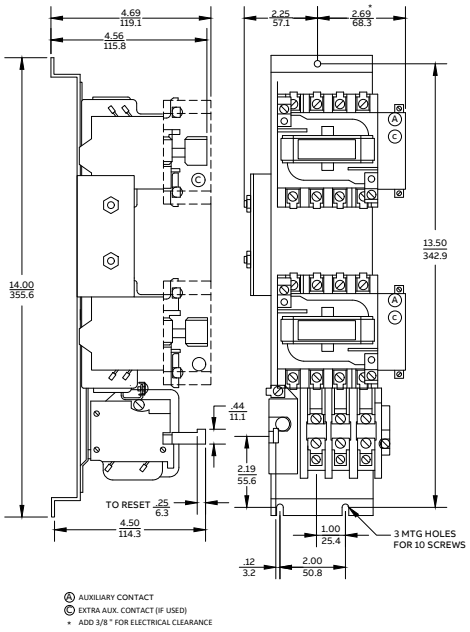
Open non-combination magnetic starters

CR309 reversing layout dimensions

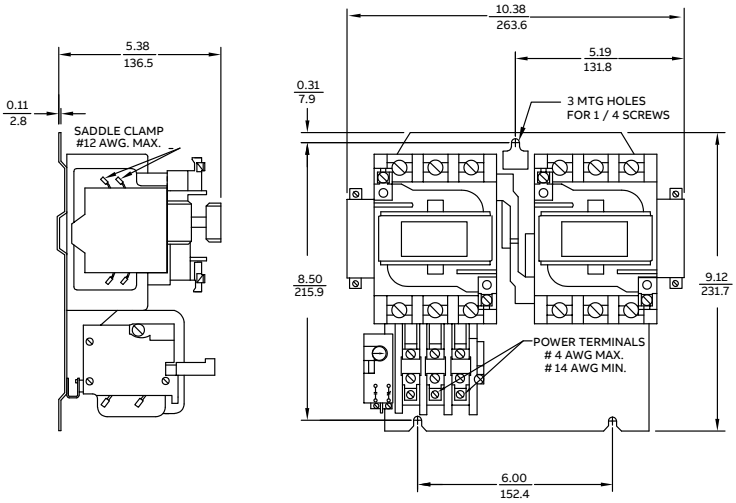
200 horsepower maximum
NEMA sizes 00–5
600 volts maximum only



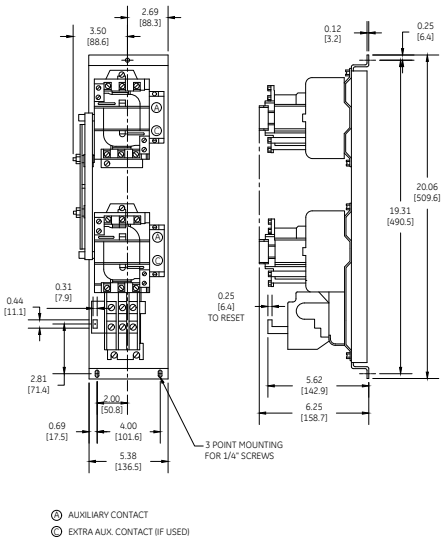
Open type, NEMA size 00, 0 and 1 reversing (horizontal); 7¾ lbs.



Open type, NEMA size 0 and 1 reversing (vertical); 7¼ lbs.



Open type, NEMA size 2 reversing (horizontal), 16¼ lbs.



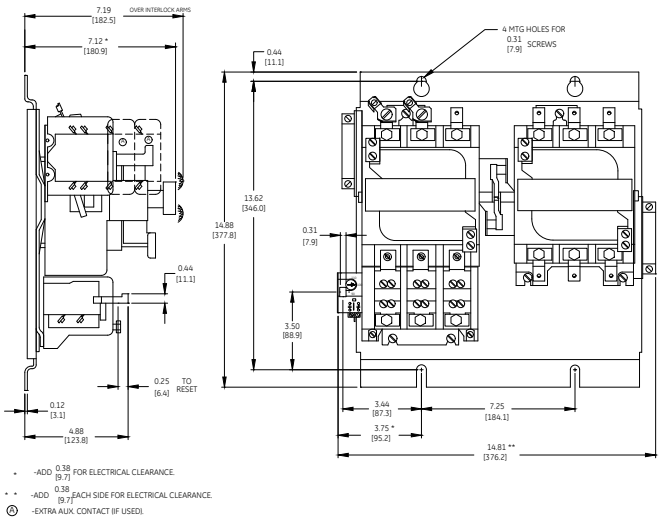
Open type, NEMA size 2 reversing (vertical); 16¼ lbs.

02

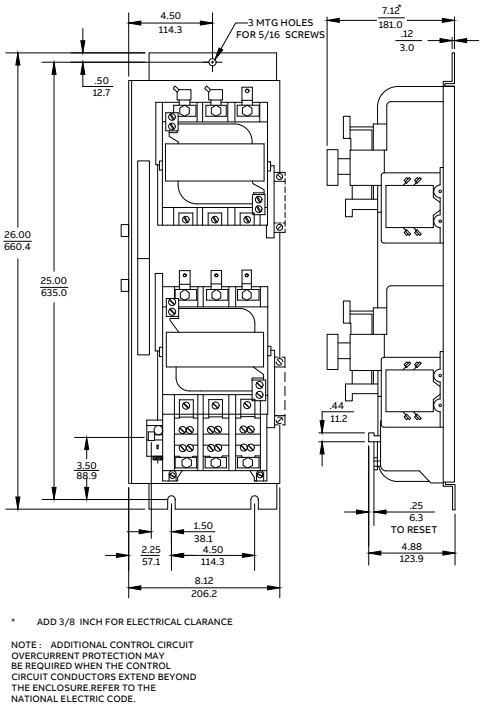
Open non-combination magnetic starters

CR309 reversing layout dimensions

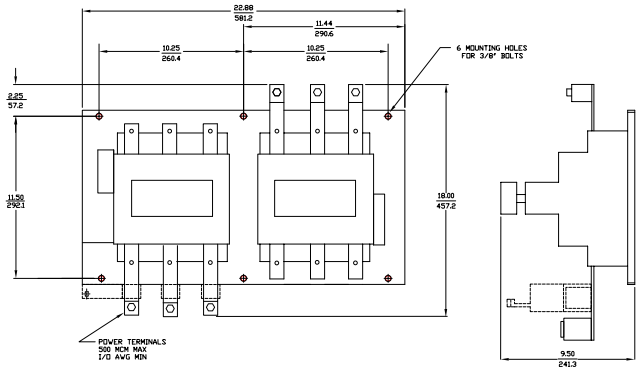
200 horsepower maximum
NEMA sizes 00–5
600 volts maximum only



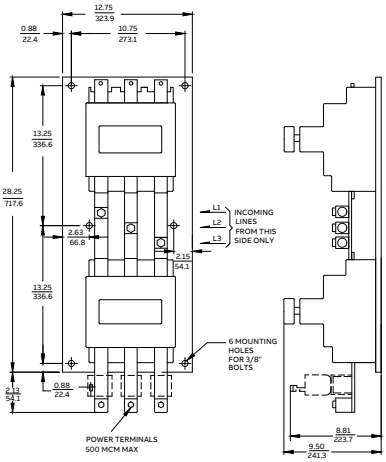
Open type, NEMA size 3 and 4 reversing (horizontal); 49 lbs.



Open type, NEMA size 3 and 4 reversing (vertical); 49 lbs.



Open type, NEMA size 5 reversing (horizontal); 115 lbs.



Open type, NEMA size 5 reversing (vertical), 115 lbs.

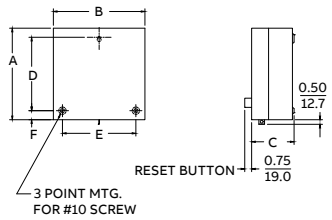
Enclosed non-combination magnetic starters

CR309 reversing layout dimensions

200 horsepower maximum
NEMA sizes 00–2
600 volts maximum only

CR309 NEMA type 1 lift-off cover without CPT size 00–2

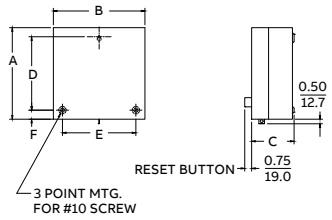
NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Approx. shipping wt. (lbs)
00	10.0 (254.0)	10.0 (254.0)	4.62 (117.3)	8.00 (203.2)	8.00 (203.2)	1.00 (25.4)	15
0	10.0 (254.0)	10.0 (254.0)	4.62 (117.3)	8.00 (203.2)	8.00 (203.2)	1.00 (25.4)	15
1	10.0 (254.0)	10.0 (254.0)	4.62 (117.3)	8.00 (203.2)	8.00 (203.2)	1.00 (25.4)	15
2	13.25 (336.5)	12.00 (304.8)	6.13 (155.7)	11.00 (279.4)	9.00 (228.6)	1.13 (28.7)	30



Type 1, NEMA sizes 00–2
Drawing no. 55-178440

CR309 NEMA type 1 lift-off cover with CPT size 00–1

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Approx. shipping wt. (lbs)
00	10.00 (254.0)	13.50 (342.9)	4.62 (117.3)	8.00 (203.2)	11.50 (292.1)	1.00 (25.4)	15
0	10.00 (254.0)	13.50 (342.9)	4.62 (117.3)	8.00 (203.2)	11.50 (292.1)	1.00 (25.4)	15
1	10.00 (254.0)	13.50 (342.9)	4.62 (117.3)	8.00 (203.2)	11.50 (292.1)	1.00 (25.4)	15



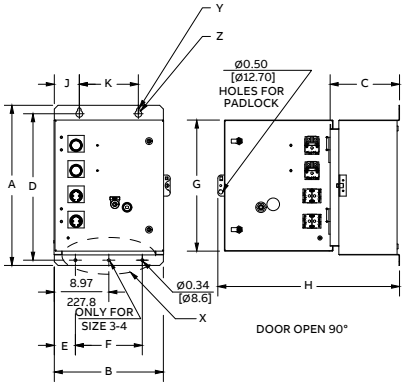
Type 1, NEMA sizes 00–1
Drawing no. 55-178440

Enclosed non-combination magnetic starters

CR309 reversing layout dimensions

200 horsepower maximum
NEMA sizes 00–4
600 volts maximum only

CR309 NEMA type 1 hinged cover without CPT size 00–4



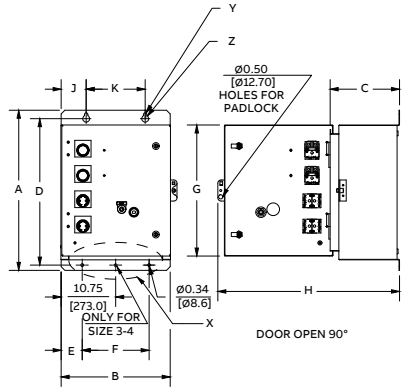
Type 1, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR309 NEMA type 1 hinged cover with CPT size 00–4



Type 1, NEMA sizes 00–4
Drawing no. 270A7283P1_5

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
0	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
1	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
2	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115
4	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

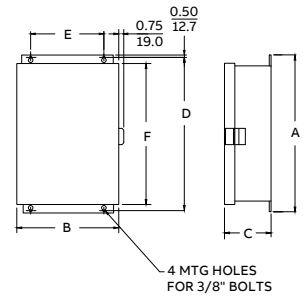
Enclosed non-combination magnetic starters

CR309 reversing layout dimensions

200 horsepower maximum
NEMA sizes 00–5
600 volts maximum only

CR309 NEMA type 1 size 5

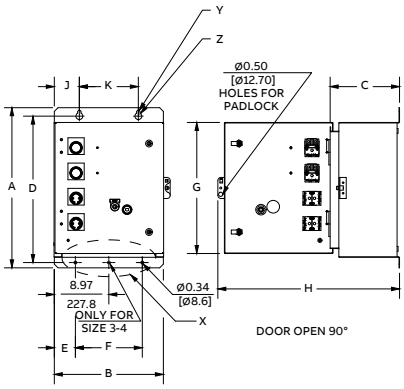
NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Shipping weight (lbs)
5	51.13 (1298.7)	32.00 (812.8)	11.50 (292.1)	51.12 (1298.4)	27.00 (685.8)	50.12 (1273.0)	286



Type 1, NEMA size 5
Drawing no. 55-200208

CR309 NEMA type 12 hinged cover without CPT size 00–4

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70



Type 12, NEMA sizes 00–4
Drawing no. 270A7283P1_2

Mounting details

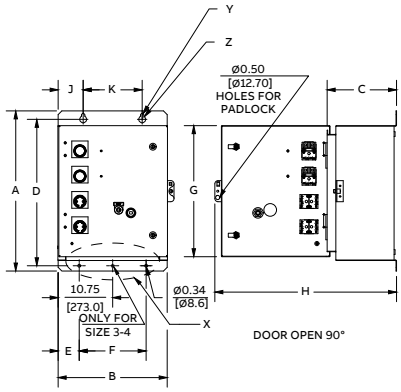
NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

Enclosed non-combination magnetic starters

CR309 reversing layout dimensions

200 horsepower maximum
NEMA sizes 00–5
600 volts maximum only

CR309 NEMA type 12 hinged cover with CPT size 00–4



Type 12, NEMA sizes 00–4
Drawing no. 270A7283P1_5

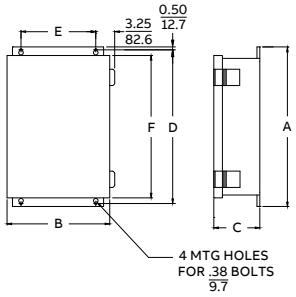
NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
0	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
1	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
2	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115
4	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR309 NEMA type 12 size 5

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Shipping weight (lbs)
5	51.50 (1308.1)	32.00 (812.8)	10.25 (260.4)	50.50 (1282.7)	27.00 (685.8)	48.75 (1238.3)	286



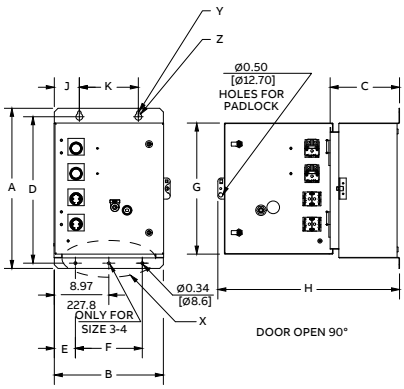
Type 12, NEMA size 5
Drawing no. 55-200211

Enclosed non-combination magnetic starters

CR309 reversing layout dimensions

200 horsepower maximum
NEMA sizes 00–4
600 volts maximum only

CR309 NEMA type 3R hinged cover without CPT size 00–4



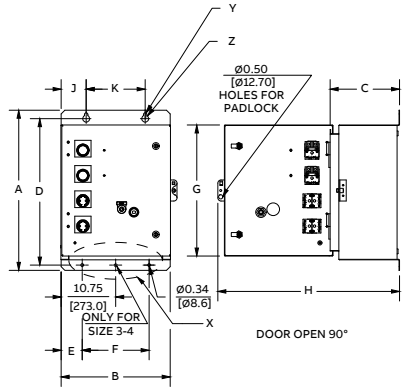
Type 3R, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR309 NEMA type 3R hinged cover with CPT size 00–4



Type 3R, NEMA sizes 00–4
Drawing no. 270A7283P1_5

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
0	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
1	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
2	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115
4	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

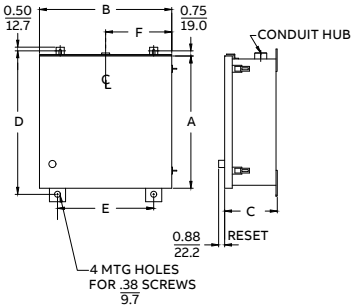
Enclosed non-combination magnetic starters

CR309 reversing layout dimensions

200 horsepower maximum
NEMA sizes 00–5
600 volts maximum only

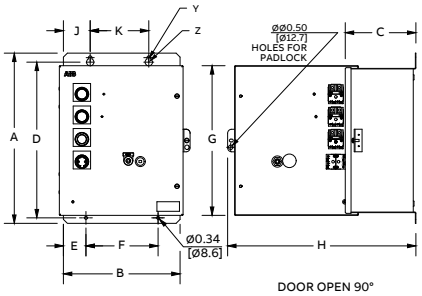
CR309 NEMA type 3R size 5

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Shipping weight (lbs)
5	48.00 (1219.2)	32.00 (812.8)	10.25 (260.4)	49.50 (1257.3)	26.00 (660.4)	16.00 (406.4)	286



Type 3R, NEMA size 5
Drawing no. 55-210108

CR309 NEMA type 4/4X hinged cover without CPT size 00–4



Type 4/4X, NEMA sizes 00–4
Drawing no. 270A7291P1_4

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
0	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
1	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
2	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
3	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55
4	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55

Mounting details

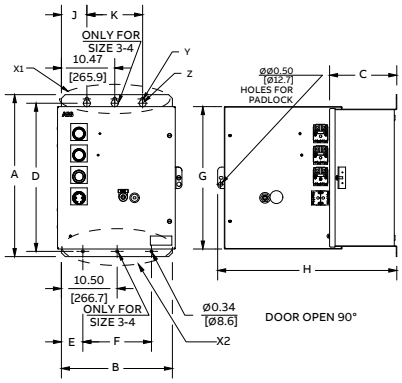
NEMA size	No. of top holes	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2,3, 4	2	2	0.40 (10.2)	0.82 (20.8)

Enclosed non-combination magnetic starters

CR309 reversing layout dimensions

200 horsepower maximum
NEMA sizes 00–5
600 volts maximum only

CR309 NEMA type 4/4X hinged cover with CPT size 00–4



Type 4/4X, NEMA sizes 00–4
Drawing no. 270A7291P1_7

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
0	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
1	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
2	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
3	33.88 (860.5)	20.94 (531.8)	8.70 (220.9)	32.27 (819.6)	2.50 (63.5)	16.00 (406.4)	31.6 (802.6)	29.88 (758.9)	2.47 (62.7)	16.00 (406.4)	110
4	33.88 (860.5)	20.94 (531.8)	8.70 (220.9)	32.27 (819.6)	2.50 (63.5)	16.00 (406.4)	31.6 (802.6)	29.88 (758.9)	2.47 (62.7)	16.00 (406.4)	110

Mounting details

NEMA size	No. of top holes X1	No. of bottom holes X2	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.40 (10.2)	0.82 (20.8)
Size 2,	2	3	0.40 (10.2)	0.82 (20.8)
Size 3, 4	3	3	0.40 (10.2)	0.82 (20.8)

CR309 NEMA type 4/4X size 5

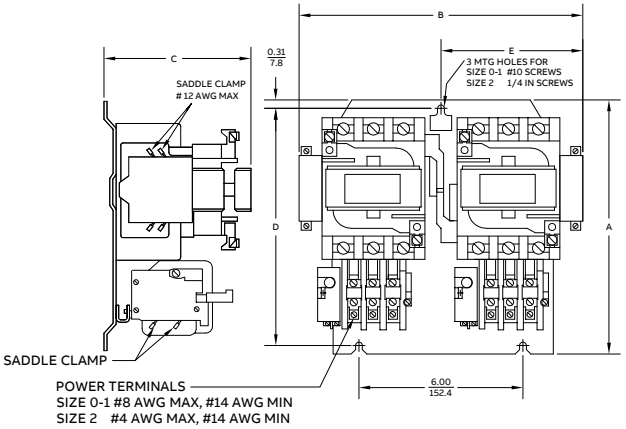
NEMA size	Height	Width	Depth	Shipping weight (lbs)
5	47.55 (1207.8)	36.00 (914.4)	11.12 (282.4)	260

Open non-combination magnetic starters

CR309 2-speed layout dimensions

Non-combination
200 horsepower maximum
NEMA sizes 0–5
600 volts maximum

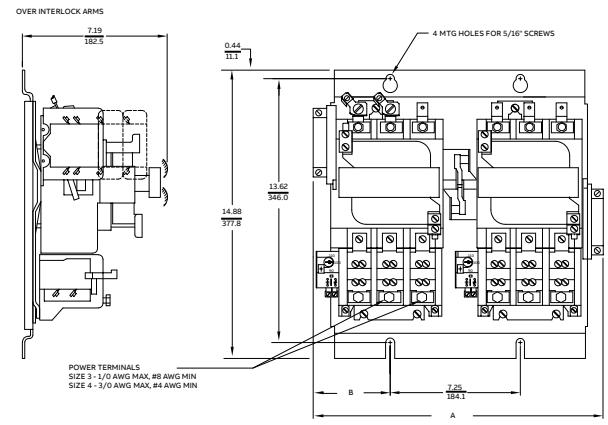
CR309 open NEMA sizes 0–2 two-speed



Open type, NEMA sizes 0-2 two-speed

NEMA size	Dimensions A	B	C	D	E	F	Mounting screw size	Shipping weight (lbs)
0, 1	Two-speed, two-winding	7.00 (177.8)	8.88 (225.6)	3.94 (100.0)	6.50 (165.1)	4.44 (112.8)	#10	8
0, 1	Two-speed, one-winding	7.00 (177.8)	9.88 (251.0)	3.94 (100.0)	6.50 (165.1)	4.44 (112.8)	#10	8¾
2	Two-speed, two-winding	9.12 (231.6)	10.36 (263.2)	5.38 (136.6)	8.50 (215.8)	5.19 (131.7)	¼”	18¼
2	Two-speed, one-winding	9.12 (231.6)	13.38 (339.6)	5.38 (136.6)	8.50 (215.8)	5.19 (131.7)	¼”	19

CR309 open NEMA sizes 3 and 4 two-speed



Open type, NEMA sizes 3 and 4two-speed

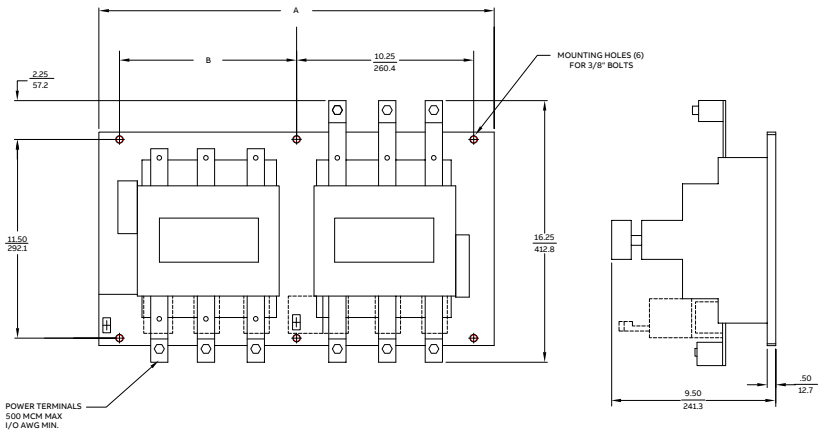
NEMA size	Operation type	Dimension A	Dimension B	Shipping weight (lbs)
3, 4	Two-speed, two winding	14.81 (376.2)	3.75 (95.2)	50
3, 4	Two-speed, one-winding	18.81 (477.8)	5.81 (147.6)	52

Open non-combination magnetic starters

CR309 2-speed layout dimensions

Non-combination
200 horsepower maximum
NEMA sizes 0–5
600 volts maximum

CR309 open NEMA size 5 two-speed



Open type, NEMA size 5 two-speed

NEMA size	Operation type	Dimension A	Dimension B	Shipping weight (lbs)
5	Two-speed, two-winding	22.88 (581.2)	10.25 (260.4)	–
5	Two-speed, one-winding	28.75 (730.3)	16.00 (406.4)	–

[1]Contact nearest ABB Representative for weight.

