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Definite Purpose Contactors & Starters

Contents

Description	*Page*
Product Family Overview	
Application Description	35-2
Catalog Number Selection	35-2
Contactors	
20 – 40A, Compact 1- and 2-Pole — C25	35-3
15 – 360A, 2-, 3- and 4-Pole — C25	35-5
15 – 360A, Options and Accessories	35-7
15 – 40A, 3-Pole Fuse Block	35-9
15 – 75A, Reversing and 2-Speed — C65	35-10
Starters	
25 – 60A, Single and Three-Phase — A25, B25	35-11
Overload Relay and Accessories	35-13
Heater Packs — Class 10 and Class 20	35-14
15 – 45A, Single and Three-Phase — A27, B27	35-15
Overload Relay Specifications	35-18
15 – 75A, Single and Three-Phase — A29, B29	35-20
NEMA Type 1 Enclosed Control	
15 – 60A Contactors — C25	35-26
25 – 60A Starters — A25, B25	35-27
15 – 45A Starters — A27, B27	35-28
Dimensions	35-29
Renewal Parts	35-32
Technical Data and Specifications	35-35
Contactors — Heavy-Duty Special Purpose	35-36
Contactors — Direct Current	35-39



Definite Purpose Contactors & Starters

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Application Description

These Cutler-Hammer® ampere and horsepower rated devices from Eaton's electrical business are designed for service in applications such as Refrigeration, Air Conditioning and Resistance Heating and are manufactured to traditional Cutler-Hammer standards for quality and reliability. They are subjected to stringent quality assurance inspections and testing procedures. The life expectancy, both electrical and mechanical, will meet or exceed industry performance requirements for Definite Purpose devices.

If more detailed technical information is required — specifications, ratings, etc. — contact your local Eaton distributor or sales office.

Catalog Number Selection

Table 35-1. Definite Purpose Control Catalog Numbering System

C 25 D N A 2 15 A A 161 -84

Model
- **C** = Contactor
- **A** = Three-Phase Starter
- **B** = Single-Phase Starter

Type
- **25** = Non-reversing Contactors & Starters
- **27** = Non-reversing Starters
- **29** = Non-reversing Starters
- **65** = Reversing Contactors

Contactor Frame Size
- **A** = Compact 1-Pole
- **B** = Compact 2-Pole
- **C** = Compact 1-Pole W/Shunt
- **D** = 15 – 50A, 2- and 3-Pole
- **E** = 25 – 40A, 4-Pole
- **F** = 60 – 75A, 2- and 3-Pole
- **G** = 90A, 2- and 3-Pole
- **H** = 120A, 2- and 3-Pole
- **K** = 200 and 300A, 3-Pole
- **L** = 360A, 3-Pole

For Starters Only
- **C** = Common Control Wiring
- **S** = Separate Control Wiring

Enclosure Type
- **N** = Open with Metal Mounting Plate
- **R** = Open with DIN Rail Mounting Adapter (2- and 3-Pole, 15 – 50A Contactors Only)
- **G** = NEMA Type 1 Enclosed

Power Terminals
- **A** = Binding Head Screw
- **B** = Binding Head Screw and Quick Connect Terminals (side by side)
- **C** = Screw/Pressure Plate ①
- **D** = Screw/Pressure Plate and Quick Connect Terminals (side by side) ①
- **E** = Box Lugs (Posidrive Setscrew)
- **F** = Box Lugs (Posidrive Setscrew) and Quick Connect Terminals (side by side)
- **G** = Binding Head Screw and Quick Connect Terminals (vertical in-line)
- **H** = Screw/Pressure Plate and Quick Connect Terminals (vertical in-line) ①
- **J** = Box Lugs (Posidrive Setscrew) and Quick Connect Terminals (vertical in-line)
- **K** = Box Lugs (Hex Socket Allen Head Setscrew)
- **L** = Box Lugs (Hex Socket Allen Head Setscrew) and Quick Connect Terminals (side by side)
- **M** = Box Lugs (Hex Socket Allen Head Setscrew) and Quick Connect Terminals (vertical in-line)

① Not available on 50A devices.

No. of Poles
- **1** = 1-Pole
- **2** = 2-Pole
- **3** = 3-Pole
- **4** = 4-Pole

Current Rating

15 = 15A	**75** = 75A
25 = 25A	**90** = 90A
30 = 30A	**120** = 120A
40 = 40A	**200** = 200A
50 = 50A	**300** = 300A
60 = 60A	**360** = 360A

Coil Selection

A = 110 – 120V AC, 50/60 Hz	**R** = 12V AC, 50/60 Hz
B = 208 – 240V AC, 50/60 Hz	**T** = 24V AC, 50/60 Hz
C = 440 – 480V AC, 50/60 Hz	**1R** = 12V DC
D = 550 – 600V AC, 50/50 Hz	**1T** = 24V DC
H = 277V AC, 60 Hz	**1W** = 48V DC
J = 220 – 240 V AC, 50/60 Hz	**1A** = 120V DC
L = 380 – 415V AC, 50 Hz	

Auxiliary Contacts (Side Mount)
- **A** = 1NO Pressure Plate
- **B** = 1NC Pressure Plate
- **C** = 1NO-1NC Pressure Plate
- **D** = 2NO Pressure Plate
- **E** = 2NC Pressure Plate
- **F** = 1NO Pressure Plate and QC
- **G** = 1NC Pressure Plate and QC
- **H** = 1NO-1NC Pressure Plate and QC
- **J** = 2NO Pressure Plate and QC
- **K** = 2NC Pressure Plate and QC
- **L** = 1NO-1NC Snap Switch QC Only
- **M** = 2NO-2NC Snap Switch QC Only