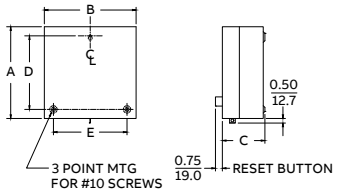
Enclosed non-combination magnetic starters

CR309 multispeed starters

2-speed/1-winding layout dimensions

200 horsepower maximum
NEMA sizes 0–4
600 volts maximum

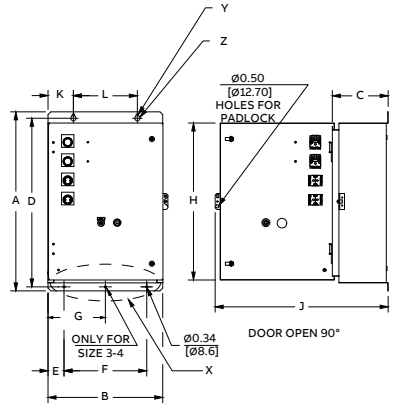
CR309 NEMA type 1 lift-off cover without CPT size 0–2



NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Approx. shipping wt. (lbs)
00	10.00 (254.0)	13.50 (342.9)	4.62 (117.3)	8.00 (203.2)	11.50 (292.1)	1.00 (25.4)	15
0	10.00 (254.0)	13.50 (342.9)	4.62 (117.3)	8.00 (203.2)	11.50 (292.1)	1.00 (25.4)	15
1	10.00 (254.0)	13.50 (342.9)	4.62 (117.3)	8.00 (203.2)	11.50 (292.1)	1.00 (25.4)	15
2	13.25 (336.5)	16.00 (406.4)	6.13 (155.7)	11.00 (279.4)	13.00 (330.2)	1.13 (28.7)	30

NEMA type 1, sizes 0–2 two-speed
Drawing no. 55-178440

CR309 NEMA type 1 hinged cover without CPT size 00–4



NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Dimension L	Approx. shipping wt. (lbs)
00	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
0	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
1	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
2	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	8.97 (227.8)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
3	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	10.75 (273.0)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115
4	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	10.75 (273.0)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.40 (10.2)	0.82 (20.8)
Size 2,3, 4	2	3	0.40 (10.2)	0.82 (20.8)

Type 1, sizes 00–4 two-speed
Drawing no. 270A7285P1_6

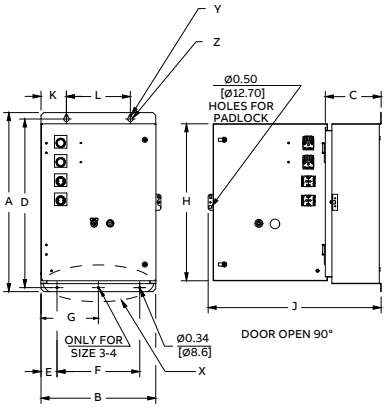
Enclosed non-combination magnetic starters

CR309 multispeed starters

2-speed/1-winding layout dimensions

200 horsepower maximum
NEMA sizes 0–4
600 volts maximum

CR309 NEMA type 1 hinged cover with CPT size 00–4



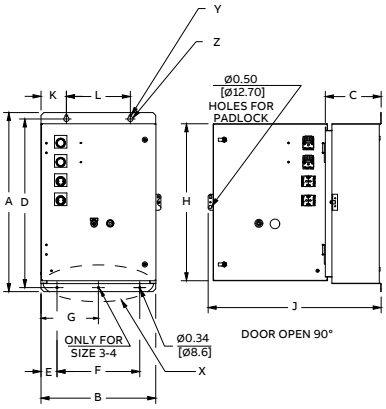
Type 1, sizes 00–4 two-speed
Drawing no. 270A7285P1_6

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Dimension L	Approx. shipping wt. (lbs)
00	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
0	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
1	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
2	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	8.97 (227.8)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
3	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	10.75 (273.0)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115
4	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	10.75 (273.0)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.40 (10.2)	0.82 (20.8)
Size 2,3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR309 NEMA type 12 hinged cover without CPT size 00–4



Type 12, sizes 00–4 two-speed
Drawing no. 270A7285P1_6

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Dimension L	Approx. shipping wt. (lbs)
00	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
0	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
1	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
2	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	8.97 (227.8)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
3	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	10.75 (273.0)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115
4	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	10.75 (273.0)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.40 (10.2)	0.82 (20.8)
Size 2,3, 4	2	3	0.40 (10.2)	0.82 (20.8)

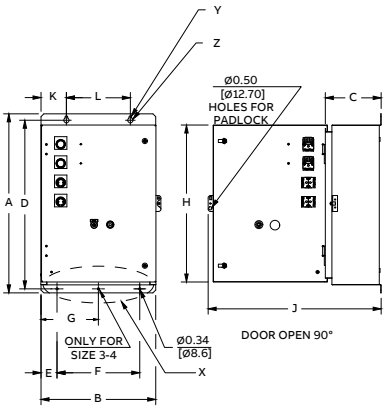
Enclosed non-combination magnetic starters

CR309 multispeed starters

2-speed/1-winding layout dimensions

200 horsepower maximum
NEMA sizes 0–4
600 volts maximum

CR309 NEMA type 12 hinged cover with CPT size 00–4



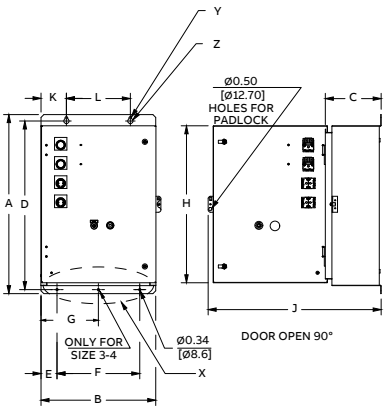
Type 12, sizes 00–4 two-speed
Drawing no. 270A7285P1_6

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Dimension L	Approx. shipping wt. (lbs)
00	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
0	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
1	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
2	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	8.97 (227.8)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
3	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	10.75 (273.0)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115
4	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	10.75 (273.0)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.40 (10.2)	0.82 (20.8)
Size 2,3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR309 NEMA type 3R hinged cover without CPT size 00–4



Type 3R, sizes 00–4 two-speed
Drawing no. 270A7285P1_6

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Dimension L	Approx. shipping wt. (lbs)
00	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
0	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
1	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
2	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	8.97 (227.8)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
3	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	10.75 (273.0)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115
4	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	10.75 (273.0)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.40 (10.2)	0.82 (20.8)
Size 2,3, 4	2	3	0.40 (10.2)	0.82 (20.8)

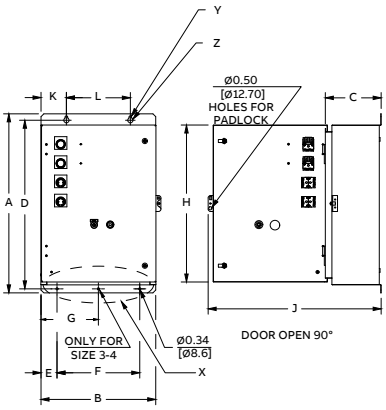
Enclosed non-combination magnetic starters

CR309 multispeed starters

2-speed/1-winding layout dimensions

200 horsepower maximum
NEMA sizes 0–4
600 volts maximum

CR309 NEMA type 3R hinged cover with CPT size 00–4



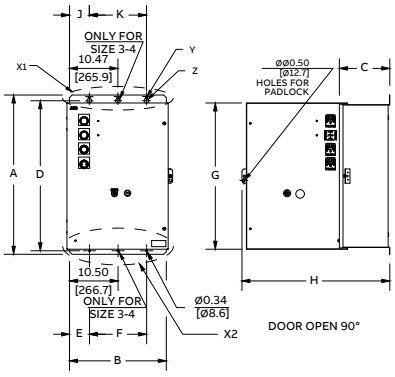
Type 3R, sizes 00–4 two-speed
Drawing no. 270A7285P1_6

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Dimension L	Approx. shipping wt. (lbs)
00	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
0	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
1	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	-	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
2	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	8.97 (227.8)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
3	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	10.75 (273.0)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115
4	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	10.75 (273.0)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.40 (10.2)	0.82 (20.8)
Size 2,3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR309 NEMA type 4/4X hinged cover without CPT size 00–4



Type 4/4x, sizes 00–4 two-speed
Drawing no. 270A7293P1_8

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
0	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
1	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
2	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55
3	33.88 (860.5)	20.94 (531.8)	8.70 (220.9)	32.27 (819.6)	2.50 (63.5)	16.00 (406.4)	31.6 (802.6)	29.88 (758.9)	2.47 (62.7)	16.00 (406.4)	110
4	33.88 (860.5)	20.94 (531.8)	8.70 (220.9)	32.27 (819.6)	2.50 (63.5)	16.00 (406.4)	31.6 (802.6)	29.88 (758.9)	2.47 (62.7)	16.00 (406.4)	110

Mounting details

NEMA size	No. of top holes X1	No. of bottom holes X2	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	3	3	0.40 (10.2)	0.82 (20.8)

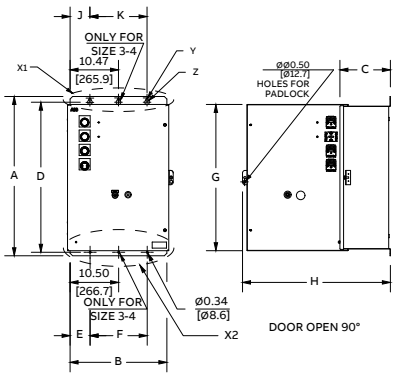
Enclosed non-combination magnetic starters

CR309 multispeed starters

2-speed/1-winding layout dimensions

200 horsepower maximum
NEMA sizes 0–4
600 volts maximum

CR309 NEMA type 4/4X hinged cover with CPT size 00–4



Type 4/4x, sizes 00–4 two-speed
Drawing no. 270A7293P1_8

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
0	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
1	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
2	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55
3	33.88 (860.5)	20.94 (531.8)	8.70 (220.9)	32.27 (819.6)	2.50 (63.5)	16.00 (406.4)	31.6 (802.6)	29.88 (758.9)	2.47 (62.7)	16.00 (406.4)	110
4	33.88 (860.5)	20.94 (531.8)	8.70 (220.9)	32.27 (819.6)	2.50 (63.5)	16.00 (406.4)	31.6 (802.6)	29.88 (758.9)	2.47 (62.7)	16.00 (406.4)	110

Mounting details

NEMA size	No. of top holes X1	No. of bottom holes X2	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	3	3	0.40 (10.2)	0.82 (20.8)

Enclosed non-combination magnetic starters

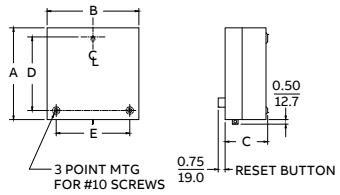
CR309 multispeed starters

2-speed/2-winding layout dimensions

200 horsepower maximum
NEMA sizes 0–2
600 volts maximum

CR309 NEMA type 1 lift-off cover without CPT size 0–2

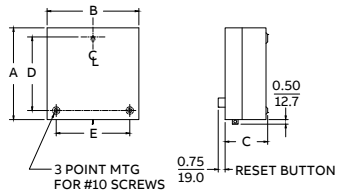
NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Approx. shipping wt. (lbs)
00	10.0 (254.0)	10.0 (254.0)	4.62 (117.3)	8.00 (203.2)	8.00 (203.2)	1.00 (25.4)	15
0	10.0 (254.0)	10.0 (254.0)	4.62 (117.3)	8.00 (203.2)	8.00 (203.2)	1.00 (25.4)	15
1	10.0 (254.0)	10.0 (254.0)	4.62 (117.3)	8.00 (203.2)	8.00 (203.2)	1.00 (25.4)	15
2	13.25 (336.5)	12.00 (304.8)	6.13 (155.7)	11.00 (279.4)	9.00 (228.6)	1.13 (28.7)	30



Type 1, sizes 0–2 two-speed
Drawing no. 55-178440

CR309 NEMA type 1 lift-off cover with CPT size 00–1

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Approx. shipping wt. (lbs)
00	10.00 (254.0)	13.50 (342.9)	4.62 (117.3)	8.00 (203.2)	11.50 (292.1)	1.00 (25.4)	15
0	10.00 (254.0)	13.50 (342.9)	4.62 (117.3)	8.00 (203.2)	11.50 (292.1)	1.00 (25.4)	15
1	10.00 (254.0)	13.50 (342.9)	4.62 (117.3)	8.00 (203.2)	11.50 (292.1)	1.00 (25.4)	15



Type 1, sizes 0–1 two-speed
Drawing no. 55-178440

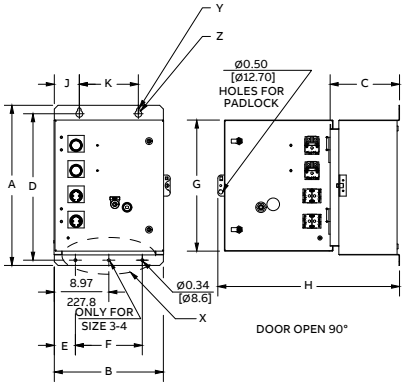
Enclosed non-combination magnetic starters

CR309 multispeed starters

2-speed/2-winding layout dimensions

200 horsepower maximum
NEMA sizes 0–4
600 volts maximum

CR309 NEMA type 1 hinged cover without CPT size 00–4



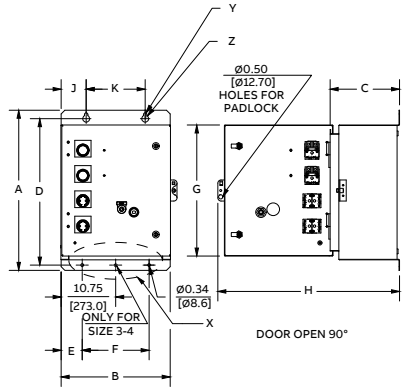
Type 1, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR309 NEMA type 1 hinged cover with CPT size 00–4



Type 1, NEMA sizes 00–4
Drawing no. 270A7283P1_5

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
0	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
1	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
2	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115
4	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

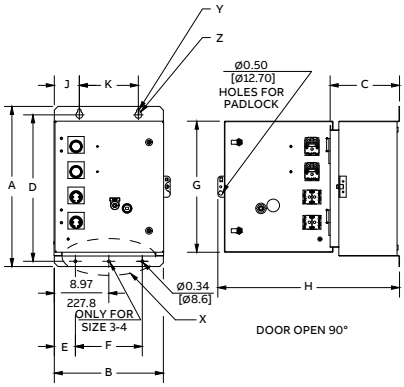
Enclosed non-combination magnetic starters

CR309 multispeed starters

2-speed/2-winding layout dimensions

200 horsepower maximum
NEMA sizes 0–4
600 volts maximum

CR309 NEMA type 12 hinged cover without CPT size 00–4



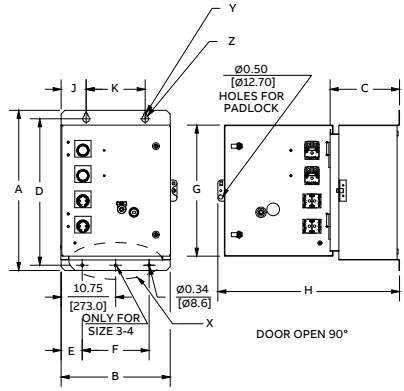
Type 12, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR309 NEMA type 12 hinged cover with CPT size 00–4



Type 12, NEMA sizes 00–4
Drawing no. 270A7283P1_5

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
0	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
1	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
2	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115
4	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

Enclosed non-combination magnetic starters

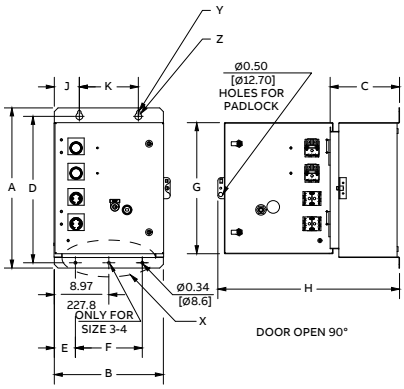
CR309 multispeed starters

2-speed/2-winding layout dimensions

200 horsepower maximum
NEMA sizes 0–4
600 volts maximum

CR309 NEMA type 3R hinged cover without CPT size 00–4

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70



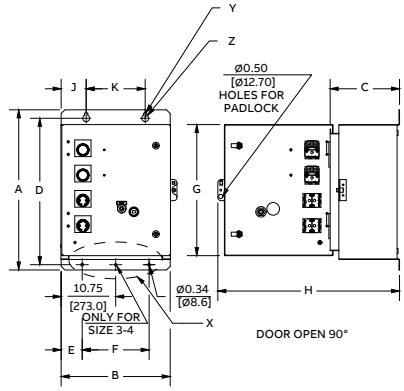
Type 3R, NEMA sizes 00–4
Drawing no. 270A7283P1_2

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR309 NEMA type 3R hinged cover with CPT size 00–4

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
0	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
1	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
2	19.00 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7)	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115
4	34.00 (863.6)	21.44 (544.5)	8.73 (221.7)	32.37 (822.1)	3.00 (76.2)	15.50 (393.7	30.55 (775.9)	30.55 (775.9)	3.72 (94.4)	14.00 (355.6)	115



Type 3R, NEMA sizes 00–4
Drawing no. 270A7283P1_5

Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

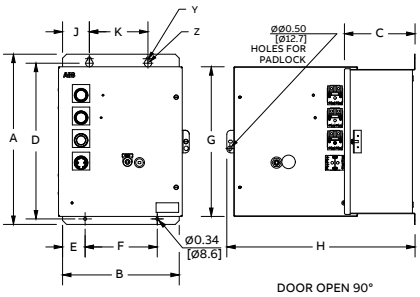
Enclosed non-combination magnetic starters

CR309 multispeed starters

2-speed/2-winding layout dimensions

200 horsepower maximum
NEMA sizes 0–4
600 volts maximum

CR309 NEMA type 4/4X hinged cover without CPT size 00–4



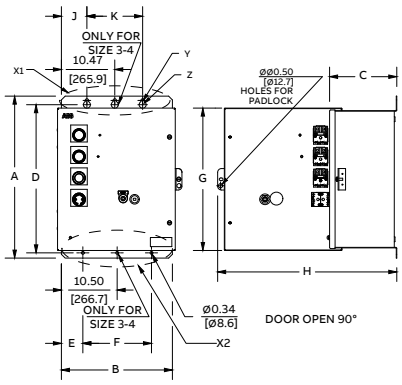
Type 4/4X, NEMA sizes 00–4
Drawing no. 270A7291P1_4

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
0	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
1	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
2	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
3	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55
4	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55

Mounting details

NEMA size	No. of top holes	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2,3, 4	2	2	0.40 (10.2)	0.82 (20.8)

CR309 NEMA type 4/4X hinged cover with CPT size 00–4



Type 4/4X, NEMA sizes 00–4
Drawing no. 270A7291P1_7

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
0	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
1	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
2	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
3	33.88 (860.5)	20.94 (531.8)	8.70 (220.9)	32.27 (819.6)	2.50 (63.5)	16.00 (406.4)	31.6 (802.6)	29.88 (758.9)	2.47 (62.7)	16.00 (406.4)	110
4	33.88 (860.5)	20.94 (531.8)	8.70 (220.9)	32.27 (819.6)	2.50 (63.5)	16.00 (406.4)	31.6 (802.6)	29.88 (758.9)	2.47 (62.7)	16.00 (406.4)	110

Mounting details

NEMA size	No. of top holes X1	No. of bottom holes X2	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.40 (10.2)	0.82 (20.8)
Size 2,	2	3	0.40 (10.2)	0.82 (20.8)
Size 3, 4	3	3	0.40 (10.2)	0.82 (20.8)

Enclosed combination magnetic starters

CR307, CR308, CR387 non-reversing dimensions

400 horsepower maximum
NEMA sizes 5–6
600 volts maximum 50/60 Hz

CR307, CR308, CR387 NEMA type 1/3R/12 NEMA size 5

Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F
52.75 (1339.9)	30.00 (762.0)	11.19 (284.3)	51.63 (1311.3)	E1 - 16.00 (406.4) E2 - 24.00 (609.6)	48.59 (1234.2)

CR307, CR308, CR387 NEMA type 4X NEMA size 5

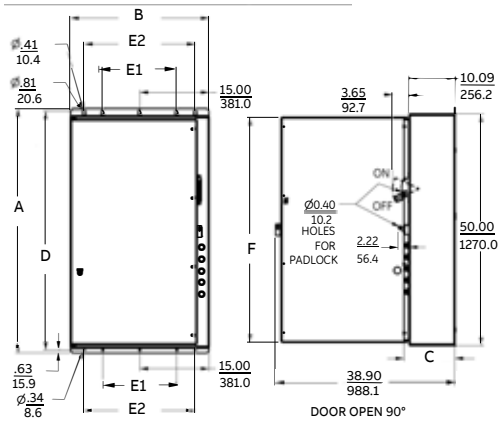
Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F
52.79 (1340.9)	30.00 (762.0)	11.15 (283.3)	51.63 (1311.3)	E1 - 16.00 (406.4) E2 - 24.00 (609.6)	48.61 (1234.7)

CR307, CR308, CR387 NEMA type 1/3R/12 NEMA size 6

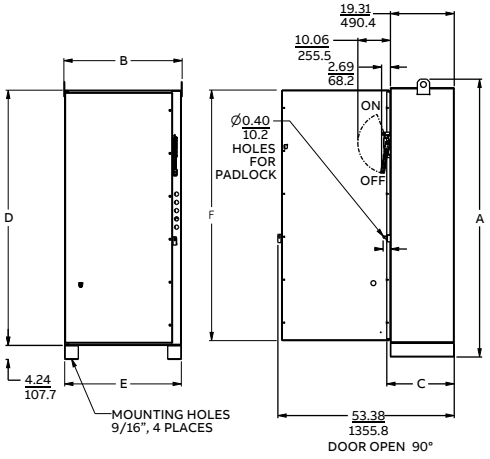
Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F
84.09 (2135.9)	35.80 (909.3)	20.41 (518.5)	77.25 (1962.2)	35.30 (896.6)	75.84 (1926.3)

CR307, CR308, CR387 NEMA type 4X NEMA size 6

Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F
52.79 (1340.9)	30.00 (762.0)	11.15 (283.3)	51.63 (1311.3)	E1 - 16.00 (406.4) E2 - 24.00 (609.6)	48.61 (1234.7)



CR307, CR308, CR387 NEMA type 1/3R/12, type 4X NEMA size 5



CR307, CR308, CR387 NEMA type 1/3R/12, type 4X NEMA size 6

Outlines, dimensions (in. / mm) and weights (for estimating only)

Enclosed combination magnetic starters

CR307, CR308, CR387 non-reversing dimensions

400 horsepower maximum
NEMA sizes 5–6
600 volts maximum 50/60 Hz

CR307, CR308, CR387 NEMA type 3R NEMA size 5

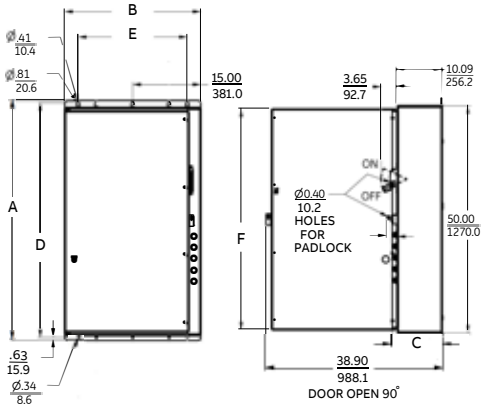
Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F
54.22 (1377.2)	30.51 (774.9)	11.194 (284.33)	52.11 (1323.7)	22.41 (569.1)	51.07 (1297.2)

CR307, CR308, CR387 NEMA type 1/3R/12 NEMA size 6

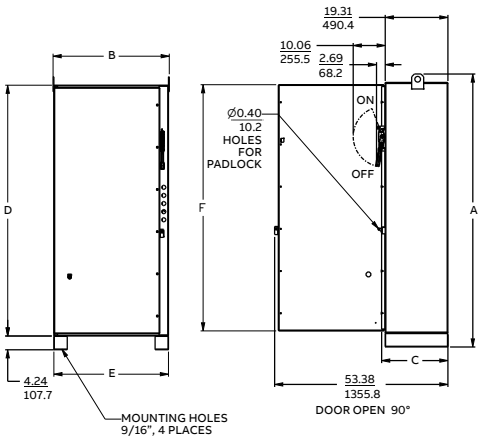
Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F
84.09 (2135.9)	35.80 (909.3)	20.41 (518.5)	77.25 (1962.2)	35.30 (896.6)	75.84 (1926.3)

CR307, CR308, CR387 NEMA type 4X NEMA size 6

Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F
52.79 (1340.9)	30.00 (762.0)	11.15 (283.3)	51.63 (1311.3)	E1 - 16.00 (406.4) E2 - 24.00 (609.6)	48.61 (1234.7)



CR307, CR308, CR387 NEMA type 3R NEMA size 5



CR307, CR308, CR387 NEMA type 1/3R/12, type 4X NEMA size 6

Outlines, dimensions (in. / mm) and weights (for estimating only)

Enclosed combination magnetic starters

CR307, CR308, CR387 non-reversing dimensions

400 horsepower maximum
NEMA sizes 0–4
600 volts maximum 50/60 Hz

CR407, CR408 (non-fusible disconnect), CR487 NEMA type 1 enclosure
Standard size (enclosure code = 1)

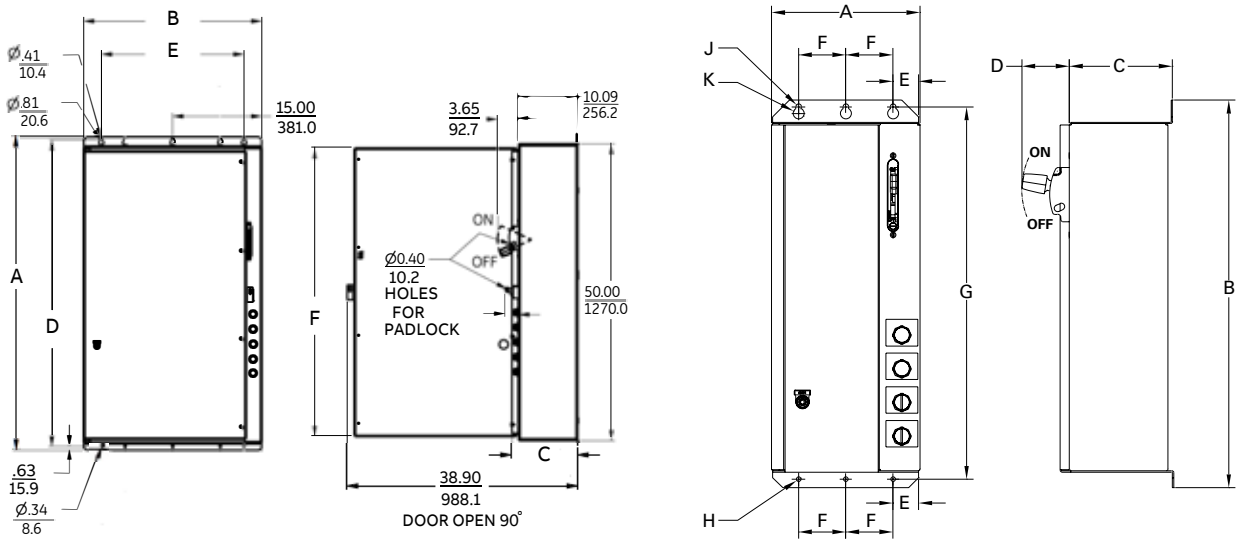
NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2								See CR307, C308, CR387 dimensional information		
3–4	19.78 (502.4)	33.32 (846.3)	8.14 (206.7)	3.56 (90.4)	1.89 (48.0)	8.00 (203.2)	32.44 (824.0)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)

CR407, CR408 (non-fusible disconnect), CR487 NEMA type 1 enclosure
Oversized (enclosure code = 5)

NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	19.78 (502.4)	33.32 (846.3)	8.14 (206.7)	3.56 (90.4)	1.89 (48.0)	8.00 (203.2)	32.44 (824.0)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3–4	23.00 (584.2)	53.82 (1367)	8.14 (206.7)	3.73 (94.6)	3.39 (86.1)	8.00 (203.2)	52.94 (1344.7)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)

CR407, CR408 (non-fusible disconnect), CR487 NEMA type 3R/12 enclosure
Standard size (enclosure code = 6 or 2)

NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	11.00 279.4)	28.75 (730.3)	7.70 (195.5)	3.49 (88.6)	1.91 (48.5)	3.50 (88.9)	27.63 (701.7)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3–4	20.00 (508.0)	33.25 (844.6)	8.20 (208.2)	3.48 (88.5)	1.91 (48.5)	8.00 (203.2)	32.13 (816.0)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)



Outlines, dimensions ($\frac{\text{in.}}{\text{mm}}$) and weights (for estimating only)

Enclosed combination magnetic starters

CR307, CR308, CR387 non-reversing dimensions

400 horsepower maximum
NEMA sizes 0–4
600 volts maximum 50/60 Hz

CR407, CR408 (non-fusible disconnect), CR487 NEMA type 3R/12 enclosure
Oversized (enclosure code = R or 7)

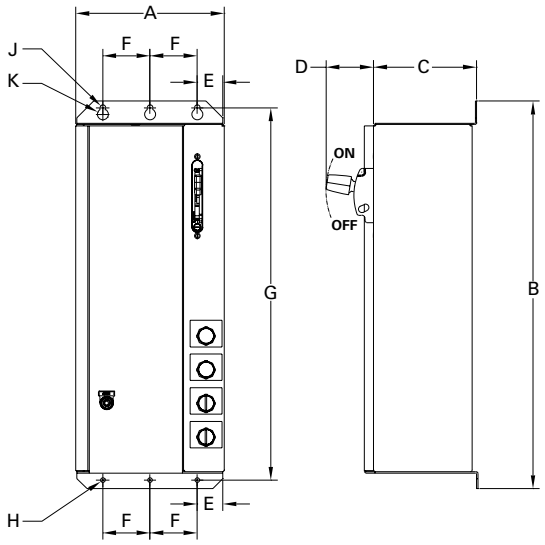
NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	20.00 (508.0)	33.25 (844.6)	8.20 (208.2)	3.48 (88.5)	1.91 (48.5)	8.00 (203.2)	32.13 (816.0)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3–4	23.00 (584.2)	53.82 (1367.0)	8.20 (208.2)	3.50 (88.8)	3.41 (86.6)	8.00 (203.2)	52.70 (1338.5)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)

CR407, CR408 (non-fusible disconnect), CR487 NEMA type 4/4X enclosure
Standard size (enclosure code = 4)

NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	11.00 (279.4)	29.38 (746.3)	7.64 (194.0)	3.53 (89.7)	1.91 (48.5)	3.50 (88.9)	28.26 (717.7)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3–4	20.00 (508.0)	33.32 (846.3)	8.14 (206.7)	3.72 (94.6)	1.91 (48.5)	8.00 (203.2)	32.20 (817.8)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)

CR407, CR408 (non-fusible disconnect), CR487 NEMA type 4/4X enclosure
Oversized (enclosure code = S)

NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	20.00 (508.0)	33.32 (846.3)	8.14 (206.7)	3.72 (94.6)	1.91 (48.5)	8.00 (203.2)	32.20 (817.8)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3–4	23.00 (584.2)	53.76 (1365.5)	8.14 (206.7)	3.55 (90.2)	3.41 (86.6)	8.00 (203.2)	52.64 (1336.9)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)

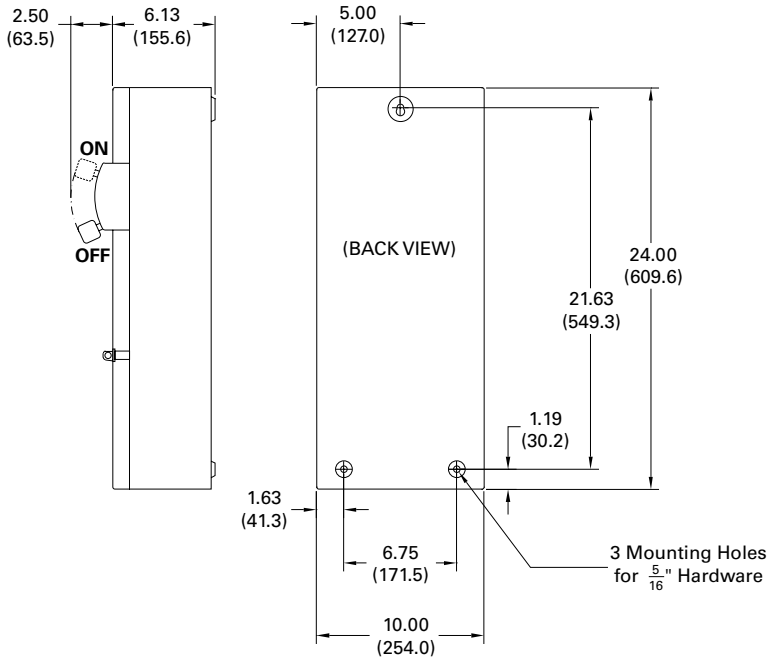


Outlines, dimensions ($\frac{in.}{mm}$) and weights (for estimating only)

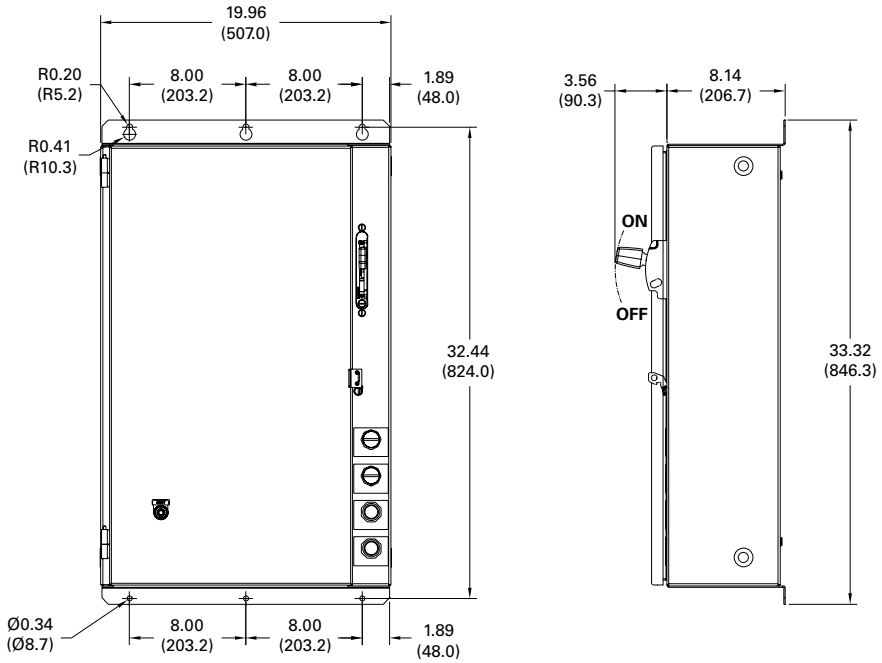
Enclosed combination magnetic starters

CR307, CR308, CR387 non-reversing dimensions

400 horsepower maximum
NEMA sizes 0–2
600 volts maximum 50/60 Hz



CR307, CR387, CR308 (excludes 100 A, 600 V fuse clips); type 1, standard size enclosure



CR308 (includes 100 A, 600 V fuse clips); type 1, standard size enclosure

Outlines, dimensions (in. / mm) and weights (for estimating only)

Enclosed combination magnetic starters

CR408 non-reversing dimensions

400 horsepower maximum
NEMA sizes 0–4
600 volts maximum 50/60 Hz

CR408 (non-fusible disconnect) NEMA type 1 enclosure
Standard size (enclosure code = 1)

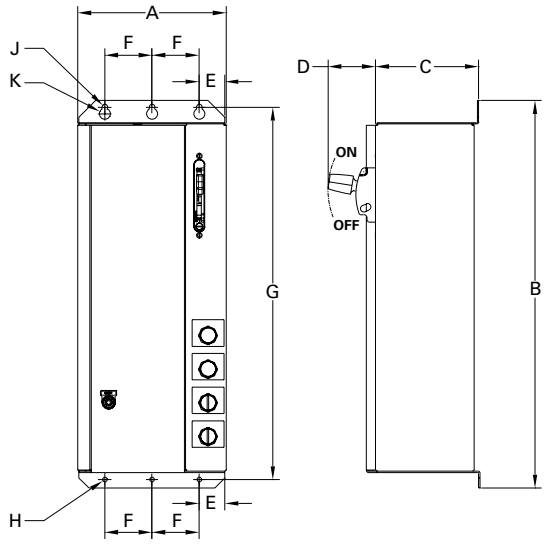
NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2										See CR308 dimensional information
3 (excludes 200 A fuse clips)	19.78 (502.4)	33.32 (846.3)	8.14 (206.7)	3.56 (90.4)	1.89 (48.0)	8.00 (203.2)	32.44 (824.0)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3 (includes four 200 A fuse clips)	23.00 (584.2)	53.82 (1367)	8.14 (206.7)	3.73 (94.6)	3.39 (86.1)	8.00 (203.2)	52.94 (1344.7)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)

CR408 (non-fusible disconnect) NEMA type 1 enclosure
Oversized (enclosure code = 5)

NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	19.78 (502.4)	33.32 (846.3)	8.14 (206.7)	3.56 (90.4)	1.89 (48.0)	8.00 (203.2)	32.44 (824.0)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3 (excludes 200 A fuse clips)	23.00 (584.2)	53.82 (1367)	8.14 (206.7)	3.73 (94.6)	3.39 (86.1)	8.00 (203.2)	52.94 (1344.7)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)

CR408 (fusible disconnect) NEMA type 3R/12 enclosure
Standard size (enclosure code = 6 or 2)

NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	11.00 (279.4)	28.75 (730.3)	7.70 (195.5)	3.49 (88.6)	1.91 (48.5)	3.50 (88.9)	27.63 (701.7)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3 (excludes 200 A fuse clips)	20.00 (508.0)	33.25 (844.6)	8.20 (208.2)	3.48 (88.5)	1.91 (48.5)	8.00 (203.2)	32.13 (816.0)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3 (includes four 200 A fuse clips)	23.00 (584.2)	53.82 (1367.0)	8.20 (208.2)	3.50 (88.8)	3.41 (86.6)	8.00 (203.2)	52.70 (1338.5)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)



Outlines, dimensions ($\frac{\text{in.}}{\text{mm}}$) and weights (for estimating only)

Enclosed combination magnetic starters

CR408 non-reversing dimensions

400 horsepower maximum
NEMA sizes 0–4
600 volts maximum 50/60 Hz

CR408 (fusible disconnect) NEMA type 3R/12 enclosure
Oversized (enclosure code = R or 7)

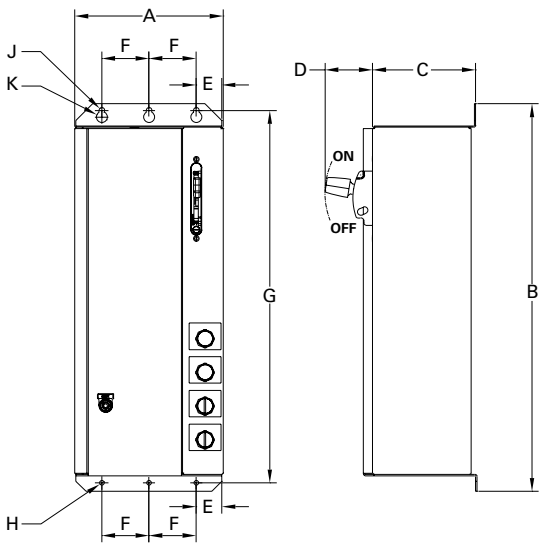
NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	20.00 (508.0)	33.25 (844.6)	8.20 (208.2)	3.48 (88.5)	1.91 (48.5)	8.00 (203.2)	32.13 (816.0)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3 (excludes 200 A fuse clips)	23.00 (584.2)	53.82 (1367.0)	8.20 (208.2)	3.50 (88.8)	3.41 (86.6)	8.00 (203.2)	52.70 (1338.5)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)

CR408 (fusible disconnect) NEMA type 4/4X enclosure
Standard size (enclosure code = 4)

NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	11.00 (279.4)	29.38 (746.3)	7.64 (194.0)	3.53 (89.7)	1.91 (48.5)	3.50 (88.9)	28.26 (717.7)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3 (excludes 200A fuse clips)	20.00 (508.0)	33.32 (846.3)	8.14 (206.7)	3.72 (94.6)	1.91 (48.5)	8.00 (203.2)	32.20 (817.8)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3 (includes four 200 A fuse clips)	23.00 (584.2)	53.76 (1365.5)	8.14 (206.7)	3.55 (90.2)	3.41 (86.6)	8.00 (203.2)	52.64 (1336.9)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)

CR408 (fusible disconnect) NEMA type 4/4X enclosure
Oversized (enclosure code = S)

NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	20.00 (508.0)	33.32 (846.3)	8.14 (206.7)	3.72 (94.6)	1.91 (48.5)	8.00 (203.2)	32.20 (817.8)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3 (excludes 200 A fuse clips)	23.00 (584.2)	53.76 (1365.5)	8.14 (206.7)	3.55 (90.2)	3.41 (86.6)	8.00 (203.2)	52.64 (1336.9)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)



Outlines, dimensions ($\frac{\text{in.}}{\text{mm}}$) and weights (for estimating only)

Enclosed combination magnetic starters

CR410, CR411, CR490 reversing, instantaneous trip circuit breaker dimensions

200 horsepower maximum
NEMA sizes 0–4
600 volts maximum 50/60 Hz

NEMA type 1 enclosure
(Enclosure code = 1)

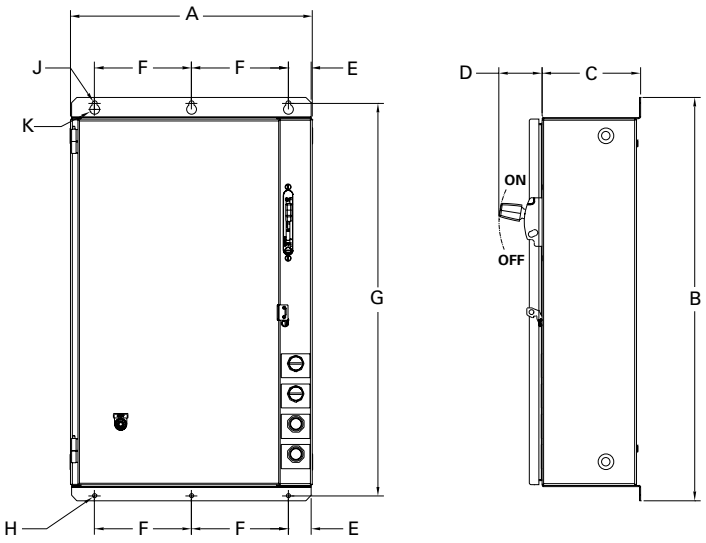
NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	19.78 (502.4)	33.32 (846.3)	8.14 (206.7)	3.56 (90.4)	1.89 (48.0)	8.00 (203.2)	32.44 (824.0)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3–4	23.00 (584.2)	53.82 (1367)	8.14 (206.7)	3.73 (94.6)	3.39 (86.1)	8.00 (203.2)	52.94 (1344.7)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)

NEMA type 3R/12 enclosure
(Enclosure code = 6 or 2)

NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	20.00 (508.0)	33.25 (844.6)	8.20 (208.2)	3.48 (88.5)	1.91 (48.5)	8.00 (203.2)	32.13 (816.0)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3–4	23.00 (584.2)	53.82 (1367.0)	8.20 (208.2)	3.50 (88.8)	3.41 (86.6)	8.00 (203.2)	52.70 (1338.5)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)

NEMA type 4/4X enclosure
(Enclosure code = 4)

NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	20.00 (508.0)	33.32 (846.3)	8.14 (206.7)	3.72 (94.6)	1.91 (48.5)	8.00 (203.2)	32.20 (817.8)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3–4	23.00 (584.2)	53.76 (1365.5)	8.14 (206.7)	3.55 (90.2)	3.41 (86.6)	8.00 (203.2)	52.64 (1336.9)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)



Outlines, dimensions ($\frac{\text{in.}}{\text{mm}}$) and weights (for estimating only)

Enclosed combination magnetic starters

CR412, CR413, CR492, CR414, CR415, CR494 2-speed dimensions

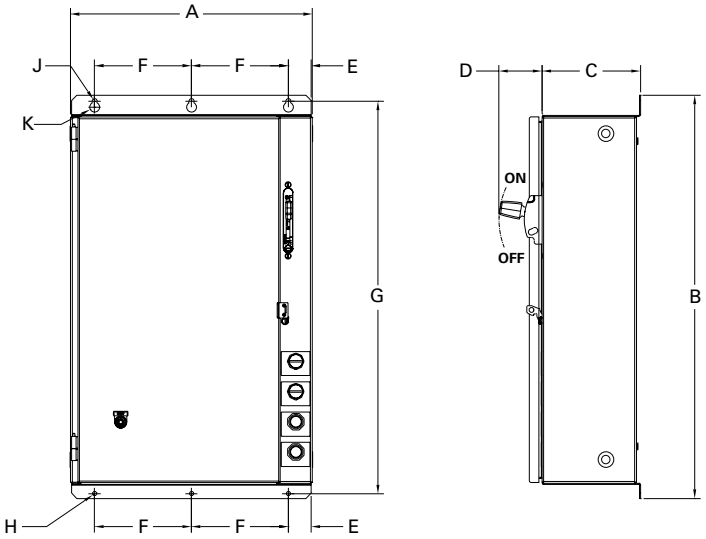
100 horsepower maximum
NEMA sizes 0–4
600 volts maximum 50/60 Hz

NEMA type 1 enclosure
(Enclosure code = 1)

NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	19.78 (502.4)	33.32 (846.3)	8.14 (206.7)	3.56 (90.4)	1.89 (48.0)	8.00 (203.2)	32.44 (824.0)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3–4	23.00 (584.2)	53.82 (1367)	8.14 (206.7)	3.73 (94.6)	3.39 (86.1)	8.00 (203.2)	52.94 (1344.7)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)

NEMA type 3R/12 enclosure
(Enclosure code = 6 or 2)

NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	20.00 (508.0)	33.25 (844.6)	8.20 (208.2)	3.48 (88.5)	1.91 (48.5)	8.00 (203.2)	32.13 (816.0)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3–4	23.00 (584.2)	53.82 (1367.0)	8.20 (208.2)	3.50 (88.8)	3.41 (86.6)	8.00 (203.2)	52.70 (1338.5)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)



Outlines, dimensions ($\frac{in.}{mm}$) and weights (for estimating only)

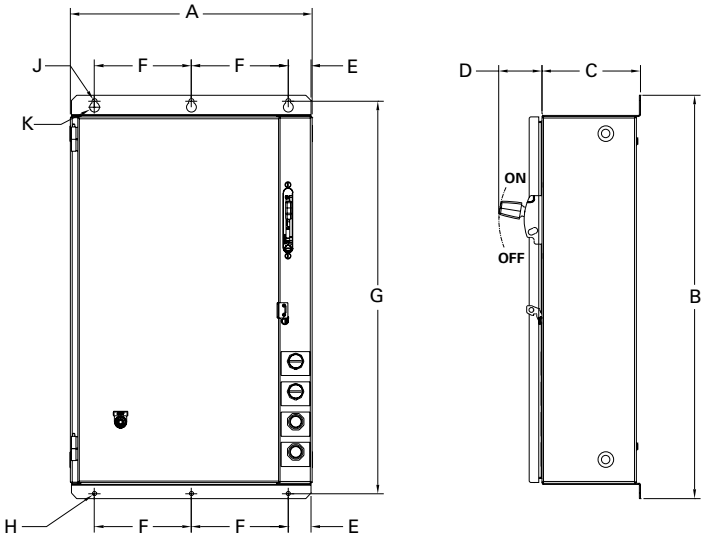
Enclosed combination magnetic starters

CR412, CR413, CR492, CR414, CR415, CR494 2-speed dimensions

100 horsepower maximum
NEMA sizes 0–4
600 volts maximum 50/60 Hz

NEMA type 4/4X enclosure
(Enclosure code = 4)

NEMA size	A	B	C	D	E	F	G	H (dia)	J (dia)	K (dia)
0–2	20.00 (508.0)	33.32 (846.3)	8.14 (206.7)	3.72 (94.6)	1.91 (48.5)	8.00 (203.2)	32.20 (817.8)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)
3–4	23.00 (584.2)	53.76 (1365.5)	8.14 (206.7)	3.55 (90.2)	3.41 (86.6)	8.00 (203.2)	52.64 (1336.9)	0.34 (8.7)	0.41 (10.3)	0.81 (20.6)



Outlines, dimensions ($\frac{in.}{mm}$) and weights (for estimating only)

NEMA enclosed starters with IEC-style components

500-line starters introduction

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Application information and technical data	171

Enclosed non-combination starters

CR505 contactor, single- and 3-phase	172–178
CR506 non-reversing, single- and 3-phase	172–178
CR509 reversing, single- and 3-phase	172–178

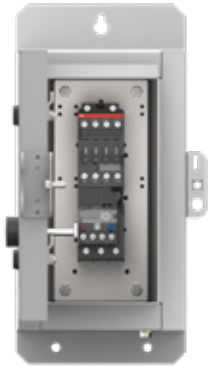
Accessories/kits

Enclosure kits	179

Dimensions

CR505 non-reversing dimensions	181–183
CR506 non-reversing dimensions	184–187
CR509 reversing dimensions	188–191

500-line starters
Overview



CR506H1020259AAAP

NEMA sizes 00–4
600 V maximum 50/60 Hz
100 hp maximum

Application
ABB's latest technology of AF contactors with electronically controlled coils offers the benefits of a traditional IEC-style contactor while still having NEMA ratings for use in UL required markets. Especially suitable for handling the switching of resistance heating and capacitor circuit loads, their compact size also fits the needs of the panel building industry. In addition, they may be used for controlling AC motors where overload protection is provided separately.

Features
- The electronic system within the AF contactor continuously monitors the current and voltage apply to the coil. The contactor is safely operated in an always optimized condition and hum-free.
- AF coil and energy consumption is reduced up to 80%. This allows a reduction of the temperature rise, the size of control transformers and size of cabinets.
- With conventional contactor technology, use of an external surge suppressor is recommended. With AF technology, surges are handled by the contactor and never reach the control circuit.
- Attractive, modern, squared-off enclosure.
- Motor full-load current should not exceed continuous ampere rating of contactor.

500-line starters

Application information and technical data



AC/DC control supply				Type	AF09	AF12	AF16	AF26	AF30	AF38	AF40	AF52	AF65	AF80	AF96	AF116	AF140	AF146
IEC	AC-3	Rated operational power θ ≤ 60 °C for AF09 ... AF370 θ ≤ 55 °C for AF400 ... AF2650	220–230–240 V	kW	2.2	3	4	6.5	9	11	11	15	18.5	22	30	30	37	45
			380–400 V	kW	4	5.5	7.5	11	15	18.5	18.5	22	30	37	45/ 55	55	75	75
			415 V	kW	4	5.5	9	11	15	18.5	22	30	37	45	55	55	75	75
			440 V	kW	4	5.5	9	15	18.5	22	22	30	37	45	55	75	90	90
			500 V	kW	5.5	7.5	9	15	18.5	22	22	30	37	45	55	75	90	90
			690 V	kW	5.5	7.5	9	15	18.5	22	22	30	37	45	55	55	75	90
			1000 V	kW	—	—	—	—	—	—	—	—	—	35	40	—	—	75
		Rated operational current	380–400 V	A	9	12	18	26	32	38	40	53	65	80	105	116	140	146
	AC-1	Rated operational current	θ ≤ 40 °C, 690 V	A	25	28	30	45	50	50	70	100	105	125	130	160	200	225
UL/CSA	1-phase motor rating		120 V	hp	0.75	1	1.5	2	2	2	3	3	5	7.5	7.5	—	—	—
			240 V	hp	1.5	2	3	3	5	5	7.5	10	15	15	20	—	—	—
	3-phase motor rating		200–208 V	hp	2	3	5	7.5	10	10	10	15	20	25	30	30	40	40
			220–240 V	hp	2	3	5	7.5	10	10	15	20	25	30	40	40	50	50
			440–480 V	hp	5	7.5	10	15	20	25	30	40	50	60	60/ 75	75	100	100
			550–600 V	hp	7.5	10	15	20	25	30	40	50	60	75	75	100	125	125
	General use rating		600 V	A	25	28	30	45	50	50	60	80	90	105	115	160	200	200
NEMA	NEMA size				00	0	—	1	—	—	2	—	—	3	—	—	4	—

Main accessories

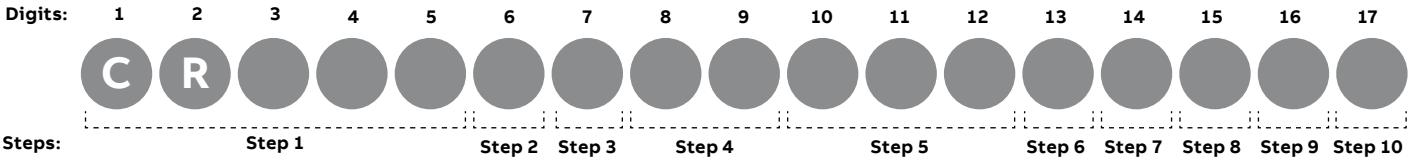
Auxiliary contact blocks	Front mounting	CA4-10 (1 x NO) CA4-01 (1 x NC)							
	Side mounting	CAL4-11 (1 x NO + 1 x NC)							CAL19-11 (1 x NO + 1 x NC)
Timers	Electronic	TEF4-ON TEF4-OFF							
Interlocking units	Mechanical	VM4				VM96-4			VM19 (for same size contactors)
	Mechanical/electrical	VEM4							
Connection sets	For reversing contactors	BER16-4		BER38-4		BER65-4		BER96-4	BER140-4
Surge suppressors		Built-in surge protection							

Note: Refer to the Motor Protection and Control Catalog for detailed AF contactor component information, ratings and accessories.

NEMA enclosed starters with IEC-style components

500-line

Part number configuration
Valid for NEMA sizes 0–4



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–5) product line code

Product line	Code
Contactor, single and 3-phase	CR505
Non-reversing starter, single and 3-phase	CR506
Reversing starter, 3-phase	CR509

Step 2 (digit 6) input voltage

Input voltage	Phases	Code
120 V (max 7.5 hp)	Single-phase	J
240 V (max 15 hp)	Single-phase	M
208 V (max 40 hp)	Three-phase	C
240 V (max 50 hp)	Three-phase	E
480 V (max 100 hp)	Three-phase	H
600 V (max 100 hp)	Three-phase	N

Step 3 (digit 7) enclosure type

Enclosure type	Code
NEMA 1	1
NEMA 12	2
NEMA 4X	4
NEMA 3R	6

Step 4 (digits 8, 9) control voltage

Control circuit (coil) voltage and CPT	Phases	No CCF No CPT	CCF No CPT	CCF CPT
120 V	Three-phase	02	F2	-
208 V	Three-phase	08	F8	-
240 V	Three-phase	03	F3	-
480 V	Three-phase	04	F4	-
600 V	Three-phase	05*	F5*	-
24 V	Three-phase	09	F9	-
240 V/120 V with CPT	Three-phase	-	-	93
480 V/120 V with CPT	Three-phase	-	-	94
600 V/120 V with CPT	Three-phase	-	-	95
208 V/120 V with CPT	Three-phase	-	-	98
120 V	Single-phase	02	F2	-
240 V	Single-phase	03	F3	-
120 V/24 V with CPT	Single-phase	-	-	S2
240 V/120 V with CPT	Single-phase	-	-	93
240 V/24 V with CPT	Single-phase	-	-	S3

* Coil with line voltage 575–600 V AC is not available

Step 5 (digits 10–12) horsepower rating

Horsepower rating	Phases	Code
¼	Single-phase	00A
½	Single-phase	00B
¾	Single-phase	00C
1	Single- and three-phase	001
1.5	Single- and three-phase	00D
2	Single- and three-phase	002
3	Single- and three-phase	003
5	Single- and three-phase	005
7.5	Single- and three-phase	007
10	Single- and three-phase	010
15	Single- and three-phase	015
20	Three-phase	020
25	Three-phase	025
30	Three-phase	030
40	Three-phase	040
50	Three-phase	050
60	Three-phase	060
75	Three-phase	075
100	Three-phase	100

Step 6 (digit 13) overload relay

Overload relay	Contacts	Code
Thermal overload, Class 10	Standard (1 NO + 1 NC)	9
Electronic overload	Standard (1 NO + 1 NC)	X
No overload*		Z

* Not available with non-reversing (CR506) or reversing starters (CR509)

Step 7 (digit 14) auxiliary contacts

Auxiliary contacts	Code
None	A
1 NO + 1 NC	D
2 NO + 2 NC*	N

* Not available with reversing starters (CR509)

NEMA enclosed starters with IEC-style components

500-line

Part number configuration
Valid for NEMA sizes 0–4

Step 8 (digit 15) pushbutton/selector switch
Not valid for reversing starters; see following table

Pushbutton/selector switch	Code
None	A
Start (black) / Stop (red) pushbutton	J
Hand – off – auto (HOA) selector switch	L
Off – on selector switch	M

Step 8 (digit 15) pushbutton/selector switch
For reversing starters only

Pushbutton/selector switch	Code
None	A
FWD/REV/Stop pushbutton	J
HOA and FWD-REV selector switch	P
FWD-OFF-REV selector switch	T

Step 9 (digit 16) pilot lights (LED)
Not valid for reversing starters; see following table

Pilot light	Code
None	A
Red (across coil)	1
Red (across coil) and green (through NC auxiliary contact)	6

Step 9 (digit 16) pilot lights (LED)
For reversing starters only

Pilot light	Code
None	A
Red (across coil)	2

Step 10 (digit 17) Overload range
Thermal overload
3-phase, 208 V

Horsepower rating	Overload range (A)	Code
½	1.7 to 2.3	A
½ ¾	2.3 to 3.1	B
¾ 1	3.1 to 4.2	C
1 1.5 2	4.2 to 5.7	D
1.5 2	5.7 to 7.6	E
2 3	7.6 to 10	F
3 5	10 to 13	G
5	13 to 16	H
5 7.5 10	16 to 20	J
7.5 10	20 to 24	K
7.5 10	24 to 29	L
10	29 to 35	M
10	35 to 38	N
15	30 to 40	P
15 20	36 to 47	Q
15 20	44 to 53	R
20	50 to 60	S
20	57 to 67	T
25	48 to 60	U
25 30	57 to 68	V
25 30	65 to 78	W
25 30	75 to 87	X
30	84 to 96	Y
40	66 to 90	1
40	80 to 110	2
40	100 to 135	3
50	80 to 110	4
50 60	100 to 135	5
50 60	110 to 150	6
50 60	130 to 175	7
60	150 to 200	8

NEMA enclosed starters with IEC-style components

500-line

Part number configuration
Valid for NEMA sizes 0–4

Step 10 (digit 17) overload range
Thermal overload
3-phase, 240 V

Horsepower rating	Overload range (A)	Code
½	1.3 to 1.7	A
½	1.7 to 2.3	B
½ ¾	2.3 to 3.1	C
¾ 1	3.1 to 4.2	D
1 1.5 2	4.2 to 5.7	E
1.5 2 3	5.7 to 7.6	F
3	7.6 to 10	G
3 5	10 to 13	H
5	13 to 16	J
5 7.5	16 to 20	K
7.5 10	20 to 24	L
7.5 10	24 to 29	M
10	29 to 35	N
15	30 to 40	P
15 20	36 to 47	Q
15 20	44 to 53	R
20 25	50 to 60	S
20 25	57 to 67	T
30	57 to 68	U
30	65 to 78	V
30	75 to 87	W
30	84 to 96	X
40	66 to 90	Y
40 50	80 to 110	1
40 50	100 to 135	2
50	110 to 142	3
60	110 to 150	4
60	130 to 175	5
60 75	150 to 200	6

Step 10 (digit 17) overload range
Thermal overload
3-phase, 480 V

Horsepower rating	Overload range (A)	Code
½	0.74 to 1.0	A
½ ¾	1 to 1.3	B
¾ 1	1.3 to 1.7	C
¾ 1 1.5	1.7 to 2.3	D
1.5 2	2.3 to 3.1	E
1.5 2 3	3.1 to 4.2	F
3	4.2 to 5.7	G
5	5.7 to 7.6	H
5 7.5	7.6 to 10	J
7.5 10	10 to 13	K
10 15	13 to 16	L
15	16 to 20	M
15 20	20 to 24	N
20 25	24 to 29	P
20 25	29 to 35	Q
25	35 to 38	R
30	30 to 40	S
30 40	36 to 47	T
40 50	44 to 53	U
40 50	50 to 60	V
50	57 to 67	W
60	57 to 68	X
60 75	65 to 78	Y
60 75	75 to 87	1
75	84 to 96	2
100	80 to 110	3
100	110 to 135	4
100	110 to 142	5
125	110 to 150	6
125 150	130 to 175	7
150	150 to 200	8

NEMA enclosed starters with IEC-style components

500-line

Part number configuration
Valid for NEMA sizes 0–4

Step 10 (digit 17) overload range
Thermal overload
3-phase, 600 V

Horsepower rating	Overload range (A)	Code
½	0.55 to 0.74	A
½ ¾	0.74 to 1.0	B
½ ¾	1.0 to 1.3	C
¾ 1	1.3 to 1.7	D
1 1.5 2	1.7 to 2.3	E
1.5 2 3	2.3 to 3.1	F
3	3.1 to 4.2	G
3 5	4.2 to 5.7	H
5 7.5	5.7 to 7.6	J
7.5 10	7.6 to 10	K
7.5 10 15	10 to 13	L
15	13 to 16	M
15 20	16 to 20	N
20 25	20 to 24	P
20 25	24 to 29	Q
25 30	29 to 35	R
30	35 to 38	S
40	30 to 40	T
40 50 60	36 to 47	U
40 50 60	44 to 53	V
50 60	50 to 60	W
60	57 to 67	X
75	57 to 68	Y
75	65 to 78	1
75	75 to 87	2
75	84 to 96	3
100	66 to 90	4
100 125	80 to 110	5
100 125	100 to 135	6
125	110 to 142	7
150	100 to 135	8
150	110 to 150	9
150	130 to 175	0

Step 10 (digit 17) overload range
Thermal overload
Single-phase, 120 V

Horsepower rating	Overload range (A)	Code
1/4 1/3	4.2 to 5.7	A
1/4 1/3 ½	5.7 to 7.6	B
1/3 ½ ¾	7.6 to 10	C
½ ¾ 1	10 to 13	D
¾ 1 1.5	13 to 16	E
1 1.5 2	16 to 20	F
1.5 2	20 to 24	G
2	24 to 29	H
3	25 to 33	J
3	30 to 40	K
5	36 to 47	L
5	44 to 53	M
5	50 to 60	N
5 7.5	57 to 67	P
7.5	75 to 87	Q
7.5	84 to 96	R

NEMA enclosed starters with IEC style components

500-line

Part number configuration
Valid for NEMA sizes 0–4

Step 10 (digit 17) overload range
Thermal overload
Single-phase, 240 V

Horsepower rating	Overload range (A)	Code
¼	1.7 to 2.3	A
¼ ⅓	2.3 to 3.1	B
¼ ⅓ ½	3.1 to 4.2	C
½ ¾	4.2 to 5.7	D
¾ 1 1.5	5.7 to 7.6	E
¾ 1 1.5 2	7.6 to 10	F
1 1.5 2 3	10 to 13	G
2 3	13 to 16	H
3	16 to 20	J
5	20 to 24	K
5	24 to 29	L
5	29 to 35	M
7.5	25 to 33	N
7.5 10	30 to 40	P
7.5 10	36 to 47	Q
10 15	44 to 53	R
10 15	50 to 60	S
15	57 to 67	T
20	65 to 78	U
20	75 to 87	V
20	84 to 96	W

Step 10 (digit 17) overload range
Electronic overload
3-phase, 208 V

Horsepower rating	Overload range (A)	Code
½ ¾ 1 1.5 2 3	1.9 to 6.3	A
1.5 2 3 5	5.7 to 18.9	B
7.5	9 to 30	C
10	15 to 45	D
15	20 to 56	E
20	25 to 70	F
25 30	36 to 100	G
40	54 to 150	H
50 60	63 to 210	J
75 100 125	115 to 380	K
150	150 to 500	L

NEMA enclosed starters with IEC-style components

500-line

Part number configuration
Valid for NEMA sizes 0–4

Step 10 (digit 17) overload range
Electronic overload
3-phase, 240 V

Horsepower rating	Overload range (A)	Code
½ ¾ 1 1.5	0.8 to 2.7	A
¾ 1 1.5 2	1.9 to 6.3	B
2 3 5	5.7 to 18.9	C
7.5	9 to 30	D
10 15	15 to 45	E
20 25	25 to 70	F
30	36 to 100	G
40 50	54 to 150	H
60 75	63 to 210	J
100 125 150	115 to 380	K
200	150 to 500	L

Step 10 (digit 17) overload range
Electronic overload
3-phase, 480 V

Horsepower rating	Overload range (A)	Code
½ ¾ 1	0.8 to 2.7	A
1.5 2 3	1.9 to 6.3	B
5 7.5 10	5.7 to 18.9	C
15 20	9 to 30	D
20 25	15 to 45	E
30 40	20 to 56	F
40 50	25 to 70	G
60 75	36 to 100	H
100	54 to 150	J
125 150	63 to 210	K
200 250 300	115 to 380	L
350 400	150 to 500	M

NEMA enclosed starters with IEC-style components

500-line

Part number configuration
Valid for NEMA sizes 0–4

Step 10 (digit 17) overload range
Electronic overload
3-phase, 600 V

Horsepower rating	Overload range (A)	Code
½ ¾ 1 1.5 2	0.8 to 2.7	A
2 3 5	1.9 to 6.3	B
7.5 10 15	5.7 to 18.9	C
20 25	9 to 30	D
25 30	15 to 45	E
40 50	20 to 56	F
60	25 to 70	G
75	36 to 100	H
100 125	54 to 150	J
150 200	63 to 210	K

Step 10 (digit 17) overload range
Electronic overload
Single-phase, 120 V

Horsepower rating	Overload range (A)	Code
¼	1.9 to 6.3	A
¼ ⅓ ½ ¾ 1 1.5	5.7 to 18.9	B
2	9 to 30	C
3 5	20 to 56	D
7.5	36 to 100	E

Step 10 (digit 17) overload range
Electronic overload
Single-phase, 240 V

Horsepower rating	Overload range (A)	Code
¼ ⅓ ½	1.9 to 6.3	A
¾ 1 1.5 2 3	5.7 to 18.9	B
5	9 to 30	C
7.5 10	20 to 56	D
15	25 to 70	E
20	36 to 100	F

NEMA enclosed starters with IEC-style components

Enclosure kits

Enclosure kits include: enclosure, ground wire, installation instructions for internal components and pre-drilled mounting holes. Internal components such as contactors, overloads and control power transformers must be purchased separately.

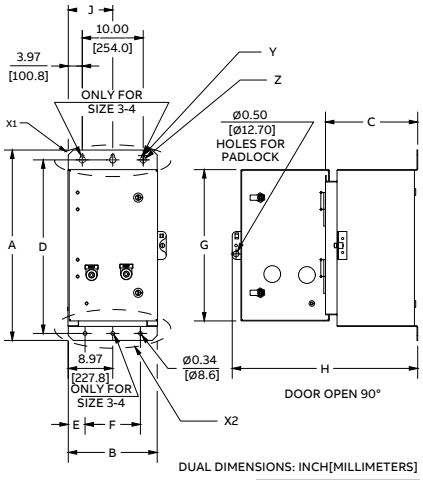
Enclosure kits

Type code	Order code	For use with	Space in enclosure for control power transformer	Pilot device knockout holes	NEMA type enclosure
ENCX1W113C5	1SQA012852R0001	AF09-38, AF..N00-1, DP20-60, CR360 30A contactors	Yes	Yes	1
		CR460 contactors	No	Yes	
ENCX1W112C1	1SQA012844R0001	AF09-30, AFN00-1, DP60, CR360 30A contactors	No	No	1
ENCX1W115C4	1SQA012861R0001	AF40-65/AFN, DP75-90, CR360 60A, CR460 30A contactors	Yes	Yes	1
ENCX1W114C1	1SQA012854R0001	AF38-65, AF..N2, DP75-90, CR360 60A contactors	No	No	1
ENCX1W117C1	1SQA012868R0001	AF80-96, AF..N3 contactors, starters, reversers	Yes	Yes	1
ENCX1W117C2	1SQA012869R0001	AF80-96, AF..N3 contactors, starters, reversers	No	No	1
ENCX1W117C5	1SQA012872R0001	AF116-146, AF..N4 contactors, starters, reversers	Yes	Yes	1
ENCX1W117C6	1SQA012873R0001	AF116-146, AF..N4 contactors, starters, reversers	Yes	No	1
ENCX2W112C1	1SQA012769R0001	AF09-30, AF..N00-1, DP-60, CR360L 30A contactors	No	No	12/3R
ENCX2W112C2	1SQA012770R0001	AF09-30, AF..N00-1 starters	No	No	12/3R
ENCX2W112C3	1SQA012771R0001	AF09-30, AF..N00-1 Reversing starters + Electronic overload	No	No	12/3R
ENCX2W112C4	1SQA012772R0001	AF09-30, AF..N00-1 Reversing starters + Thermal overload	No	No	12/3R
ENCX2W113C4	1SQA012776R0001	AF09-38, AF..N00-1 starters and reversers	Yes	Yes	1
ENCX2W113C5	1SQA012777R0001	AF09-38, AF..N00-1, DP20-60, CR360L 30A contactors	Yes	Yes	1
		CR460 contactors	No	Yes	
ENCX2W114C1	1SQA012779R0001	AF38-65, AF..N2, DP75-90, CR360L 60A starters	No	No	1
ENCX2W114C2	1SQA012780R0001	AF38-65, AF..N2 starters	No	No	1
ENCX4W105C5	1SQA012814R0001	AF09-38, AF..N00-1 ,DP20-60, CR360L 30A contactors	Yes	Yes	4X
		CR460 contactors	No	Yes	
ENCX4W107C4	1SQA012823R0001	AF40-65/AF..N, DP75-90, CR360 60A, CR460 30 A contactors	Yes	Yes	4X
ENCX4W109C1	1SQA012831R0001	AF80-96, AF..N3 contactors, starters, reversers	Yes	Yes	4X
ENCX4W109C2	1SQA012832R0001	AF80-96, AF..N3 contactors, starters, reversers	No	No	4X
ENCX4W109C5	1SQA012835R0001	AF116-146, AF..N4 contactors, starters, reversers	Yes	Yes	4X
ENCX4W109C6	1SQA012836R0001	AF116-146, AF..N4 contactors, starters, reversers	Yes	No	4X
ENCX4W104C1	1SQA012806R0001	AF09-30, AF..N00-1, DP-60, CR360 30 A contactors	No	No	4X
ENCX4W106C1	1SQA012816R0001	AF38-65, AF..N2, DP75-90, CR360L 60A starters	No	No	4X
ENCX1W113C4	1SQA012851R0001	AF09-38, AF..N00-1 starters and reversers	Yes	Yes	12/3R
ENCX1W115C2	1SQA012859R0001	AF40-65, AF..N2 starters and reversers	Yes	Yes	12/3R
ENCX1W112C2	1SQA012845R0001	AF09-30, AF..N00-1 starters	No	No	12/3R
ENCX1W114C2	1SQA012855R0001	AF38-65, AF..N2 starters	No	No	12/3R
ENCX2W114C3	1SQA012781R0001	AF38-65, AF..N2 reversers with TF42, 65, EF45 overload	No	No	12/3R
ENCX2W114C4	1SQA012782R0001	AF38-65, AF..N2 Reverser with EF65 overload	No	No	12/3R
ENCX2W115C2	1SQA012784R0001	AF40-65, AF..N2 starters and reversers	Yes	Yes	12/3R
ENCX2W115C4	1SQA012786R0001	AF40-65/AF..N, DP75-90, CR360 60 A, CR460 30 Amps contactors	Yes	Yes	12/3R
ENCX4W105C4	1SQA012813R0001	AF09-38, AF..N00-1 starters and reversers	Yes	Yes	4X
ENCX4W107C2	1SQA012821R0001	AF40-65, AF..N2 starters and reversers	Yes	Yes	4X
ENCX4W104C3	1SQA012808R0001	AF09-30, AF..N00-1 starters	No	No	4X
ENCX4W106C2	1SQA012817R0001	AF38-65, AF..N2 starters	No	No	4X
ENCX1W112C4	1SQA012847R0001	AF09-30, AF..N00-1 reversers with Thermal overload	No	No	1
ENCX1W112C3	1SQA012846R0001	AF09-30, AF..N00-1 reversers with Electronic overloads	No	No	1
ENCX1W114C3	1SQA012856R0001	AF38-65, AF..N2 reversers with TF42, 65, EF45 overloads	No	No	1
ENCX1W114C4	1SQA012857R0001	AF38-65, AF..N2 reversers with EF65 overloads	No	No	1
ENCX2W117C1	1SQA012793R0001	AF80-96, AF..N3 contactors, starters, reversers	Yes	Yes	12/3R
ENCX2W117C2	1SQA012794R0001	AF80-96, AF..N3 contactors, starters, reversers	No	No	12/3R
ENCX2W117C5	1SQA012797R0001	AF116-146, AF..N4 contactors, starters, reversers	Yes	Yes	12/3R
ENCX2W117C6	1SQA012798R0001	AF116-146, AF..N4 contactors, starters, reversers	Yes	No	12/3R
ENCX4W104C4	1SQA012809R0001	AF09-30, AF..N00-1 reversers with Electronic/Thermal overload	No	No	4X
ENCX4W106C3	1SQA012818R0001	AF38-65, AF..N2 reversers with TF42, 65, EF45 overload	No	No	4X
ENCX4W106C4	1SQA012819R0001	AF38-65, AF..N2 reversers with EF65 overload	No	No	4X

NEMA enclosed starters with IEC-style components

CR505 non-reversing dimensions

CR505 NEMA type 1 hinged cover without CPT size 00–4



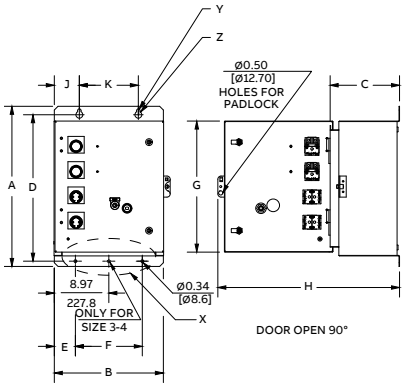
Type 1, NEMA sizes 00–4
Drawing no. 270A7282P1_9

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
0	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
1	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
2	17.00 (431.8)	7.94 (201.6)	8.23 (209.0)	15.49 (393.4)	1.50 (38.1)	4.94 (125.4)	13.51 (343.1)	16.55 (420.3)	3.97 (100.8)	25
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70

Mounting details

NEMA size	No. of top holes X1	No. of bottom holes X2	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR505 NEMA type 1 hinged cover with CPT size 00–4



Type 1, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

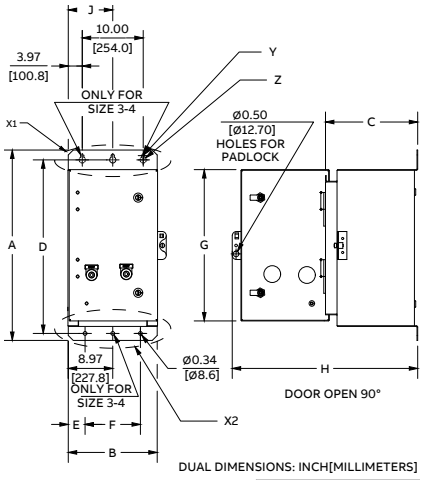
Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

NEMA enclosed starters with IEC-style components

CR505 non-reversing dimensions

CR505 NEMA type 12 hinged cover without CPT size 00–4



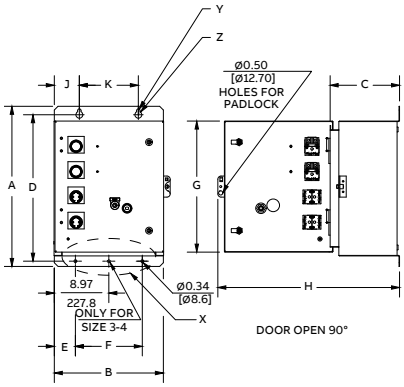
Type 12, NEMA sizes 00–4
Drawing no. 270A7282P1_9

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
0	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
1	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
2	17.00 (431.8)	7.94 (201.6)	8.23 (209.0)	15.49 (393.4)	1.50 (38.1)	4.94 (125.4)	13.51 (343.1)	16.55 (420.3)	3.97 (100.8)	25
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70

Mounting details

NEMA size	No. of top holes X1	No. of bottom holes X2	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR505 NEMA type 12 hinged cover with CPT size 00–4



Type 12, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

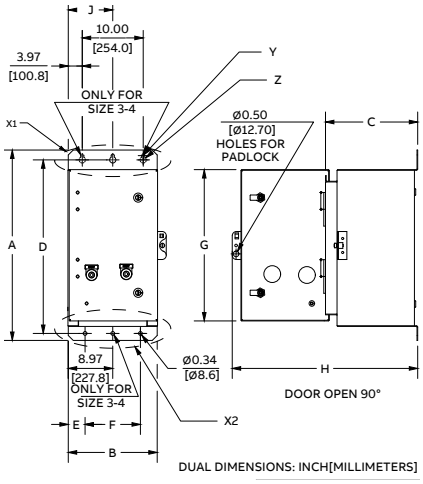
Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

NEMA enclosed starters with IEC-style components

CR505 non-reversing dimensions

CR505 NEMA type 3R hinged cover without CPT size 00–4



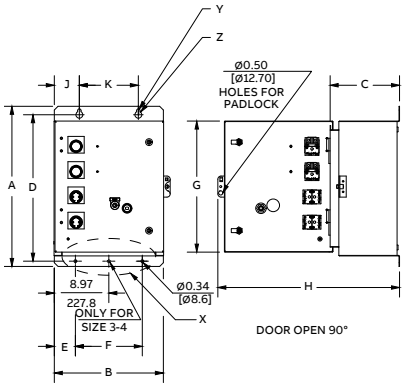
Type 3R, NEMA sizes 00–4
Drawing no. 270A7282P1_9

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
0	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
1	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
2	17.00 (431.8)	7.94 (201.6)	8.23 (209.0)	15.49 (393.4)	1.50 (38.1)	4.94 (125.4)	13.51 (343.1)	16.55 (420.3)	3.97 (100.8)	25
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70

Mounting details

NEMA size	No. of top holes X1	No. of bottom holes X2	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR505 NEMA type 3R hinged cover with CPT size 00–4



Type 3R, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

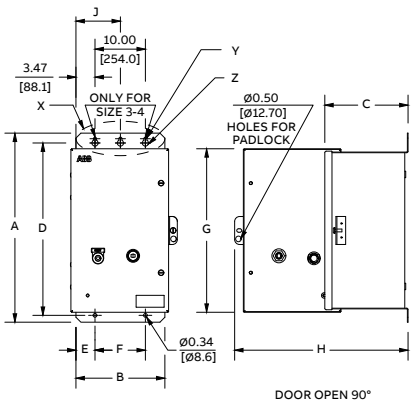
Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

NEMA enclosed starters with IEC-style components

CR505 non-reversing dimensions

CR505 NEMA type 4/4X hinged cover without CPT size 00–4



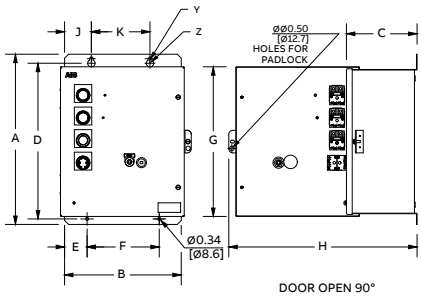
Type 4/4X, NEMA sizes 00–4
Drawing no. 270A7290P1_10

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	12.88 (327.1)	5.94 (150.8)	6.18 (156.9)	11.39 (289.3)	0.97 (24.6)	4.00 (101.6)	10.60 (269.2)	12.36 (313.9)	2.97 (75.4)	15
0	12.88 (327.1)	5.94 (150.8)	6.18 (156.9)	11.39 (289.3)	0.97 (24.6)	4.00 (101.6)	10.60 (269.2)	12.36 (313.9)	2.97 (75.4)	15
1	12.88 (327.1)	5.94 (150.8)	6.18 (156.9)	11.39 (289.3)	0.97 (24.6)	4.00 (101.6)	10.60 (269.2)	12.36 (313.9)	2.97 (75.4)	15
2	16.88 (428.7)	7.94 (201.6)	7.30 (185.4)	15.39 (390.9)	1.70 (43.1)	4.50 (114.3)	14.60 (370.8)	15.48 (393.1)	3.97 (100.8)	20
3	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254)	25.60 (650.2)	25.88 (657.3)	–	55
4	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254)	25.60 (650.2)	25.88 (657.3)	–	55

Mounting details

NEMA size	No. of top holes X	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	2	0.40 (10.2)	0.82 (20.8)

CR505 NEMA type 4/4X hinged cover with CPT size 00–4



Type 4/4X, NEMA sizes 00–4
Drawing no. 270A7291P1_4

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
0	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
1	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
2	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
3	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55
4	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55

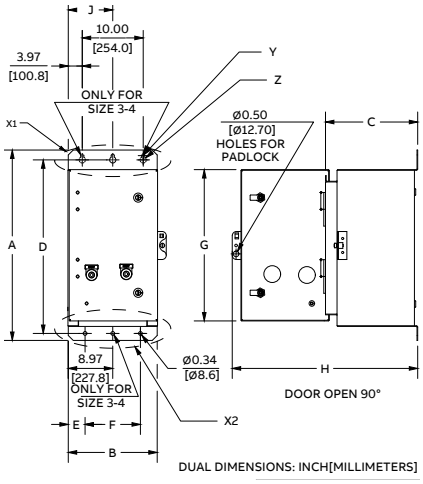
Mounting details

NEMA size	No. of top holes	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2,3, 4	2	2	0.40 (10.2)	0.82 (20.8)

NEMA enclosed starters with IEC-style components

CR506 non-reversing dimensions

CR506 NEMA type 1 hinged cover without CPT size 00–4



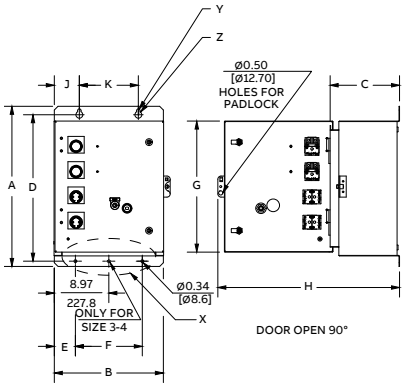
Type 1, NEMA sizes 00–4
Drawing no. 270A7282P1_9

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
0	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
1	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
2	17.00 (431.8)	7.94 (201.6)	8.23 (209.0)	15.49 (393.4)	1.50 (38.1)	4.94 (125.4)	13.51 (343.1)	16.55 (420.3)	3.97 (100.8)	25
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70

Mounting details

NEMA size	No. of top holes X1	No. of bottom holes X2	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR506 NEMA type 1 hinged cover with CPT size 00–4



Type 1, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

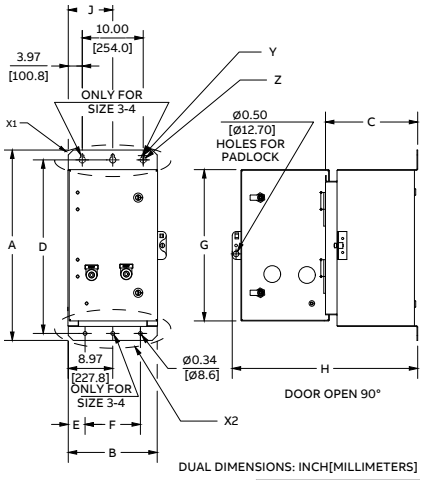
Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

NEMA enclosed starters with IEC-style components

CR506 non-reversing dimensions

CR506 NEMA type 12 hinged cover without CPT size 00–4



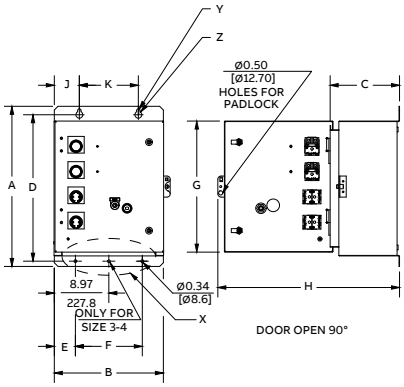
Type 12, NEMA sizes 00–4
Drawing no. 270A7282P1_9

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
0	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
1	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
2	17.00 (431.8)	7.94 (201.6)	8.23 (209.0)	15.49 (393.4)	1.50 (38.1)	4.94 (125.4)	13.51 (343.1)	16.55 (420.3)	3.97 (100.8)	25
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70

Mounting details

NEMA size	No. of top holes X1	No. of bottom holes X2	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR506 NEMA type 12 hinged cover with CPT size 00–4



Type 12, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

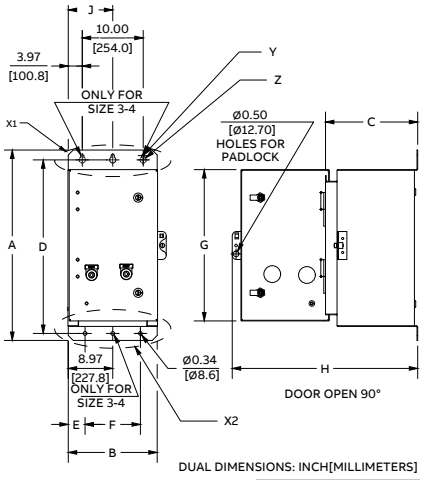
Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

NEMA enclosed starters with IEC-style components

CR506 non-reversing dimensions

CR506 NEMA type 3R hinged cover without CPT size 00–4



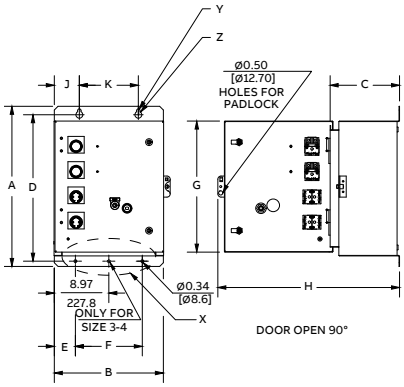
Type 3R, NEMA sizes 00–4
Drawing no. 270A7282P1_9

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
0	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
1	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
2	17.00 (431.8)	7.94 (201.6)	8.23 (209.0)	15.49 (393.4)	1.50 (38.1)	4.94 (125.4)	13.51 (343.1)	16.55 (420.3)	3.97 (100.8)	25
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70

Mounting details

NEMA size	No. of top holes X1	No. of bottom holes X2	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR506 NEMA type 3R hinged cover with CPT size 00–4



Type 3R, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

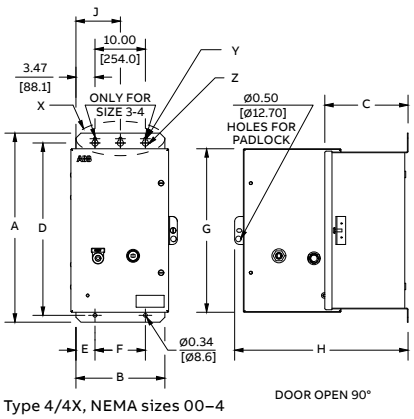
Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

NEMA enclosed starters with IEC-style components

CR506 non-reversing dimensions

CR506 NEMA type 4/4X hinged cover without CPT size 00–4



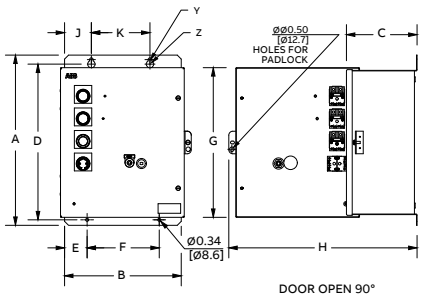
Type 4/4X, NEMA sizes 00–4
Drawing no. 270A7290P1_10

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	12.88 (327.1)	5.94 (150.8)	6.18 (156.9)	11.39 (289.3)	0.97 (24.6)	4.00 (101.6)	10.60 (269.2)	12.36 (313.9)	2.97 (75.4)	15
0	12.88 (327.1)	5.94 (150.8)	6.18 (156.9)	11.39 (289.3)	0.97 (24.6)	4.00 (101.6)	10.60 (269.2)	12.36 (313.9)	2.97 (75.4)	15
1	12.88 (327.1)	5.94 (150.8)	6.18 (156.9)	11.39 (289.3)	0.97 (24.6)	4.00 (101.6)	10.60 (269.2)	12.36 (313.9)	2.97 (75.4)	15
2	16.88 (428.7)	7.94 (201.6)	7.30 (185.4)	15.39 (390.9)	1.70 (43.1)	4.50 (114.3)	14.60 (370.8)	15.48 (393.1)	3.97 (100.8)	20
3	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254)	25.60 (650.2)	25.88 (657.3)	–	55
4	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254)	25.60 (650.2)	25.88 (657.3)	–	55

Mounting details

NEMA size	No. of top holes X	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	2	0.40 (10.2)	0.82 (20.8)

CR506 NEMA type 4/4X hinged cover with CPT size 00–4



Type 4/4X, NEMA sizes 00–4
Drawing no. 270A7291P1_4

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
0	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
1	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
2	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
3	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55
4	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55

Mounting details

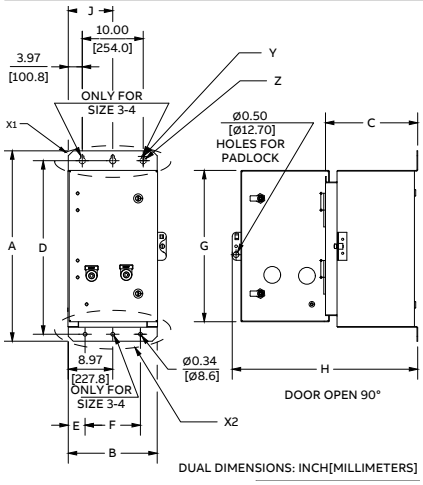
NEMA size	No. of top holes	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2,3, 4	2	2	0.40 (10.2)	0.82 (20.8)

NEMA enclosed starters with IEC-style components

CR509 reversing dimensions

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CR509 NEMA type 1 hinged cover without CPT size 00–4



Type 1, NEMA sizes 00–4
Drawing no. 270A7282P1_9

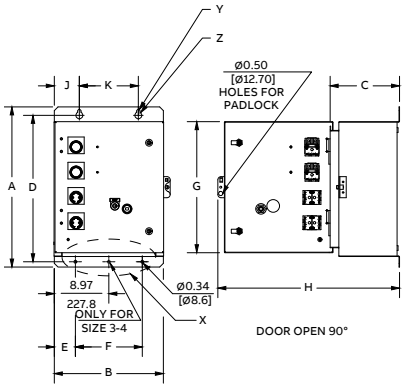
NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
0	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
1	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
2	17.00 (431.8)	7.94 (201.6)	8.23 (209.0)	15.49 (393.4)	1.50 (38.1)	4.94 (125.4)	13.51 (343.1)	16.55 (420.3)	3.97 (100.8)	25
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70

Mounting details

NEMA size	No. of top holes X1	No. of bottom holes X2	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

—

CR509 NEMA type 1 hinged cover with CPT size 00–4



Type 1, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

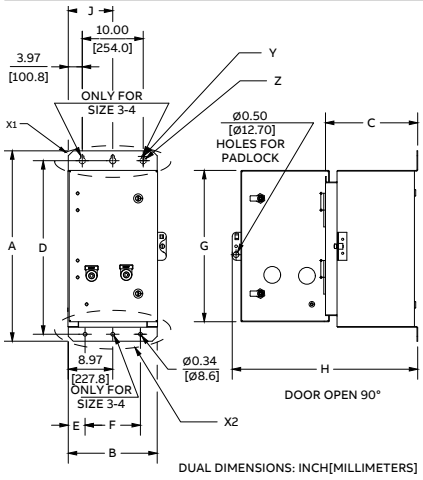
Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

NEMA enclosed starters with IEC-style components

CR509 reversing dimensions

CR509 NEMA type 12 hinged cover without CPT size 00–4



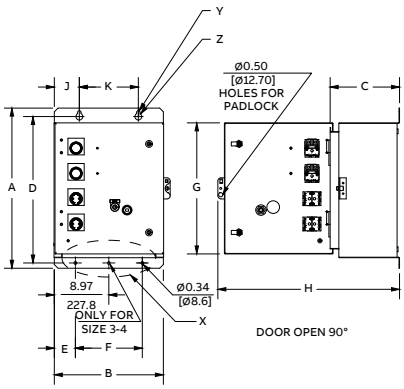
Type 12, NEMA sizes 00–4
Drawing no. 270A7282P1_9

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
0	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
1	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
2	17.00 (431.8)	7.94 (201.6)	8.23 (209.0)	15.49 (393.4)	1.50 (38.1)	4.94 (125.4)	13.51 (343.1)	16.55 (420.3)	3.97 (100.8)	25
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70

Mounting details

NEMA size	No. of top holes X1	No. of bottom holes X2	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR509 NEMA type 12 hinged cover with CPT size 00–4



Type 12, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

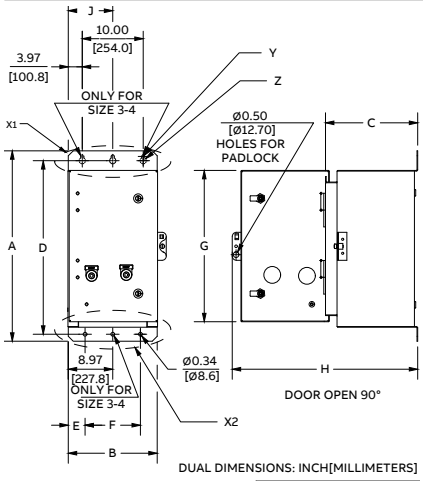
Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

NEMA enclosed starters with IEC-style components

CR509 reversing dimensions

CR509 NEMA type 3R hinged cover without CPT size 00–4



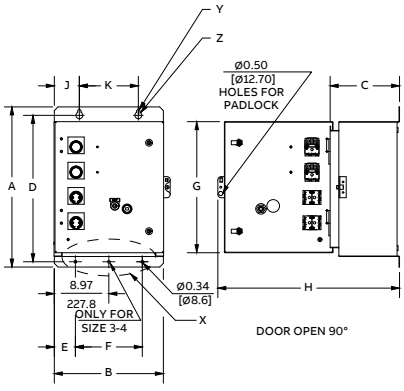
Type 3R, NEMA sizes 00–4
Drawing no. 270A7282P1_9

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
0	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
1	13.75 (349.2)	6.44 (163.5)	6.63 (168.4)	12.24 (310.8)	1.50 (38.1)	3.50 ((88.9)	10.41 (264.4)	13.45 (341.6)	3.22 (81.7)	15
2	17.00 (431.8)	7.94 (201.6)	8.23 (209.0)	15.49 (393.4)	1.50 (38.1)	4.94 (125.4)	13.51 (343.1)	16.55 (420.3)	3.97 (100.8)	25
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	–	70

Mounting details

NEMA size	No. of top holes X1	No. of bottom holes X2	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

CR509 NEMA type 3R hinged cover with CPT size 00–4



Type 3R, NEMA sizes 00–4
Drawing no. 270A7283P1_2

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
0	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
1	13.75 (349.2)	10.94 (277.8)	8.23 (209.0)	12.24 (310.8)	2.00 (50.8)	6.94 (176.2)	10.40 (264.1)	19.55 (496.5)	2.47 (62.7)	6.0 (152.4)	30
2	19.0 (482.6)	12.94 (328.6)	8.23 (209.0)	17.37 (441.1)	2.50 (63.5)	7.94 (201.6)	15.55 (394.9)	21.55 (547.3)	2.97 (75.4)	7.00 (177.8)	40
3	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70
4	28.00 (711.2)	17.94 (455.6)	8.73 (221.7)	26.37 (669.7)	2.50 (63.5)	12.94 (328.6)	24.55 (623.5)	27.05 (687.0)	3.97 (100.8)	10.00 (254.0)	70

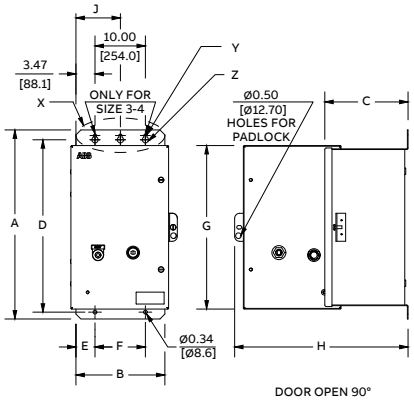
Mounting details

NEMA size	No. of top holes	No. of bottom holes X	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2	2	2	0.40 (10.2)	0.82 (20.8)
Size 3, 4	2	3	0.40 (10.2)	0.82 (20.8)

NEMA enclosed starters with IEC-style components

CR509 reversing dimensions

CR509 NEMA type 4/4X hinged cover without CPT size 00–4



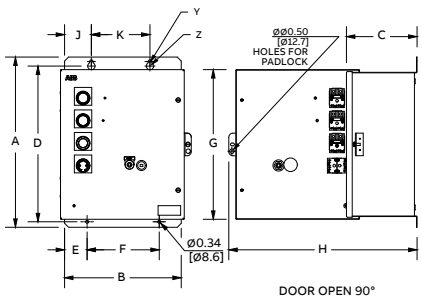
Type 4/4X, NEMA sizes 00–4
Drawing no. 270A7290P1_10

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Approx. shipping wt. (lbs)
00	12.88 (327.1)	5.94 (150.8)	6.18 (156.9)	11.39 (289.3)	0.97 (24.6)	4.00 (101.6)	10.60 (269.2)	12.36 (313.9)	2.97 (75.4)	15
0	12.88 (327.1)	5.94 (150.8)	6.18 (156.9)	11.39 (289.3)	0.97 (24.6)	4.00 (101.6)	10.60 (269.2)	12.36 (313.9)	2.97 (75.4)	15
1	12.88 (327.1)	5.94 (150.8)	6.18 (156.9)	11.39 (289.3)	0.97 (24.6)	4.00 (101.6)	10.60 (269.2)	12.36 (313.9)	2.97 (75.4)	15
2	16.88 (428.7)	7.94 (201.6)	7.30 (185.4)	15.39 (390.9)	1.70 (43.1)	4.50 (114.3)	14.60 (370.8)	15.48 (393.1)	3.97 (100.8)	20
3	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254)	25.60 (650.2)	25.88 (657.3)	–	55
4	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254)	25.60 (650.2)	25.88 (657.3)	–	55

Mounting details

NEMA size	No. of top holes X	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1, 2	1	2	0.28 (7.1)	0.56 (14.2)
Size 3, 4	2	2	0.40 (10.2)	0.82 (20.8)

CR509 NEMA type 4/4X hinged cover with CPT size 00–4



Type 4/4X, NEMA sizes 00–4
Drawing no. 270A7291P1_4

NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Approx. shipping wt. (lbs)
00	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
0	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
1	12.88 (327.1)	10.44 (265.1)	7.80 (198.1)	11.39 (289.3)	2.50 (63.5)	5.50 (139.7)	10.60 (269.2)	18.48 (469.3)	2.50 (63.5)	5.00 (127.0)	20
2	18.88 (479.5)	12.94 (328.6)	7.70 (195.5)	17.27 (438.6)	2.50 (63.5)	8.00 (203.2)	16.60 (421.6)	20.88 (530.3)	2.97 (75.4)	6.50 (165.1)	35
3	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55
4	27.88 (708.1)	16.94 (430.2)	8.70 (220.9)	26.27 (667.2)	3.50 (88.9)	10.00 (254.0)	25.60 (650.2)	25.88 (657.3)	3.47 (88.1)	10.00 (254)	55

Mounting details

NEMA size	No. of top holes	No. of bottom holes	Key hole upper dia. Y	Key hole lower dia. Z
Size 00, 0, 1	2	2	0.28 (7.1)	0.56 (14.2)
Size 2,3, 4	2	2	0.40 (10.2)	0.82 (20.8)

Overload relays

Thermal overload relays

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Solid-state overload relays

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Dimensions

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Thermal overload relays

CR324 thermal overload relay overview

600 V AC/250 V DC, 3-pole
135 maximum amperes continuous

Application

The overload relays provide reliable overload protection for motors. These relays support applications up to NEMA size 6, accommodating currents up to 540 amperes. With panel-mount adapters, the current limit is 135 amperes. The relays come fully equipped for use on control panels. When an overload condition occurs in any of the three legs in which heaters are inserted, it will cause the relay to trip, opening a normally closed contact, and, as an option, closing a normally open contact.

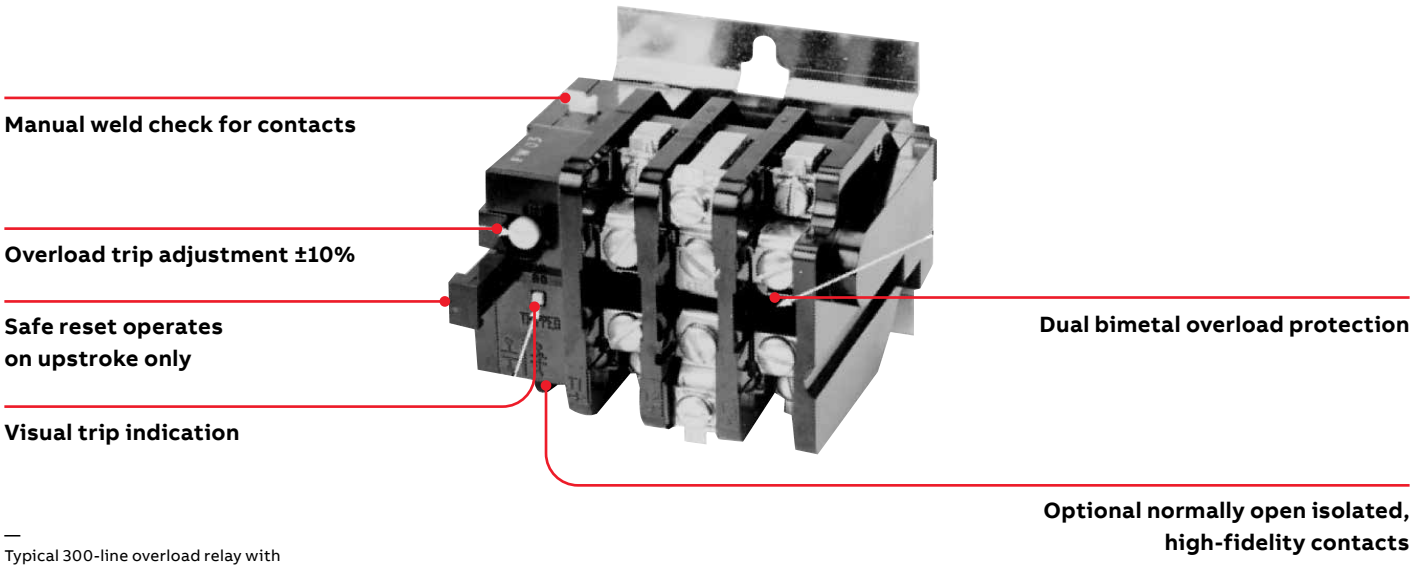
Standard and ambient compensated forms with various contact arrangements are available. A normally open circuit may be connected to a signal light, an alarm bell or input circuit of a programmable controller, e.g., to provide indication of an overload relay trip.

Features

- Flexibility of operation — trip rating can be easily changed by replacing the front-accessible heaters.
- Dual bimetal current monitoring — additional bimetal strip "anticipates" the rate of temperature rise in the motor winding, effectively reducing trip time in locked rotor conditions. It prevents dangerous temperature overshoot in the motor windings.

Product number selection instructions

1. Order required relay by complete product number as shown in table.
   Example: An open block-type relay with one normally closed contact is to be mounted in a control panel. Three-leg overload protection is needed and the full-load current of the motor being controlled is 40.5 amperes. Order: CR324D310A and three CR123C400B heaters.



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Typical 300-line overload relay with heater shown in center pole only

Thermal overload relays

CR324 thermal overload relays

600 V AC/250 V DC, 3-pole
135 maximum amperes continuous

CR324 block overload relays

Current rating (amps)	NEMA size	Contact configuration	Manual reset		Automatic reset	
			Standard panel-mount	Ambient-compensated panel-mount	Standard panel-mount	Ambient-compensated panel-mount
			Product number	Product number	Product number	Product number
27	1	1NC	CR324C310A	CR324C610A	CR324C310A1[1]	CR324C610A1[1]
27	1	1NO–1NC	CR324C360A	CR324C660A	–	–
45	2	1NC	CR324D310A	CR324D610A	CR324D310A1[1]	CR324D610A1[1]
45	2	1NO–1NC	CR324D360A	CR324D660A	–	–
90	3	1NC	CR324E310A	CR324E610A	CR324E310A1[1]	CR324E610A1[1]
90	3	1NO–1NC	CR324E360A	CR324E660A	–	–
135	4	1NC	CR324F310A	CR324F610A	CR324F310A1[1]	CR324F610A[1]
135	4	1NO–1NC	CR324F360A	CR324F660A	–	–

[1]For NO/NC (SPDT) contact forms, contact nearest ABB Representative.

Contact ratings

Continuous rating amperes	Make amperes	Recommended maximum interrupting capacity, amperes					
		DC circuits		AC circuits			
AC or DC		125 V	250 V	115 V	230 V	460 V	575 V
10	30	0.35	0.17	3	1.5	0.75	0.6

Accessories

External reset kit

Enclosure type	NEMA size	Reset distance (in.) behind panel	Product number
NEMA Type 1 NEMA Type 12	00–5	1–6	CR124X100C
NEMA Type 4/4X	00–5	1–6	CR124X100D

For single or block overload relays and 200-, 300- and 400-line starters.

Solid-state overload relays

CR324X solid-state overload relays overview

3-pole, 600 V AC



CR324CXCS

Technical features

- 2:1 Adjustable full load amps with tactile feedback dial
- Selectable 10/20/30 protection class
- Ambient insensitive within the stated operating temperature range of –20 °C to +70 °C
- Built-in thermal memory to prevent hot motor restarts
- Protection against complete phase current loss
- Manual reset (standard) and remote reset (optional) 120 V AC
- Accuracy: ± 2%
- Repeatability: ± 2%
- Self-powered at 50% of minimum current range
- Size: 1–6 (0.40 A–540 A, 600 V, 50/60 Hz)
- Unbalance trip signal for PLC operation
- Manual trip
- Visual trip indication
- Standard isolated 1 NO and 1 NC auxiliary contact (A600, Q600)
- Built-in line/load straps
- Fits with existing 300-line starters
- Power factor correction terminals (sizes 1–4)
- DIN rail mountable sizes 1 and 2

Solid-state overload relays

CR324X solid-state overload relays

3-pole, 600 V AC

For continuous rated motors, with a service factor of 1.15 to 1.25, select the heater with maximum motor amperes equal to or immediately greater than the motor full-load current (provides a maximum of 125% protection). For continuous rated motors with no service factor, multiply the full-load current of the motor by 0.90 and use this value to select the heater.

Solid-state overload relays

					Panel mount	MRO and replacement
Setting range amps	NEMA size	Fuse max. amps	Breaker max amps	Continuous amp rating	Product number	Product number
0.4–0.85	00–1	3	15	27	CR324CXCP	CR324CXCS
0.8–1.7	00–1	6	15	27	CR324CXDP	CR324CXDS
1.6–3.4	00–1	12	15	27	CR324CXEP	CR324CXES
3.2–6.8	00–1	25	25	27	CR324CXFP	CR324CXFS
6.5–13.5	00–1	50	50	27	CR324CXGP	CR324CXGS
13–27	00–1	100	100	27	CR324CXHP	CR324CXHS
6.5–13.5	2	50	50	45	CR324DXGP	CR324DXGS
13–27	2	100	100	45	CR324DXHP	CR324DXHS
25–50	2	200	200	45	CR324DXJP	CR324DXJS
17–35	3	125	125	90	CR324FXKP	CR324FXKS[1]
35–70	3	250	250	90	CR324FXLP	CR324FXLS[1]
65–135	3	500	400	90	CR324FXMP	CR324FXMS[1]
17–35	4	125	125	135	CR324FXKP	CR324FXKS[1]
35–70	4	250	250	135	CR324FXLP	CR324FXLS[1]
65–135	4	500	400	135	CR324FXMP	CR324FXMS[1]
35–70	5	–	–		–	CR324GXNS[2]
65–135	5	500	400		–	CR324GXPS[2]
130–270	5	600	800		–	CR324GXQS[2]
130–270	6	1200	800		–	CR324HXSK[3]
260–540	6	1200	800		–	CR324HXTK[3]
130–270	6	1200	800		–	CR324HXSS[4]
260–540	6	1200	800		–	CR324HXTS[4]

[1] Reset is approximately 1" longer than on equivalent bimetal overloads. For ABB 300-line enclosures, perform the actions noted in the enclosure reset extension type table
[2] May be used as replacement for bimetal overload on size 5 starters. Use existing CTs.
[3] Must be used as solid-state replacement for bimetal overloads on size 6; since CT ratio changes, CTs are included.
[4] May be used as a replacement for existing solid-state overload on size 6. Use existing CTs.

Enclosure reset extension type	Adjustment required
Threaded rod (standard)	Cut threaded shaft 1" and adjust for 1/16" gap
"U" style, 2 1/16" long	Replace extension with product number 55-512811G005
"U" style, 1 1/2" long	Replace extension with product number 55-512811G002

Solid-state overload relay options

Item	NEMA size	Voltage	Product number
Remote reset	1–6	120 V AC	CR324XRRM02
Panel-mount adapter	1	–	CR324CXPMA
	2	–	CR324DXPMA

Solid-state overload relays

CR324X short circuit ratings

3-pole, 600 V AC

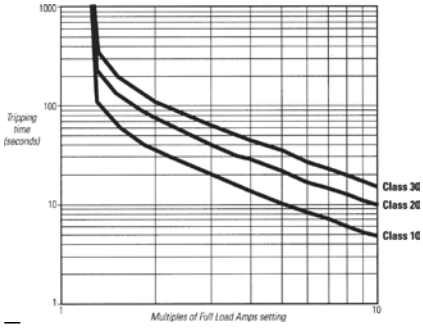
Fusible combination starter short circuit ratings

Fusible combination starters and CR324X solid-state overload relays		
NEMA size	**Fuse type**	**Max. symmetrical RMS amperes**
0–3	H, K	5,000 at 600 V
4, 5	H, K	10,000 at 600 V
0–4	J	100,000 at 600 V
0–4	RK1, RK5	65,000 at 480 V
5	J, RK1, RK5	100,000 at 600 V
6	J, L, RK1, RK5	100,000 at 600 V

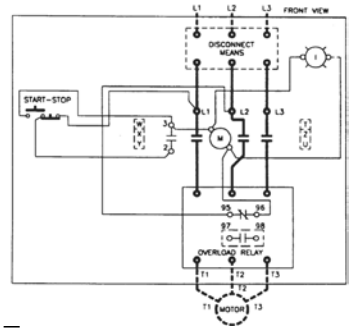
"High available" short circuit ratings for NEMA size 00–4 contactors

NEMA size	Product series*	Max. FLA [amperes]	RMS symmetrical amperes [A]	Voltage max. [V AC] [B]	Manufacturer [C]	Branch circuit protection* [D]	Max. breaker rating [amps] [E]	Encl. min. volume [cu.-in.] [F]
00	CR305	8	100	240	ABB	XT2	125	1399
00	CR305	8	100	480	ABB	XT2	125	1399
00	CR305	8	25	600	ABB	XT2	125	1399
0	CR305	16	100	240	ABB	XT2	125	1399
0	CR305	16	100	480	ABB	XT2	125	1399
0	CR305	16	25	600	ABB	XT2	125	1399
1	CR305	25.3	100	240	ABB	XT2	125	1399
1	CR305	25.3	100	480	ABB	XT2	125	1399
1	CR305	25.3	25	600	ABB	XT2	125	1399
2	CR305	42	100	240	ABB	XT2	125	1399
2	CR305	42	100	480	ABB	XT2	125	1399
2	CR305	42	25	600	ABB	XT2	125	1399
3	CR305	80	100	240	ABB	XT2	125	5288
3	CR305	80	100	480	ABB	XT2	125	5288
3	CR305	80	25	600	ABB	XT2	125	5288
3	CR305	80	100	240	ABB	XT4	250	5288
3	CR305	80	100	480	ABB	XT4	250	5288
3	CR305	80	25	600	ABB	XT4	250	5288
4	CR305	136	100	240	ABB	XT2	125	5288
4	CR305	136	100	480	ABB	XT2	125	5288
4	CR305	136	25	600	ABB	XT2	125	5288
4	CR305	136	100	240	ABB	XT4	250	5288
4	CR305	136	100	480	ABB	XT4	250	5288
4	CR305	136	25	600	ABB	XT4	250	5288

* These contactors are also suitable for use with instantaneous-trip circuit breakers, when used as part of combination motor controllers. Click on the following link for CMC ratings https://www.ul.com/resources/short-circuit-current-ratings-combination-motor-controller-components



Tripping time (sec.) vs. multiples of FLA for ABB CR324X overload, cold state



Typical 3-phase diagram

Heaters

Heater overview and selection

Magnetic starters — full voltage

Heater selection information

To prevent overloading the starter, do not select heater(s) for a motor of larger rating than the maximum given on the nameplate for the starter.

For continuous rated motors with a service factor of 1.15 to 1.25, select the heater with maximum motor amperes equal to or immediately greater than the motor full-load current (provides a maximum of 125% protection). For continuous rated motors with no service factor, multiply the full-load current of the motor by 0.90 and use this value to select the heater.

To protect the heater and starter during a short circuit, provide motor-branch-circuit protection in accordance with Table 430–152 in Article 430 of the National Electrical Code. In no case should the fuse rating exceed 4 times the motor full-load current for single-element fuses, or 2.25 times for dual-element fuses, or the fuse size listed in heater table under maximum fuse rating.

Caution: Overload relays, when furnished with automatic reset, should not be used with two-wire, maintained contact pilot devices such as pressure, float and limit switches, because inadvertent restarting of the motor can occur.

How to select heaters

The table below should be used to determine which column of motor full-load amperes applies for heater selection. Select in order, the basic device — including product number and description, the NEMA type of enclosure and the column to be used in the proper table by NEMA size.

If full-load amperes of the motor falls between two ratings, select heaters for the higher rating.

Ordering information

CR123F heaters being ordered for either customer's stock or any other purpose are to be specified in multiples of three (such as 3, 6, 9, 12, 15, etc.). Minimum order quantity is three.

Base product number starter/overload relay	Description	NEMA type enclosure	Quantity heaters required		Heater table column
CR306	Single-phase, 2-pole, size 00–2	Open	1		A
	Single-phase, 2-pole, size 00–2	1, 3R, 4/4X, 12	1		B
	Single-phase, 2-pole, size 3	Open	2		A
	Single-phase, 2-pole, size 6	1, 3R, 4/4X, 12	2		B
CR306	3-Phase, 3-pole, 3-leg protection	Open	3		C
	Standard, size 00–5				
	Ambient compensated, size 00, 0, 1, 2 and 5	Open	3		C
	Ambient compensated, size 3	Open	3		D
	Ambient compensated, size 8	Open	3		E
CR306, CR307, CR308, CR387, CR407, CR408, CR487	3-Phase, 3-pole, 3-leg protection				
	Standard, size 00–5	1, 3R, 4/4X, 12	3		D
	Ambient compensated, size 00, 0, 1, 2 and 5	1, 3R, 4/4X, 12	3		C
	Ambient compensated, size 3	1, 3R, 4/4X, 12	3		D
	Ambient compensated, size 8	1, 3R, 4/4X, 12	3		E
CR309	3-Phase, 3 3-pole, 3-leg protection				
	Standard, size 00–5	Open	3-Reverser	6-Two-speed	C
	Ambient compensated, size 00, 0, 1, 2 and 5	Open	3-Reverser	6-Two-speed	C
	Ambient compensated, size 3	Open	3-Reverser	6-Two-speed	D
	Ambient compensated, size 8	Open	3-Reverser	6-Two-speed	E
CR309, CR410, CR411, CR490	3-Phase, 3 3-pole, 3-leg protection				
	Standard, size 00–5	1, 3R, 4/4X, 12	3-Reverser	6-Two-speed	D
	Ambient compensated, size 00, 0, 1, 2 and 5	1, 3R, 4/4X, 12	3-Reverser	6-Two-speed	C
	Ambient compensated, size 3	1, 3R, 4/4X, 12	3-Reverser	6-Two-speed	D
	Ambient compensated, size 8	1, 3R, 4/4X, 12	3-Reverser	6-Two-speed	E
CR324	Panel-mounted				See tables
All NEMA sizes 6–9	3-Phase, 3-leg protection, standard				See tables

Heaters

CR123 heaters NEMA size 00–2

All CR123C and CR123F heaters are packaged three to a carton. Items of these heaters, being ordered for either customer's stock or any other purpose, are to be specified in multiples of three (such as 3, 6, 9, 12, 15, etc.). Minimum order quantity is three.

NEMA sizes 00, 0 and 1

Max. motor full-load amperes				
A	B	C	D	Heater product number
0.48	0.46	0.45	0.43	CR123C054A
0.55	0.50	0.49	0.48	CR123C060A
0.57	0.57	0.53	0.53	CR123C066A
0.65	0.62	0.59	0.58	CR123C071A
0.69	0.68	0.65	0.64	CR123C078A
0.83	0.80	0.76	0.74	CR123C087A
0.97	0.91	0.84	0.84	CR123C097A
1.03	0.99	0.93	0.92	CR123C109A
1.12	1.09	1.04	1.02	CR123C118A
1.26	1.22	1.15	1.10	CR123C131A
1.40	1.31	1.27	1.23	CR123C148A
1.46	1.46	1.39	1.38	CR123C163A
1.63	1.59	1.55	1.49	CR123C184A
1.79	1.74	1.73	1.67	CR123C196A
1.97	1.93	1.89	1.79	CR123C220A
2.25	2.13	2.05	1.98	CR123C239A
2.43	2.37	2.28	2.24	CR123C268A
2.60	2.52	2.47	2.43	CR123C301A
2.96	2.87	2.79	2.75	CR123C326A
3.57	3.39	3.31	3.25	CR123C356A
3.86	3.59	3.70	3.43	CR123C379A
4.43	4.31	4.06	4.03	CR123C419A
4.87	4.57	4.47	4.43	CR123C466A
5.37	5.31	4.95	4.94	CR123C526A
5.99	5.86	5.49	5.36	CR123C592A
6.39	6.19	5.91	5.77	CR123C630A
6.87	6.61	6.47	6.35	CR123C695A
7.71	7.61	7.20	6.92	CR123C778A
8.72	8.46	8.22	7.99	CR123C867A
9.50	9.35	8.72	8.47	CR123C955A
10.5	10.4	9.67	9.19	CR123C104B
11.7	11.3	10.4	10.0	CR123C113B
12.2	11.9	11.0	10.7	CR123C125B
13.5	13.0	12.4	12.0	CR123C137B
15.1	14.5	13.2	12.9	CR123C151B
17.5	17.4	15.4	15.1	CR123C163B
18.9	18.6	17.1	16.3	CR123C180B
20.8	20.5	18.1	17.9	CR123C198B
22.4	22.3	20.0	19.7	CR123C214B
25.5	24.7	21.5	21.2	CR123C228B
26.2	25.7	22.5	22.3	CR123C250B
27.0	27.0	23.9	23.5	CR123C273B
–	–	26.3	25.5	CR123C303B
–	–	27.0	27.0	CR123C330B

NEMA size 1P

Max. motor full-load amperes		
A	B	Heater product number
14.2	14.2	CR123C151B
17.3	17.3	CR123C163B
18.7	18.7	CR123C180B
20.6	20.6	CR123C198B
22.5	22.5	CR123C214B
24.7	24.7	CR123C228B
25.5	25.5	CR123C250B
26.7	26.7	CR123C273B
27.9	27.9	CR123C303B
32.1	32.1	CR123C330B
36.0	36.0	CR123C366B

NEMA size 2

Max. motor full-load amperes				
A	B	C	D	Heater product number
5.92	5.79	5.85	5.72	CR123C592A
6.23	6.12	6.47	6.30	CR123C630A
6.63	6.49	7.35	7.04	CR123C695A
7.72	7.59	8.06	7.91	CR123C778A
8.96	8.71	9.03	8.80	CR123C867A
9.92	9.19	9.61	9.27	CR123C955A
10.4	10.1	10.5	9.99	CR123C104B
11.7	11.2	11.6	11.1	CR123C113B
12.1	11.9	12.5	12.1	CR123C125B
13.5	12.6	13.6	13.1	CR123C137B
14.7	14.5	16.7	15.5	CR123C151B
18.3	17.7	17.9	16.8	CR123C163B
20.1	19.1	18.7	18.0	CR123C180B
22.3	21.4	20.4	19.7	CR123C198B
25.0	22.9	22.7	21.6	CR123C214B
27.7	24.7	24.7	23.9	CR123C228B
29.3	25.9	26.3	25.5	CR123C250B
30.7	27.1	29.5	28.2	CR123C273B
32.7	30.2	32.5	31.6	CR123C303B
35.6	34.8	36.7	34.7	CR123C330B
39.4	38.7	41.9	37.8	CR123C366B
45.0	45.0	43.2	40.6	CR123C400B
–	–	45.0	45.0	CR123C440B
–	–	–	–	CR123C460B

Heaters

CR123 heaters NEMA size 3–5

All CR123C and CR123F heaters are packaged three to a carton. Items of these heaters, being ordered for either customer's stock or any other purpose, are to be specified in multiples of three (such as 3, 6, 9, 12, 15, etc.). Minimum order quantity is three.

NEMA size 3

Max. motor full-load amperes				
A	B	C	D	Heater product number
20.2	19.4	–	–	CR123F199B
21.0	20.1	–	–	CR123F218B
21.8	21.1	19.3	18.4	CR123F233B
24.5	24.6	22.1	21.1	CR123F243B
25.7	25.2	23.4	22.1	CR123F270B
29.2	29.2	27.0	26.1	CR123F300B
33.5	32.8	29.1	28.0	CR123F327B
37.0	35.1	31.8	31.3	CR123F357B
39.2	38.4	33.9	33.3	CR123F395B
42.7	40.4	37.6	34.3	CR123F430B
45.7	45.7	41.9	40.9	CR123F487B
48.4	48.9	47.7	44.7	CR123F567B
54.9	54.7	52.1	51.0	CR123F614B
62.7	58.6	55.8	52.0	CR123F658B
67.5	63.4	59.7	55.4	CR123F719B
77.1	72.3	68.1	63.3	CR123F772B
81.5	76.6	71.5	66.1	CR123F848B
86.3	83.8	78.2	73.5	CR123F914B
90.0	90.0	87.5	82.2	CR123F104C
–	–	90.0	90.0	CR123F114C

NEMA size 4

Max. motor full-load amperes			
C	D	E	Heater product number
32.2	32.0	32.0	CR123F357B
34.0	34.2	34.2	CR123F395B
36.8	36.7	36.7	CR123F430B
44.6	43.9	43.9	CR123F487B
48.4	46.6	46.6	CR123F567B
53.9	52.6	52.6	CR123F614B
57.4	55.6	55.6	CR123F658B
60.0	58.7	58.7	CR123F719B
69.5	67.1	67.1	CR123F772B
71.7	70.6	70.6	CR123F848B
79.9	76.3	76.3	CR123F914B
92.3	88.7	88.7	CR123F104C
97.0	93.4	93.4	CR123F114C
108.0	102.0	105.0	CR123F118C
118.0	110.0	114.0	CR123F133C
131.0	122.0	128.0	CR123F149C
135.0	131.0	131.0	CR123F161C
–	135.0	135.0	CR123F174C

NEMA size 5

Max. motor full-load amperes		
C	D	Heater product number
118	115	CR123C592A
128	125	CR123C630A
138	135	CR123C695A
155	151	CR123C778A
168	164	CR123C867A
184	179	CR123C955A
200	195	CR123C104B
221	215	CR123C113B
237	231	CR123C125B
262	255	CR123C137B
270	270	CR123C151B

Heaters

CR123 heaters for CR324 overload relays

Overload relays

For CR324 standard and ambient compensated block overloads — panel-mounted

All CR123C and 123F heaters are packaged three to a carton. Items of these heaters, being ordered for either customer's stock or any other purpose, are to be specified in multiples of three (such as 3, 6, 9, 12, 15, etc.). Minimum order quantity is three.

Three heaters

Max. motor full-load amperes	Heater product number	Max. fuse rating	Max. motor full-load amperes	Heater product number	Max. fuse rating
CR324C (Size 0, 1)					
0.39	CR123C054A	3	3.89	CR123C466A	15
0.42	CR123C060A	3	4.30	CR123C526A	15
0.45	CR123C066A	3	4.77	CR123C592A	15
0.51	CR123C071A	3	5.14	CR123C630A	20
0.56	CR123C078A	3	5.63	CR123C695A	20
0.65	CR123C087A	3	6.26	CR123C778A	25
0.73	CR123C097A	3	7.15	CR123C867A	25
0.81	CR123C109A	3	7.58	CR123C955A	30
0.90	CR123C118A	3	8.39	CR123C104B	30
1.00	CR123C131A	3	9.11	CR123C113B	35
1.10	CR123C148A	3	9.67	CR123C125B	35
1.21	CR123C163A	3	11.0	CR123C137B	40
1.35	CR123C184A	3	11.9	CR123C151B	45
1.50	CR123C196A	6	14.3	CR123C163B	50
1.64	CR123C220A	6	16.1	CR123C180B	60
1.78	CR123C239A	6	17.2	CR123C198B	60
1.98	CR123C268A	6	19.2	CR123C214B[1]	70
2.15	CR123C301A	6	20.6	CR123C228B[1]	80
2.42	CR123C326A	6	21.8	CR123C250B[1]	80
2.88	CR123C356A	10	23.4	CR123C273B[1]	80
3.22	CR123C379A	12	26.1	CR123C303B[1]	90
3.53	CR123C419A	12	27.0	CR123C330B[1]	90
CR324D (Size 2)					
5.14	CR123C630A	20	8.39	CR123C104B	30
5.63	CR123C695A	20	9.11	CR123C113B	35
6.26	CR123C778A	20	9.67	CR123C125B	35
7.15	CR123C867A	25	11.0	CR123C137B	40
7.58	CR123C955A	30	12.0	CR123C151B	45
14.4	CR123C163B	60	28.0	CR123C303B	100
16.3	CR123C180B	60	32.1	CR123C330B	110
17.3	CR123C198B	60	35.9	CR123C366B	125
19.3	CR123C214B	70	41.5	CR123C400B	150
20.9	CR123C228B	80	43.4	CR123C440B	150
22.9	CR123C250B	90	45.0	CR123C460B	150
24.7	CR123C273B	90	–	–	–

[1]Size 1 only.

Three heaters

Max. motor full-load amperes	Heater product number	Max. fuse rating	Max. motor full-load amperes	Heater product number	Max. fuse rating
CR324E (Size 3)					
18.0	CR123F233B	70	44.4	CR123F567B	175
20.5	CR123F243B	80	48.4	CR123F614B	175
21.7	CR123F270B	80	52.4	CR123F658B	200
25.1	CR123F300B	90	57.0	CR123F719B	225
27.0	CR123F327B	100	64.5	CR123F772B	225
30.5	CR123F357B	110	68.8	CR123F848B	250
32.5	CR123F395B	125	75.7	CR123F914B	275
33.9	CR123F430B	125	86.2	CR123F104C	275
38.9	CR123F487B	150	90.0	CR123F114C	300
CR324F (Size 4)					
30.5	CR123F357B	100	68.6	CR123F848B	250
32.5	CR123F395B	125	75.7	CR123F914B	275
33.9	CR123F430B	125	86.2	CR123F104C	275
38.9	CR123F487B	150	93.0	CR123F114C	300
44.4	CR123F567B	175	109.0	CR123F118C	350
48.4	CR123F614B	175	123.0	CR123F133C	400
52.4	CR123F658B	200	131.0	CR123F149C	400
57.0	CR123F719B	225	135.0	CR123F161C	400
64.5	CR123F772B	225	–	–	–

Thermal overload relays

CR324 dimensions

CR324 NEMA sizes 1–4

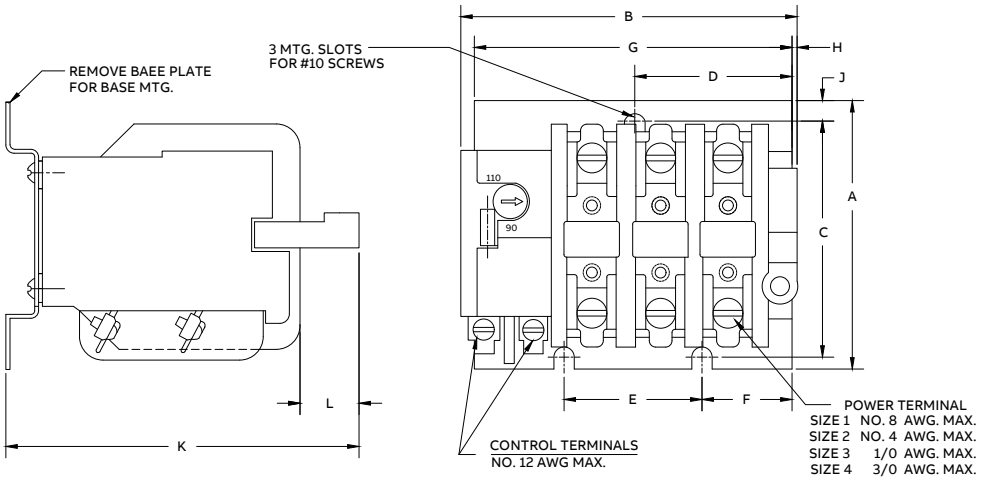
NEMA size	Dimension A	Dimension B	Dimension C	Dimension D	Dimension E	Dimension F	Dimension G	Dimension H	Dimension J	Dimension K	Dimension L	Mounting screw size
1	3.19 (81.0)	3.71 (94.2)	2.75 (69.8)	1.75 (44.4)	1.50 (38.1)	1.00 (25.4)	3.50 (88.9)	0.06 (1.5)	0.22 (5.5)	3.75 (95.2)	0.66 (1.66)	#10
2	3.19 (81.0)	3.71 (94.2)	2.75 (69.8)	1.75 (44.4)	1.50 (38.1)	1.00 (25.4)	3.50 (88.9)	0.06 (1.5)	0.22 (5.5)	3.75 (95.2)	0.66 (1.66)	#10
3	4.62 (117.4)	6.25 (158.8)	4.00 (101.6)	2.62 (66.5)	3.00 (76.2)	1.12 (28.4)	–	–	0.38 (9.6)	4.28 (108.7)	0.54 (13.7)	¼"
4	4.62 (117.4)	6.25 (158.8)	4.00 (101.6)	2.62 (66.5)	3.00 (76.2)	1.12 (28.4)	–	–	0.38 (9.6)	4.28 (108.7)	0.54 (13.7)	¼"

[1]For NO/NC (SPDT) contact forms, contact nearest ABB Representative.

External reset kit

Enclosure type	NEMA size	Reset distance (in.) behind panel	Product number
NEMA Type 1 NEMA Type 12	00-5	1 - 6	CR124X100C
NEMA Type 4/4X	00-5	1 - 6	CR124X100D

For single or block overload relays and 200-, 300- and 400-line starters.



CR324

Outlines, dimensions (in. / mm) and weights (for estimating only)

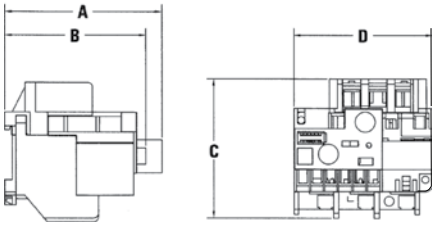
04

Solid-state overload relays

CR324X dimensions

3-pole, 600 V AC

Panel mount

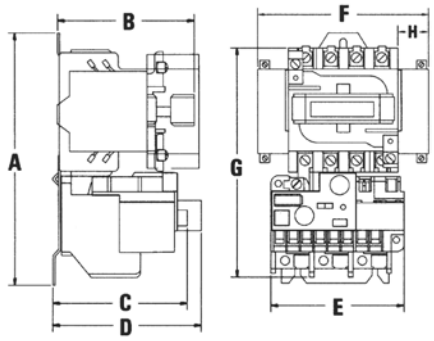


Panel mount

Size	A[1]	B	C	D
1	4.11	3.77	3.60	3.70
2	4.11	3.77	3.60	3.70
3	5.60	5.26	5.06	6.25
4	5.60	5.26	5.06	6.25

[1]If used

Open NEMA starter



Open NEMA starter

Size	A	B	C	D[1]	E	F[1]	G	H[1]
1	7.00	3.63	3.94	3.92	3.70	4.76	6.50	.84
2	9.12	4.57	5.50	4.91	3.70	5.44	8.50	.84
3	11.62	5.32	6.50	5.66	6.24	7.50	10.62	.88
4	11.62	5.32	6.50	5.66	6.24	7.50	10.62	.88

[1]If used

Current ranges available

	0.4–0.85	0.8–1.7	1.6–3.4	3.2–6.8	6.5–13.5	13–27	25–50	17–35	35–70	65–135	130–270	260–540
Size 1	●	●	●	●	●	●						
Size 2					●	●	●					
Size 3*								●	●[2]	●[2]		
Size 4								●	●	●		
Size 5										●	●	
Size 6											●	●

[2]Size 3, 90 amps max.

Manual motor starters

Manual motor starters	
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Manual motor starters

CR101 manual motor starter overview

1 hp maximum at 115 V or 230 V
¾ hp maximum at 277 V for 2-pole forms
25–60 Hz



CR101H



CR101H1



CR101H400H

The CR101 manual motor starters provide dependable overload protection for single-phase motors up to one horsepower (115 or 230 volts), and are an economical choice when undervoltage protection is not required.

Application
Designed for starting and stopping single-phase motors up to 1 hp, these manual starters have provision for overload protection, and their low cost provides economical starter selection for applications where no undervoltage protection is required. This line of starters may be used on such equipment as grinders, conveyors, fans, mixers and blowers.

Features
- Terminal design — box terminals provide easy access for wiring.
- Molded plastic switch housing — protects starter mechanism.

Product number selection instructions
Order starter by complete product number and specify overload heater as a separate item by complete product number.

Examples:
1. A general-purpose enclosed starter for surface wall mounting is desired. The starter is to break both lines. Motor to be started with this device has a full-load current of 0.6 ampere.
   Order:
   (1) CR101H1 manual motor starter
   (1) CR123H074A heater
2. The complete combination surface-mounted station, CR101H12, may also be ordered by components, e.g., order (1) CR101X10 flush plate; (1) CR101X14 box; and (1) CR101H manual starter. The other complete general-purpose manual starters may also be broken down in this manner.

Manual motor starters

CR101 single-phase manual motor starters

1 hp maximum at 115 V or 230 V
¾ hp maximum at 277 V for 2-pole forms
25–60 Hz

CR101

Open starters include an unmounted nameplate. Heaters can be selected from the table on the following pages and ordered as a separate item. One heater is required per starter (two for 2-speed forms and for combination starter CR101H13).

Toggle-operated non-reversing open[1]

	No. of poles	Product number
	1	CR101Y[2]
	2	CR101H[2]

[2]Units are individually boxed and "poly-packed" 10 per carton as standard.

Toggle-operated non-reversing enclosed NEMA type 1

	No. of poles	Indicating light	Product number
	1	No	CR101Y1[2]
	2	No	CR101H1[2]
	1	Yes	CR101Y11[4]
	2	Yes	CR101H11[4]

[2]Units are individually boxed and "poly-packed" 10 per carton as standard.
[4]Includes a 115/230-volt neon lamp(s). Not available at 277 volts.

Lever-operated non-reversing enclosed NEMA type 3/4/12

	No. of poles	Hubs	Product number
	1	¾-Inch hub on one end	CR101Y400H
	2	¾-Inch hub on one end	CR101H400H
	1	¾-Inch hub on both ends	CR101Y400J
	2	¾-Inch hub on both ends	CR101H400J

Multi-speed enclosed NEMA type 1 surface mount

No. of poles	Indicating light	Product number
1	None	CR101Y600B
1	Two	CR101Y610B[4]
2	None	CR101H600B
2	Two	CR101H610B[4]

[4]Includes a 115/230-volt neon lamp(s). Not available at 277 volts.

Multi-speed enclosed NEMA type 1 gray flush-plate

No. of poles	Indicating light	Product number
1	None	CR101Y600A
1	Two	CR101Y610A[4]
2	None	CR101H600A
2	Two	CR101H610A[4]

[4]Includes a 115/230-volt neon lamp(s). Not available at 277 volts.

Manual motor starters

CR101 single-phase manual motor starters

1 hp maximum at 115 V or 230 V
¾ hp maximum at 277 V for 2-pole forms
25–60 Hz

Multi-speed enclosed NEMA type 1 stainless-steel flush-plate

No. of poles	Indicating light	Product number
1	None	CR101Y608A
1	Two	CR101Y618A[4]
2	None	CR101H608A
2	Two	CR101H618A[4]

[4]Includes a 115/230-volt neon lamp(s). Not available at 277 volts.

Combination device enclosed NEMA type 1

No. of poles	Description	Product number
2	CR101H + base unit HOA	CR101H12
2	2 (CR101H)	CR101H13

Maximum horsepower ratings — AC or DC continuous carry — 16 amperes

Product number	No. of poles	Horsepower at 32 V AC	Horsepower at 115 V AC	Horsepower at 230 V AC	Horsepower at 277 V AC	Horsepower at 115 V DC	Horsepower at 230 V DC
CR101Y	1	¼	1	1	—	1	¼
CR101H	2	¼	1	1	¾	1	1

Manual motor starters

CR101 single-phase manual motor starters

1 hp maximum at 115 V or 230 V
¾ hp maximum at 277 V for 2-pole forms
25–60 Hz

Pushbutton-operated non-reversing flush plate only

No. of poles	Pushbutton text	Product number
2	Start/Stop	CR101JA0A
2	On/Off	CR101JA0B
3	Start/Stop	CR101BA0A
3	On/Off	CR101BA0B

Pushbutton-operated non-reversing enclosed NEMA type 1


CR101JA1A

No. of poles	Pushbutton text	Product number
2	Start/Stop	CR101JA1A
2	On/Off	CR101JA1B
3	Start/Stop	CR101BA1A
3	On/Off	CR101BA1B

Pushbutton-operated multi-speed flush plate only

No. of poles	Pushbutton text	Product number
3	Fast/Stop/Slow	CR101BB0B

Pushbutton-operated multi-speed enclosed NEMA type 1

No. of poles	Pushbutton text	Product number
3	Fast/Stop/Slow	CR101BB1B

Pushbutton-operated reversing enclosed flush plate only

No. of poles	Pushbutton text	Product number
3	FWD/OFF/REV	CR101BE0A
3	FWD/STOP/REV	CR101BE0B
3	UP/STOP/DOWN	CR101BE0C

Pushbutton-operated reversing enclosed NEMA type 1


CR101BE1C

No. of poles	Pushbutton text	Product number
3	FWD/OFF/REV	CR101BE1A
3	FWD/STOP/REV	CR101BE1B
3	UP/STOP/DOWN	CR101BE1C

Manual motor starters

CR123 heaters for CR101 manual motor starters

Overload heater units for CR101H, CR101Y

All CR123H heaters are packaged as single units.

The table below gives a proper size heater to trip the switch on approximately 125% motor current. Listed values are for motors with 1.15–1.25 service factor. For motors with 1.0 service factor continuously, multiply full-load current of motor by 0.9 and use this value to select heater. Contact nearest ABB Representative for recommendation on heaters to be used with definite-purpose motors. If motor full-load amperes falls between two ratings, select heater for the highest of those two. For 1.35 service factor motors, multiply full-load current of motor by 1.15 and use this value to select heater(s).

Maximum motor full-load amperes	Heater product number
.48	CR123H055A
.53	CR123H061A
.58	CR123H067A
.65	CR123H074A
.71	CR123H082A
.78	CR123H090A
.86	CR123H099A
.95	CR123H108A
1.04	CR123H120A
1.14	CR123H132A
1.25	CR123H144A
1.37	CR123H158A
1.49	CR123H172A
1.63	CR123H188A
1.78	CR123H205A
1.95	CR123H224A
2.13	CR123H245A
2.32	CR123H267A
2.53	CR123H291A
2.76	CR123H317A
3.01	CR123H346A
3.27	CR123H377A
3.56	CR123H410A
3.88	CR123H446A
4.22	CR123H486A
4.60	CR123H529A
5.00	CR123H575A
5.43	CR123H625A
5.90	CR123H680A
6.41	CR123H739A
6.98	CR123H802A
7.60	CR123H873A
8.25	CR123H950A
8.95	CR123H103B
9.75	CR123H112B
10.6	CR123H122B
11.4	CR123H132B
12.5	CR123H144B
13.6	CR123H157B
14.8	CR123H171B
16.0	CR123H186B

Manual motor starters

CR101 enclosure components

Enclosure components — single units

Flush plates painted gray or of stainless steel are available for flush mounting of all listed open manual starters.

Safety to maintenance personnel and operators and security to equipment is provided by locking attachment, CR101X3, for use on all toggle-operated manual starter forms.

Customers can assemble CR101H1, H11, Y1 or Y11 general-purpose manual starters by adding either an open CR101H or CR101Y manual starter to a CR101X6 back and a CR101X4 or X5 cover.

	Product description	Product number
	Flush plate with 115/230-volt indicating light and screws	CR101X1
	Standard flush plate with screws	CR101X2
 CR101X3	Locking attachment (lock not included)	CR101X3
	Cover (front with 115/230-volt neon indicating light and screws)	CR101X4
 CR101X3	Standard cover (front with screws)	CR101X5
	Enclosure back with screws (surface-mounting)	CR101X6
	Stainless-steel flush plate with 115/230-volt indicating light and screws	CR101X7
	Stainless-steel flush plate with screws	CR101X8

Manual motor starters

CR101 enclosure components

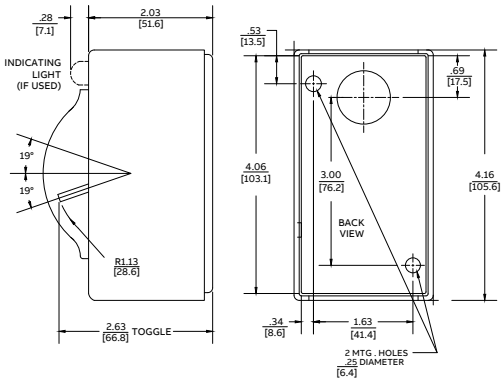
Combination plates and box

Customer convenience and flexibility is made possible by the availability of combination flush plates. These plates may be used flush mounted with a CR101X14 or other 2½- inch deep, two-gang boxes to make a general-purpose surface-mounted installation. Open manual starters must be ordered separately.

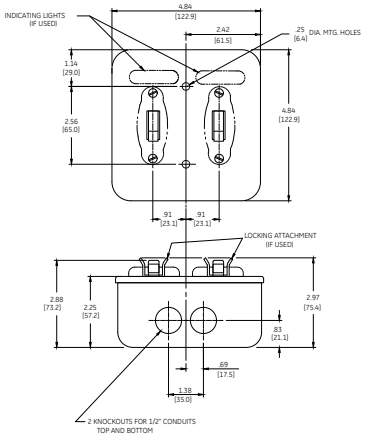
	Product description	Product number
	Combination flush plate with hand-auto switch	CR101X10
 CR101X11	Combination flush plate with hand-auto switch and 115/230-volt neon indicating light	CR101X11
	Combination flush plate for (2) CR101 open starters	CR101X12
	Combination flush plate for (2) CR101 open starters with (2) 115/230-volt neon indicating lights	CR101X13
 CR101X14	Box (back) for combination forms	CR101X14

Manual motor starters

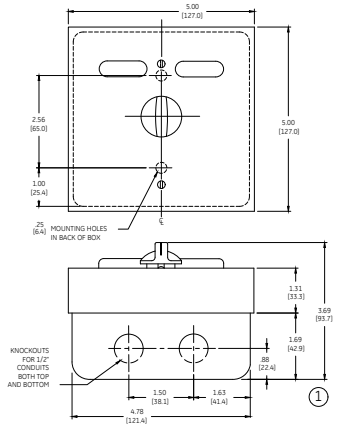
CR101 drawings/dimensions



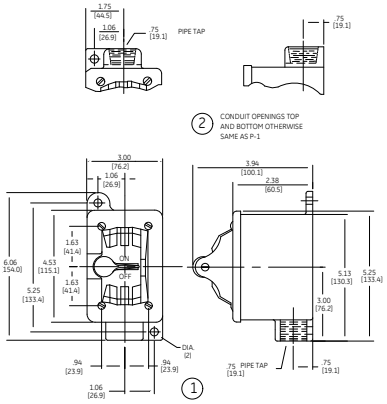
CR101 manual starter in type 1 enclosure, 2 lbs.



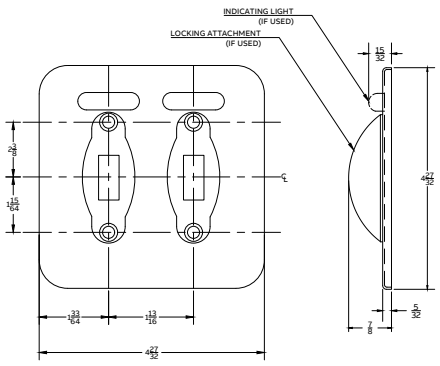
CR101H12 or CR101X13 combination starter, 4 lbs.



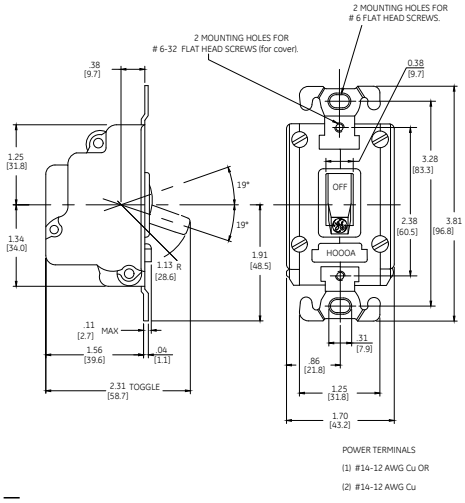
CR101 two-speed manual starter in type 1 enclosure, 3 lbs.



CR101 manual starter in type 4 enclosure, 4 lbs.



CR101X12 or CR101X13 combination flush plate, 1 lb.



CR101 manual starter, open type, 1 lb.

Outlines, dimensions ($\frac{\text{in.}}{\text{mm}}$) and weights (for estimating only)

Pumping panels

Pumping panels	
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Pumping panels

CR340, CR341 pumping panels overview

NEMA sizes 0–6
100 hp max. at 240 V, 600 hp max. at 600 V



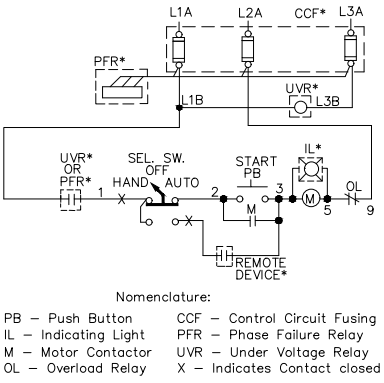
CR340 pump panel

Application

Specifically designed for outdoor installation, these pumping panels provide full voltage control of squirrel-cage pump motors. They offer protection from motor burnouts due to overloading, protection against untimely restarts after power failure and protection of motor circuit against damage from short circuits. Enclosure provides additional space for customer to mount desired modifications and accessories. Custom panel designs available upon request. Contact nearest ABB representative or authorized distributor for additional information.

Product number selection instructions

1. ABB pumping panels are specifically designed for outdoor installation. They provide full-voltage control of squirrel-cage pump motors. Overload, undervoltage, and short-circuit protection are included as standard.
2. ABB pumping panels are available with traditional NEMA Class 20 bimetal thermal overloads, Class 10/20/30 selectable and adjustable electronic overloads with phase loss protection and Class 10 adjustable thermal overloads with differential protection.
3. In addition, pump panels can be provided with no overload relay, Class 10 overloads with fixed heaters, adjustable trip and differential trip, standard NEMA Class 20 overload relays or the Class 10/20/30 electronic overload relay.
4. Product notes
   Fuse clips are sized for dual element time-delay fuses. Order heaters by complete product number.



Typical CR340 and CR341, NEMA sizes 1–6

Pumping panels

CR340 thermal magnetic breaker and instantaneous trip circuit breaker with thermal overload relay

Includes complete starter with circuit breaker, H-O-A selector switch, start pushbutton and three-leg ambient compensated overload protection in type 3R enclosure with manual reset. Horsepower ratings are based on standard NEC motor data and normal service conditions. All forms are UL listed and CSA certified.

The following tables contain common product numbers. Use the selection guide starting on page 222 to select other configurations.

Thermal magnetic circuit breaker type

Coil voltage (60 Hz)[1]	NEMA size	Max. horsepower (3-phase)	CB rating (amps)	NEMA type 3R narrow Product number	NEMA type 3R wide Product number
230–240	1	2	15	CR340K013AAA1AA	CR340C013AAA1AA
230–240	1	3	20	CR340K013BAA1AA	CR340C013BAA1AA
230–240	1	5	40	CR340K013FAA1AA	CR340C013FAA1AA
230–240	1	7½	50	CR340K013HAA1AA	CR340C013HAA1AA
230–240	2	10	50	CR340L013HAA1AA	CR340D013HAA1AA
230–240	2	15	70	CR340L013KAA1AA	CR340D013KAA1AA

[1]50 Hz forms are available. Contact nearest ABB Representative for proper selection.
For pump panel without overload, change 8th digit in product number from "1" to "4."

Instantaneous trip circuit breaker type

Coil voltage (60 Hz)[1]	NEMA size	Max. horsepower (3-phase)	CB rating (amps)	NEMA type 3R narrow Product number	NEMA type 3R wide Product number
230–240	1	3	15	CR340K213CAC1AA	CR340C213CAC1AA
230–240	1	7½	30	CR340K213DAC1AA	CR340C213DAC1AA
230–240	2	15	50	CR340L213EAC1AA	CR340D213EAC1AA
230–240	3	30	100	–	CR340E213FAC1AA
230–240	4	50	150	–	CR340F213GAC1AA
230–240	5	100	400	–	CR340G213HAC1AA
460–480	1	7½	15	CR340K214CAC1AA	CR340C214CAC1AA
460–480	1	10	30	CR340K214DAC1AA	CR340C214DAC1AA[2]
460–480	2	25	50	CR340L214EAC1AA	CR340D214EAC1AA[2]
460–480	3	50	100	–	CR340E214FAC1AA[2]
460–480	4	100	150	–	CR340F214GAC1AA[2]
460–480	5	200	400	–	CR340G214HAC1AA
460–480	6	400	600	–	CR340H214KAD1AA

For pump panel without overload, change 8th digit in product number from "1" to "4."
Example: CR340K013AAA1AA becomes CR340K043AAA1AA.
[1]50 Hz forms are available. Contact nearest ABB Representative for proper selection.
[2]Available with CL-type current limiter and UL listed 100 kA/C short-circuit rating; contact an ABB Representative for availability. The 7th digit in the product number changes to "3."

General note:
Control circuit fusing included for instantaneous trip circuit breaker type.

Pumping panels

CR340 instantaneous trip circuit breaker with solid-state electronic overload relay

With solid-state overload relay
Solid-state Class 10-20-30 electronic overload with adjustable setting

Includes complete starter with a instantaneous trip circuit breaker disconnect, H-O-A selector switch, start pushbutton and overload in a type 3R enclosure with manual reset. Horsepower ratings are based on standard NEC motor data and normal service conditions. Note: See pages 196–198 for detailed information on electronic overload relays.

The following tables contain common product numbers. Use the selection guide starting on page 222 to select other configurations.

Instantaneous trip circuit breaker type solid-state Class 10-20-30 electronic overload

NEMA size	Max. horsepower (3-phase) at 230–240 V	Max. horsepower (3-phase) at 440–480 V	Max. CB rating (amps)	Overload range (amps)	NEMA type 3R narrow Product number	NEMA type 3R wide Product number
1	–	–	3	0.4–0.85	CR340K2X*CAC1AAC	CR340C2X*AAC1AAC
1	–	0.75	3	0.8–1.7	CR340K2X*CAC1AAD	CR340C2X*AAC1AAD
1	0.75	2	7	1.6–3.4	CR340K2X*CAC1AAE	CR340C2X*BAC1AAE
1	2	3	7	3.2–6.8	CR340K2X*CAC1AAF	CR340C2X*BAC1AAF
1	3	7.5	7	6.5–13.5	CR340K2X*CAC1AAG	CR340C2X*BAC1AAG
1	7.5	10	30	13–27	CR340K2X*DAC1AAH	CR340C2X*DAC1AAH
2	3	7.5	30	6.5–13.5	CR340L2X*DAC1AAG	CR340D2X*DAC1AAG
2	7.5	20	50	13–27	CR340L2X*EAC1AAH	CR340D2X*EAC1AAH
2	15	25	50	25–50	CR340L2X*EAC1AAJ	CR340D2X*EAC1AAJ
3	10	25	50	17–35	–	CR340E2X*EAC1AAK
3	25	50	100	35–70	–	CR340E2X*FAC1AAL
3	30	–	100	65–90	–	CR340E2X*FAC1AAM
4	10	25	100	17–35	–	CR340F2X*FAC1AAK
4	25	50	100	35–70	–	CR340F2X*FAC1AAL
4	50	100	150	65–135	–	CR340F2X*GAC1AAM
5	50	100	150	65–135	–	CR340G2X*GAC1AAP
5	100	200	400	130–270	–	CR340G2X*HAC1AAQ
6	100	200	400	130–270	–	CR340H2X*FAD1AAS
6	200	400	600	260–540	–	CR340H2X*GAD1AAT

*Insert number from coil table below in place of asterisk in product number for voltage/frequency desired.

***Coil table**
(To complete product number)

Coil number	Voltage	Frequency
1	200–208 V	60 Hz
3	230–240 V	60 Hz
4	460–480 V	60 Hz
5	575–600 V	60 Hz
6	380–415 V	50 Hz

- NEMA sizes 1–3 rated 5,000 rms symmetrical amperes maximum.
- NEMA sizes 4 and 5 rated 10,000 rms symmetrical amperes maximum.

General note:
Control circuit fusing included for instantaneous trip circuit breaker type.

Pumping panels

CR341 fusible disconnect with thermal overload relay

With thermal overload relay
Thermal class 20 (fuses not included except where footnoted)

Fusible disconnect
Includes complete starter with fusible switch, H-O-A selector switch, start pushbutton and three-leg ambient compensated overload protection in type 3R enclosure. Three heaters should be ordered as separate items. See table on the following pages. Fuses are not included except where footnoted.

The following tables contain common product numbers. Use the selection guide starting on page 222 to select other configurations.

Class H fuse clips

Coil voltage (60 Hz)	NEMA size	Horsepower	Fuse clip rating (amps)	NEMA type 3R narrow Product number	NEMA type 3R wide Product number
230–240	1	7½	30	CR341K013BAA1AA	CR341C013BAA1AA
230–240	2	15	60	CR341L013CAA1AA	CR341D013CAA1AA
230–240	3	20	60	–	CR341E013CAA1AA
230–240	3	30	100	–	CR341E013DAA1AA
230–240	4	50	200	–	CR341F013EAC1AA
230–240	5	60	200	–	CR341G013EAC1AA
230–240	5	100	400	–	CR341G013FAC1AA
460–480	2	10	30	CR341K014BAA1AA	CR341C014BAA1AA
460–480	2	15	30	CR341L014BAA1AA	CR341D014BAA1AA
460–480	2	25	60	CR341L014CAA1AA	CR341D014CAA1AA
460–480	3	30	60	–	CR341E014CAA1AA
460–480	3	50	100	–	CR341E014DAA1AA
460–480	4	60	100	–	CR341F014DAA1AA
460–480	4	100	200	–	CR341F014EAC1AA
460–480	5	125	200	–	CR341G014EAC1AA
460–480	5	200	400	–	CR341G014FAC1AA
460–480	6	400	600	–	CR341H014GAD1AA

For pump panel without overload, change 8th digit in product number from “1” to “4.”

Class R fuse clips

Coil voltage (60 Hz)	NEMA size	Horsepower	Fuse clip rating (amps)	NEMA type 3R narrow Product number	NEMA type 3R wide Product number
230–240	1	7½	30	CR341K113BAA1AA	CR341C113BAA1AA
230–240	2	15	60	CR341L113CAA1AA	CR341D113CAA1AA
230–240	3	20	60	–	CR341E113CAA1AA
230–240	3	30	100	–	CR341E113DAA1AA
230–240	4	50	200	–	CR341F113EAC1AA[1]
230–240	5	60	200	–	CR341G113EAC1AA[1]
230–240	5	100	400	–	CR341G113FAC1AA[1]
460–480	1	10	30	CR341K114BAA1AA	CR341C114BAA1AA
460–480	2	15	30	CR341L114BAA1AA	CR341D114BAA1AA
460–480	2	25	60	CR341L114CAA1AA	CR341D114CAA1AA
460–480	3	30	60	–	CR341E114CAA1AA
460–480	3	50	100	–	CR341E114DAA1AA
460–480	4	60	100	–	CR341F114DAA1AA
460–480	4	100	200	–	CR341F114EAC1AA[1]
460–480	5	125	200	–	CR341G114EAC1AA[1]
460–480	5	200	400	–	CR341G114FAC1AA[1]

For pump panel without overload, change 8th digit in product number from “1” to “4.”
[1]Control circuit fusing included.

Pumping panels

CR341 fusible disconnect with solid-state electronic overload relay

With solid-state overload relay
Solid-state Class 10-20-30 electronic overload with adjustable setting

Includes complete starter with fusible switch (Class H clips), H-O-A selector switch, start pushbutton and overload in a type 3R enclosure with manual reset. Horsepower ratings are based on standard NEC motor data and normal service conditions. Note: See section 3 of this catalog for detailed information on electronic overload relays.

The following tables contain common product numbers. Use the selection guide starting on page 222 to select other configurations.

Class H fuse clips

NEMA size	Max. horsepower (3-phase) at 230–240 V	Max. horsepower (3-phase) at 440–480 V	Fuse clip rating (amps)	Max. fuse rating (amps)	Overload range (amps)	NEMA type 3R narrow Product number	NEMA type 3R wide Product number
1	–	–	30	3	0.4–0.85	CR341K0X*BAA1AAC	CR306341C0X*BAA1AAC
1	–	0.75	30	6	0.8–1.7	CR341K0X*BAA1AAD	CR306341C0X*BAA1AAD
1	0.75	2	30	10	1.6–3.4	CR341K0X*BAA1AAE	CR306341C0X*BAA1AAE
1	2	3	30	25	3.2–6.8	CR341K0X*BAA1AAF	CR306341C0X*BAA1AAF
1	3	7.5	30	30	6.5–13.5	CR341K0X*BAA1AAG	CR306341C0X*BAA1AAG
1	7.5	10	30	30	13–27	CR341K0X*BAA1AAH	CR306341C0X*BAA1AAH
2	3	7.5	30	30	6.5–13.5	CR341L0X*BAA1AAG	CR306341D0X*BAA1AAG
2	7.5	20	60	60	13–27	CR341L0X*CAA1AAH	CR306341D0X*CAA1AAH
2	15	25	60	60	25–50	CR341L0X*CAA1AAJ	CR306341D0X*CAA1AAJ
3	10	25	60	50	17–35	–	CR306341E0X*CAC1AAK[3]
3	25	50	60	60	35–70	–	CR306341E0X*CAC1AAL[3]
3	30	–	60	60	65–90	–	CR306341E0X*CAC1AAM[3]
4	10	25	200	200	17–35	–	CR306341F0X*EAC1AAK[3]
4	25	50	200	200	35–70	–	CR306341F0X*EAC1AAL[3]
4	50	100	200	200	65–135	–	CR306341F0X*EAC1AAM[3]
5	50	100	200	200	65–135	–	CR306341G0X*EAC1AAP[3]
5	100	200	400	400	130–270	–	CR306341G0X*FAC1AAQ[3]
6	100	200	600	600	130–270	–	CR306341H0X*GAD1AAS[3]
6	200	400	1200	1200	260–540	–	CR306341H0X*LAD1AAT[3]

* Insert number from coil table on next page in place of asterisk in product number for voltage/frequency desired.
• NEMA sizes 1–3 rated 5,000 rms symmetrical amperes maximum.
• NEMA sizes 4 and 5 rated 10,000 rms symmetrical amperes maximum.
[2]50 Hz forms are available. Contact nearest ABB Representative for proper selection.
[3]Control circuit fusing included.

Pumping panels

CR341 fusible disconnect with solid-state electronic overload relay

With solid-state overload relay
Solid-state Class 10-20-30 electronic overload with adjustable setting

Includes complete starter with fusible switch (Class H clips), H-O-A selector switch, start pushbutton and overload in a type 3R enclosure with manual reset. Horsepower ratings are based on standard NEC motor data and normal service conditions. Note: See section 3 of this catalog for detailed information on electronic overload relays.

The following tables contain common product numbers. Use the selection guide starting on page 222 to select other configurations.

Class R fuse clips

NEMA size	Max. horsepower (3-phase) at 230–240 V	Max. horsepower (3-phase) at 440–480 V	Fuse clip rating (amps)	Max. fuse rating (amps)	Overload range (amps)	NEMA type 3R narrow Product number	NEMA type 3R wide Product number
1	–	–	30	3	0.4–0.85	CR341K1X*BAA1AAC	CR341C1X*BAA1AAC
1	–	0.75	30	6	0.8–1.7	CR341K1X*BAA1AAD	CR341C1X*BAA1AAD
1	0.75	2	30	10	1.6–3.4	CR341K1X*BAA1AAE	CR341C1X*BAA1AAE
1	2	3	30	25	3.2–6.8	CR341K1X*BAA1AAF	CR341C1X*BAA1AAF
1	3	7.5	30	30	6.5–13.5	CR341K1X*BAA1AAG	CR341C1X*BAA1AAG
1	7.5	10	30	30	13–27	CR341K1X*BAA1AAH	CR341C1X*BAA1AAH
2	3	7.5	30	30	6.5–13.5	CR341L1X*BAA1AAG	CR341D1X*BAA1AAG
2	7.5	20	60	60	13–27	CR341L1X*CAA1AAH	CR341D1X*CAA1AAH
2	15	25	60	60	25–50	CR341L1X*CAA1AAJ	CR341D1X*CAA1AAJ
3	10	25	60	50	17–35	–	CR341E1X*CAC1AAK
3	25	50	60	60	35–70	–	CR341E1X*CAC1AAL
3	30	–	60	60	65–90	–	CR341E1X*CAC1AAM
4	10	25	200	200	17–35	–	CR341F1X*EAC1AAK
4	25	50	200	200	35–70	–	CR341F1X*EAC1AAL
4	50	100	200	200	65–135	–	CR341F1X*EAC1AAM
5	50	100	200	200	65–135	–	CR341G1X*EAC1AAP
5	100	200	400	400	130–270	–	CR341G1X*FAC1AAQ

* Insert number from coil table below in place of asterisk in product number for voltage/frequency desired.

***Coil table**
(To complete product number)

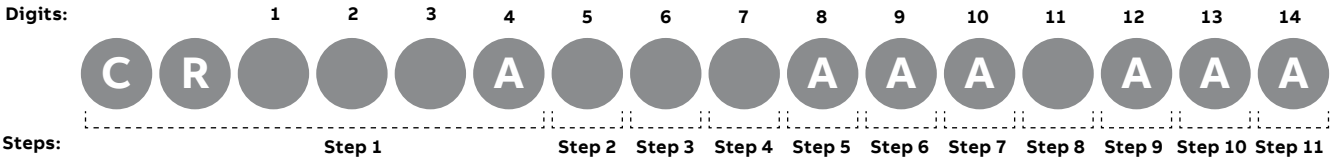
Coil number[1]	Voltage	Frequency
1	200–208 V	60 Hz
3	230–240 V	60 Hz
4	460–480 V	60 Hz
5	575–600 V	60 Hz
6	380–415 V	50 Hz

• NEMA sizes 1–3 rated 5,000 rms symmetrical amperes maximum.
• NEMA sizes 4 and 5 rated 10,000 rms symmetrical amperes maximum.
[1]Horsepower ratings are based on standard NEC motor data and normal service conditions.

Pumping panels

CR340, CR341 pump panel nomenclature

Part number configuration
Valid for NEMA sizes 1–5



To configure the part number, use the tables below to fill in the digit boxes with the appropriate code.

Step 1 (digits 1–3) select product line code

Code	Option
340	Pump panel circuit breaker and instantaneous trip circuit breaker forms
341	Pump panel fused and non-fused disconnect forms

Step 1 (digit 4) select NEMA size

Code	Option
C	Size 1, wide
D	Size 2, wide
E	Size 3, wide
F	Size 4, wide
G (13)	Size 5, wide
H (13)(10)	Size 6, standard
K (1)	Size 1, narrow
L (1)	Size 2, narrow

Step 2 (digit 5) select disconnect means

Code	Option
0	Standard IC rating (class H fuse clips / thermal CB)
1	Higher IC rating (class R fuse clips / hi-break thermal CB)
2 (11)	instantaneous trip circuit breaker standard IC rating (CR340 only)
3 (11)	instantaneous trip circuit breaker higher IC rating (CR340 only)

Step 3 (digit 6) select overloads

Code	Option
1	Class 20 NEMA ambient compensated [thermal overload]
4 (11)	No overloads
X	Class 10-20-30 solid-state overload (not available for NEMA size 6 and 7)
Y (1)	Panel-mount class 10-20-30 solid-state (not available for NEMA size 5 and above)

Step 4 (digit 7) select line voltage

Code	Option
1	200–208 V
3	230–240 V
4	460–480 V
5	575–600 V

Pumping panels

CR340, CR341 pump panel nomenclature

Part number configuration
Valid for NEMA sizes 1–5

Step 5 (digit 8) select disconnect

Table A: Thermal circuit breaker trips (CR340 only)

	200–208 V	230–240 V	460–480 V	575–600 V	200–208 V	230–240 V	460–480 V	575–600 V	200–208 V	230–240 V	460–480 V	575–600 V	200–208 V	230–240 V	460–480 V	575–600 V	200–208 V	230–240 V	460–480 V	575–600 V	200–208 V	230–240 V	460–480 V	575–600 V
Trip	**NEMA size – 1**				**NEMA size – 2**				**NEMA size – 3**				**NEMA size – 4**				**NEMA size – 5**				**NEMA size – 6**			
A			15	15													200	200	200	200	300	300	300	300
C	25	25	25	25													250	250	250	250	400	400	400	400
D																	300	300	300	300				
F	40	40			40	40	40	40					200	200	200	200	400	400	400	400	600	600	600	600
H																					800	800	800	800
J					60	60	60	60			60	60												
N									100	100	100	100			100	100								
R									125	125			125	125										

Table B: Tmax® XT instantaneous trip circuit breaker trips (CR340 only)

																					Amperage ratings				
	200–208 V	230–240 V	460–480 V	575–600 V	200–208 V	230–240 V	460–480 V	575–600 V	200–208 V	230–240 V	460–480 V	575–600 V	200–208 V	230–240 V	460–480 V	575–600 V	200–208 V	230–240 V	460–480 V	575–600 V	200–208 V	230–240 V	460–480 V	575–600 V	Trip range
Code	**NEMA size – 1**				**NEMA size – 2**				**NEMA size – 3**				**NEMA size – 4**				**NEMA size – 5**				**NEMA size – 6**				
A	3	3	3	3																					
B	7	7	7	7																					
C	15	15	15	15	15	15	15	15																	
D	30	30	30	30	30	30	30	30	30	30	30	30													
E					50	50	50	50	50	50	50	50	50	50	50	50									
F									100	100	100	100	100	100	100	100									
G													150	150	150	150									
H																	200	200	200	200					550-1670
J																	250	250	250	250					1000-3300
K																	300	300	300	300	300	300	300	300	1800-6000
M																	350	350	350	350	350	350	350	350	3000-6000
N																	400	400	400	400	400	400	400	400	5000-10000
P																					600	600	600	600	
Q																					800	800	800	800	

Pumping panels

CR340, CR341 pump panel nomenclature

Part number configuration
Valid for NEMA sizes 1–5

Table C: Fusible disconnect switch fuse clip sizes (CR341 only)

	Size					
Code	**1**	**2**	**3**	**4**	**5**	**6[14]**
A[12]						Disconnect switch less fuse clips
B	30	30				
C	60	60	60			
D		100	100	100		
E				200	200	
F					400	
G						600
H						800
J						1000
L						1200
M						
N						

Table D: Class 10-20-30 electronic overload

	Size						
Code	**1**	**2**	**3**	**4**	**5**	**6**	**7**
C	0.4–0.85						Not available for NEMA size 7
D	0.8–1.7						
E	1.6–3.4						
F	3.2–6.8						
G	6.5–13.5	6.5–13.5					
H	13–27	13–27					
J		25–50					
K			17–35	17–35			
L			35–70	35–70			
M			65–90	65–135			
P					65–135		
Q					130–270	130–270	
T						260–540	

Pumping panels

CR340, CR341 pump panel nomenclature

Part number configuration
Valid for NEMA sizes 1–5

Step 6 (digit 9) select timer options

Code	Option
A [6]	Hand-off-auto (HOA), start (black) pushbutton (standard)
B	Hand-off-auto (HOA)
C [7][5][4]	Program timer with mini door
D [7][5]	Program timer
E [7][5]	Back spin timer
K	Start (black) - stop (red) pushbutton
L [7][5][3]	Program timer, no added features

Step 7 (digit 10) select control circuit fusing

code	Option
A [9]	None (standard)
B [8]	Separate control 120 V
C	Control circuit fusing (CCF)
D	CCF, separate control 120 V
E [5]	CCF, control power transformer (CPT)
F [5]	CCF, CPT 100 VA extra

Step 8 (digit 11) select relay protection

Code	Option
1	None (standard)
3 [5]	Light arrestor
5 [5]	Light arrestor, surge capacitor
7 [5]	Surge capacitor

Step 9 (digit 12) select accessories

code	Option
A	None (standard)
B	Unwired control circuit
D [2]	Elapsed time meter (wired across coil) — mounted on door
E [5]	Space heater (wired through NC contact)
F	1 NO auxiliary (extra)
G	2 NO auxiliary (extra)
H	1 NC auxiliary (extra)
J	2 NC auxiliary (extra)
K	1 NO and 1 NC auxiliary (extra)
L [5]	Red and green indicating light (motor on and off)
N [5]	Red indicating light (motor on)
P [5]	Auxiliary relay (2 NO, 2 NC)
S [5][2]	Elapsed time meter with NO contact — mounted on door

Pumping panels

CR340, CR341 pump panel nomenclature

Part number configuration
Valid for NEMA sizes 1–5

Step 10 (digit 13) select relay type

Code	Option
A	None (standard)
B [5]	Under-voltage relay
C [5]	Under-voltage relay and phase failure relay
D [5]	Phase failure relay

Step 11 (digit 14) select overload range

	Size						
Code	1	2	3	4	5	6	7
C	0.4–0.85						Not available for NEMA size 7
D	0.8–1.7						
E	1.6–3.4						
F	3.2–6.8						
G	6.5–13.5	6.5–13.5					
H	13–27	13–27					
J		25–50					
K			17–35	17–35			
L			35–70	35–70			
M			65–90	65–135			
P					65–135		
Q					130–270	130–270	
T						260–540	

Notes
(1) Panel-mount EOL (option Y under overloads: digit 6) is not available for narrow size pump panels (options K and L under NEMA size - digit 4)
(2) Not available with line voltages options 4, 5, 6 and 9
(3) Not available with line voltages options 5, 6 and 9
(4) Not available with line voltages options 6 and 9
(5) Not available with NEMA size options K and L
(6) HOA and start pushbuttons are offered as standard with options C, D, E and L
(7) Extra capacity CPT required
(8) CCF is not included with this option
(9) CCF is included when
a. Fuse clip size is more than 100 amps (option E and above)
b. Mag. only circuit breaker is more than 7 amps (option C and above)
c. Thermal magnetic circuit breaker is more than 100 amps (option P through S and A through K for size 4 through 7)
(10) instantaneous trip circuit breaker options 2 and 3 under digit 5 Disconnect means is not available with No overload option 4 under digit 6 Overloads selection
(11) Higher IC ratings [digit 5] option 1 is not valid when protector rating [digit 8] equals option A Disconnect switch less fuse clips
(12) NEMA Size 5 and 6 are labeled under UL 508A
(13) Class L fuses will be provided for disconnects above 600 amps

Pumping panels

CR123 heaters for CR340/CR341 pump panels

Class 20 overload heaters

For use with polyphase motors. For continuous rated motors with a service factor of 1.15 to 1.25, select heaters from the heater table for the motor full-load amperes. This provides a maximum of 125% protection. For continuous rated motors with 1.0 service factor, multiply the full-load amperes of the motor by 0.90 and use this value to select heaters.

Ordering information

All heaters listed are packaged in multiples of three. Items of these heaters should be ordered in quantities of three-unit multiples (such as 3, 6, 9, 12, etc.). The minimum order quantity is three.

Example: (For motors with FLA of 9.28)

Item 1: (2) CR341D013C for 2 motors.

Item 1A: (6) CR123C104B for starters.

Size 1 — Class 20 overload relay heaters

Motor full-load amps				
3-phase 3 heaters	Heater product number	Max. fuse rating (A)	Max. breaker rating (A)	TEC/TECL rating
0.41–0.45	CR123C054A	3	–	–
0.46–0.49	CR123C060A	3	15	–
0.50–0.53	CR123C066A	3	15	–
0.54–0.59	CR123C071A	3	15	–
0.60–0.65	CR123C078A	3	15	–
0.66–0.76	CR123C087A	3	15	3
0.77–0.84	CR123C097A	3	15	3
0.85–0.93	CR123C109A	3	15	3
0.94–1.04	CR123C118A	3	15	3
1.05–1.15	CR123C131A	3	15	3
1.16–1.27	CR123C148A	3	15	3
1.28–1.39	CR123C163A	3	15	3
1.40–1.55	CR123C184A	6	15	3
1.56–1.73	CR123C196A	6	15	3
1.74–1.89	CR123C220A	6	15	3
1.90–2.05	CR123C239A	6	15	3
2.06–2.28	CR123C268A	6	15	3
2.29–2.47	CR123C301A	6	15	3
2.48–2.79	CR123C326A	10	15	7
2.80–3.31	CR123C356A	10	15	7
3.32–3.70	CR123C379A	10	15	7
3.71–4.06	CR123C419A	15	15	7
4.07–4.47	CR123C466A	15	15	7
4.48–4.95	CR123C526A	15	15	7
4.96–5.49	CR123C592A	20	20	7
5.50–5.91	CR123C630A	20	20	7
5.92–6.47	CR123C695A	25	20	15
6.48–7.20	CR123C778A	25	20	15
7.21–8.22	CR123C867A	30	30	15
8.23–8.72	CR123C955A	30	30	15
8.73–9.67	CR123C104B	35	30	15
9.68–10.4	CR123C113B	35	30	15
10.5–11.0	CR123C125B	40	40	15
11.1–12.4	CR123C137B	45	40	15
12.5–13.2	CR123C151B	50	50	15, 30
13.3–15.4	CR123C163B	60	50	30
15.5–17.1	CR123C180B	60	50	30
17.2–18.1	CR123C198B	70	50	30
18.2–20.0	CR123C214B	70	50	30
20.1–21.5	CR123C228B	80	50	30
21.6–22.5	CR123C250B	80	70	30
22.6–23.9	CR123C273B	80	70	30
24.0–26.3	CR123C303B	90	70	30, 50
26.4–27.0	CR123C330B	90	70	50

Size 2 — Class 20 overload relay heaters

Motor full-load amps				
3-phase 3 heaters	Heater product number	Max. fuse rating (A)	Max. breaker rating (A)	TEC/TECL rating
5.48–5.85	CR123C630A	20	–	–
5.86–6.47	CR123C695A	20	–	–
6.48–7.35	CR123C778A	25	–	–
7.36–8.06	CR123C867A	30	–	–
8.07–9.03	CR123C955A	30	–	–
9.04–9.61	CR123C104B	35	30	15
9.62–10.5	CR123C113B	35	30	15
10.6–11.6	CR123C125B	40	40	15
11.7–12.5	CR123C137B	45	40	15
12.6–13.6	CR123C151B	50	50	15
13.7–16.7	CR123C163B	60	50	30
16.8–17.9	CR123C180B	60	50	30
18.0–18.7	CR123C198B	70	70	30
18.8–20.4	CR123C214B	80	70	30
20.5–22.7	CR123C228B	80	70	30
22.8–24.7	CR123C250B	90	70	30
24.8–26.3	CR123C273B	90	70	30
26.4–29.5	CR123C303B	100	100	30, 50
29.6–32.5	CR123C330B	100	100	50
32.6–36.7	CR123C366B	100	100	50
36.8–41.9	CR123C400B	100	100	50
42.0–43.2	CR123C440B	100	100	50
43.3–45.0	CR123C460B	100	100	–

Pumping panels

CR123 heaters for CR340/CR341 pump panels

Class 20 overload heaters (continued)

Size 3 — standard or ambient compensated Class 20 overload relay heaters

Motor full-load amps				
3-phase 3 heaters	Heater product number	Max. fuse rating (A)	Max. breaker rating (A)	TEC/TECL rating (A)
17.4–18.4	CR123F233B	70	70	30
18.5–21.1	CR123F243B	80	70	30
21.2–22.1	CR123F270B	80	70	30
22.2–26.1	CR123F300B	90	70	30
26.2–28.0	CR123F327B	100	100	50
28.1–31.3	CR123F357B	100	100	50
31.4–33.3	CR123F395B	100	100	50
33.4–34.3	CR123F430B	100	100	50
34.4–40.9	CR123F487B	100	100	50
41.0–44.7	CR123F567B	100	100	50, 100
44.8–51.0	CR123F614B	100	125	100
51.1–52.0	CR123F658B	100	125	100
52.1–55.4	CR123F719B	100	125	100
55.5–63.3	CR123F772B	100	150	100
63.4–66.1	CR123F848B	100	150	100
66.2–73.5	CR123F914B	100	150	100
73.6–82.2	CR123F104C	100	150	100
82.3–90.0	CR123F114C	100	150	100

Size 4 — Class 20 overload relay heaters

Motor full-load amps				
3-phase 3 heaters	Heater product number	Max. fuse rating (A)	Max. breaker rating (A)	TEC/TECL rating (A)
28.8–31.1	CR123F357B	110	100	50
31.2–33.3	CR123F395B	125	100	50
33.4–35.6	CR123F430B	125	100	50
35.7–42.6	CR123F487B	150	100	50, 100
42.7–45.2	CR123F567B	175	125	50, 100
45.3–51.1	CR123F614B	175	150	100
51.2–53.9	CR123F658B	200	150	100
54.0–56.9	CR123F719B	200	150	100
57.0–65.2	CR123F772B	200	175	100
65.3–68.6	CR123F848B	200	200	100
68.7–74.0	CR123F914B	200	200	100
74.1–86.0	CR123F104C	200	200	100, 150
86.1–90.7	CR123F114C	200	225	150
90.8–103	CR123F118C	200	225	150
104–109	CR123F133C	200	225	150
110–119	CR123F149C	200	225	150
120–131	CR123F161C	200	225	150
132–135	CR123F174C	200	225	150

Size 5 — Class 20 overload relay heaters

Motor full-load amps			
3-phase 3 heaters	Heater product number	Max. fuse rating (A)	Max. circuit rating (A)
109–118	CR123C592A	400	600
119–128	CR123C630A	400	600
129–138	CR123C695A	400	600
139–155	CR123C778A	400	600
156–168	CR123C867A	400	600
169–184	CR123C955A	400	600
185–200	CR123C104B	400	600
201–221	CR123C113B	400	600
222–237	CR123C125B	400	600
238–262	CR123C137B	400	600
263–270	CR123C151B	400	600

Size 6 — Class 20 overload relay heaters

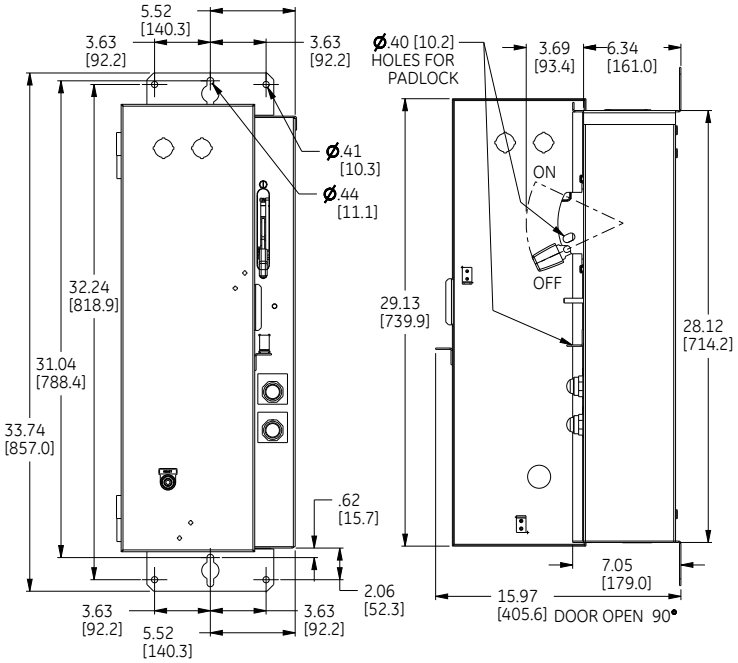
Motor full-load amps	
3-phase 3 heaters	Heater product number
181–197	CR123C220A
198–214	CR123C239A
215–238	CR123C268A
239–258	CR123C301A
259–290	CR123C326A
291–346	CR123C356A
347–387	CR123C379A
388–424	CR123C419A
425–467	CR123C466A
468–516	CR123C526A
517–540	CR123C592A

Size 7 — Class 20 overload relay heaters

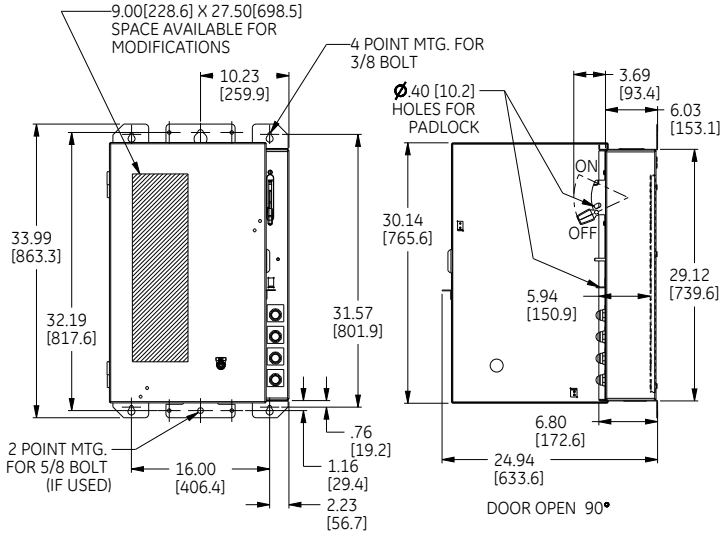
Motor full-load amps	
3-phase 3 heaters	Heater product number
346–387	CR123C326A
388–461	CR123C356A
462–515	CR123C379A
516–565	CR123C419A
566–622	CR123C466A
623–688	CR123C526A
689–763	CR123C592A
764–810	CR123C630A

Pumping panels

CR340, CR341 dimension drawings



CR340, CR341 NEMA sizes 1 and 2 narrow-type enclosures; 32 lbs. (size 1), 47 lbs. (size 2)

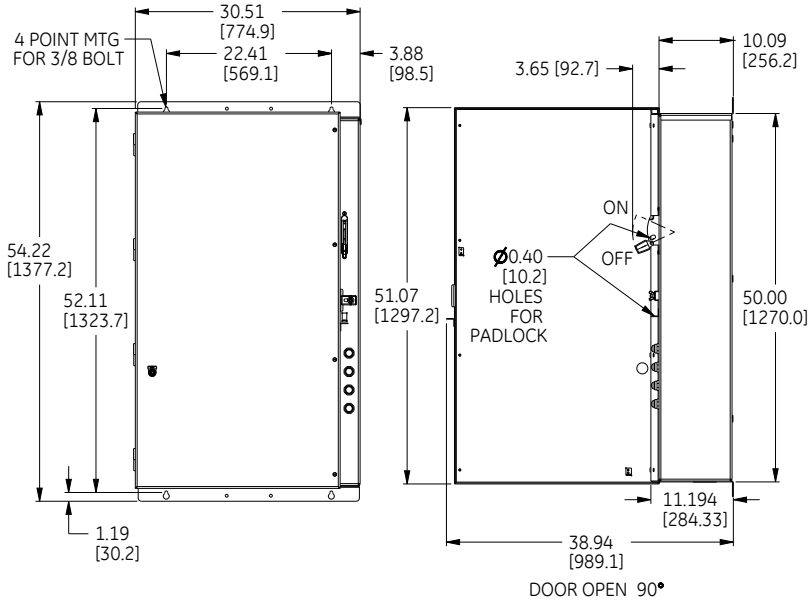


CR340, CR341 NEMA sizes 1 and 2 wide-type enclosures; 85 lbs. (size 1), 90 lbs. (size 2)

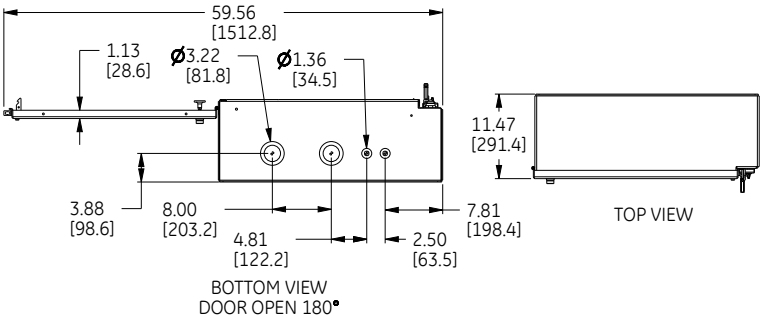
Outlines, dimensions ($\frac{\text{in.}}{\text{mm}}$) and weights (for estimating only)

Pumping panels

CR340, CR341 dimension drawings



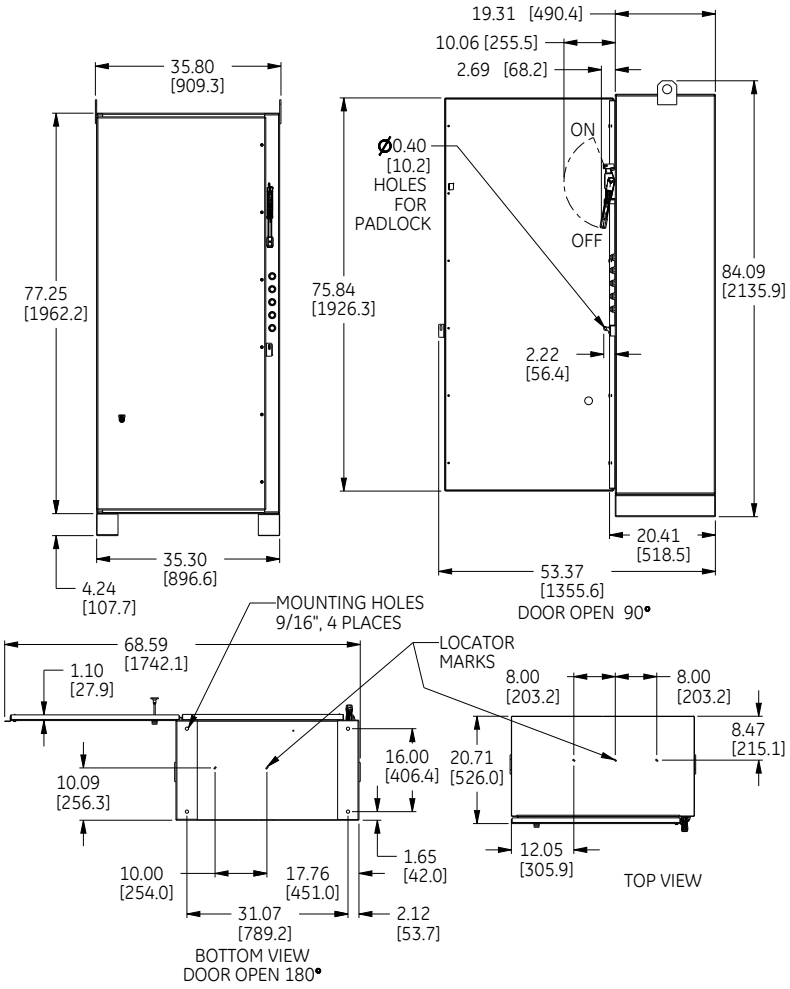
CR340, CR341 NEMA sizes 3 and 4 wide-type enclosures; 195 lbs.



CR340, CR341 NEMA size 5 wide-type enclosures; 285 lbs.

Pumping panels

CR340, CR341 dimension drawings



CR340, CR341 NEMA sizes 6 and 7 wide-type enclosures; 1,200 lbs. (size 6), 1,300 lbs. (size 7)

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