Fuse Blocks
- **161** = Class M, 600V, 30A
- **237** = Class G, 300V, 15A
- **238** = Class G, 300V, 20A
- **231** = Class G, 300V, 30A
- **232** = Class G, 300V, 60A
- **361** = Class J, 600V, 30A
- **362** = Class J, 600V, 60A
- **431** = Class T, 300V, 30A
- **432** = Class T, 300V, 60A
- **461** = Class T, 600V, 30A
- **462** = Class T, 600V, 60A
- **521** = Class H, 250V, 30A
- **522** = Class H, 250V, 60A
- **621** = Class R, 250V, 30A
- **622** = Class R, 250V, 60A

Bulk Packaging
- **Blank** = individual pkg.
- **-84** = 20 pc./pkg. (C25D_) 50 pc./pkg. (C25A_, C25B_, C25C_)
- **-86** = Rotate coil terminals 180° for 15A – 50A Contactors

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Contents

Description	*Page*
Compact 1- and 2-Pole Contactors 20 – 40A	
Product Description	**35-3**
Standards and Certifications	**35-3**
Technical Data — Specifications	**35-3**
Options	**35-3**
Dimensions	**35-4**
Product Selection	**35-4**



Compact 2-Pole

Product Description

Cutler-Hammer® 20 – 40A, single- and double-pole, Type C25 contactors from Eaton's electrical business feature a compact, efficient design with a low VA coil and straight-through wiring. New contactor housing design effectively limits dust and other contaminants from magnet structure — reduces or eliminates noise. These economically priced, UL recognized/CSA certified, ampere rated devices are well suited for use in heating/air conditioning, refrigeration, data processing and food service applications.

Standards and Certifications

- UL Recognized Components: UL File Number E1491, Guides NLDX2 and NLDX8
- CSA Certified Components: CSA C22.2 No. 14-05, File Number 238083 Class 3211 84
- IEC 60947-4-1
- EN 60947-4-1
- ARI 780/790 Standard
- RoHS Compliance

RoHS COMPLIANT

35

Technical Data — Specifications

- Insulation Voltage: 690V
- Current Rated and hp/kW Rated
- Contacts: Double Break
- Magnet Coil: Class F, 155°C
- Contact Arc Covers are standard on all Contactors
- Standard Power Terminals —
  - 5/16" Hex Washer Head Screws
  - Quad (4) Quick Connect Terminals on all Line and Load Terminals
  - Box Lugs available as option
- Contactors are marked with Line and Load Terminal Designations
- Operating Temperature Range: -13 to 158°F (-25 to 70°C)
- Terminal Wire Range —
  - Hex Washer Head Screws: 16 – 10 AWG, 30 lb-in torque rating
  - Box Lugs: 16 – 10 AWG, 35 lb-in torque rating; 8 AWG, 40 lb-in torque rating; 6 – 4 AWG, 45 lb-in torque rating
- Mounting Position: Vertical, Horizontal or Tabletop

Table 35-2. Coil Characteristics

AC Coil Voltage 50/60 Hz	Max. Inrush VA	Max. Sealed VA	Max. Sealed Watts
One-Pole			
24	33	6	2
120	33	6	2
208/240	33	6	2
277	33	6	2
Two-Pole			
24	41	6.5	3
120	41	6.5	3
208/240	41	6.5	3
277	41	6.5	3
480	41	6.5	3

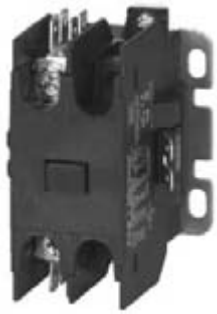
Options

Table 35-3. Compact Options — Factory Installed

Description	Adder U.S. $
Box lugs with quick connects for 20 – 40A contactors: 1-Pole 1-Pole with shunt 2-Pole To order replace letter in the 6th position of Catalog Number with letter **F**. EXAMPLE: C25BN**F**240A	

Discount Symbol **1CD-5C**

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Compact 1-Pole



Compact 1-Pole with Shunt



Compact 2-Pole

Product Selection

When Ordering Specify

- Catalog Number plus Magnet Coil Suffix
- Modify Catalog Number for any options required — see factory installed Options **Page 35-3**

Table 35-4. Catalog Numbering System

C25BNB230	A
Incomplete Catalog Number	Magnet Coil Suffix

Table 35-5. Compact Contactors Product Selection— Open Type

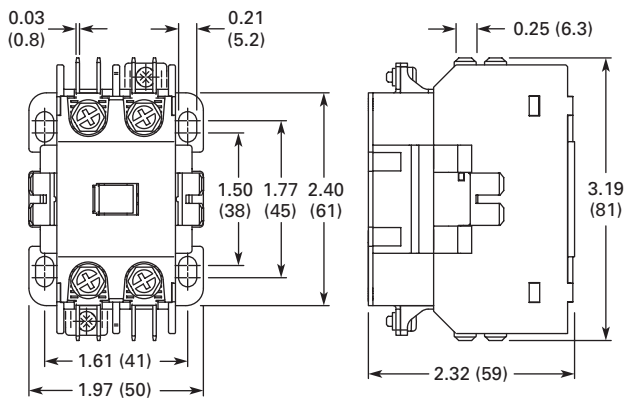
Ampere Ratings ①					Max. Motor Horsepower		Max. Motor Kilowatts		Catalog Number ②③	Price U.S. $
Inductive Full Load	Resistive	Locked Rotor								
		240 – 277V	480V	600V	115V	230V	115V	230V		
Single-Pole										
25	30	150	50	40	2	3	1.5	2.2	**C25ANB125_**	
30	40	150	75	50	2	5	1.5	3.7	**C25ANB130_**	
40	50	240	200	160	3	7-1/2	2.2	5.5	**C25ANB140_**	
Single-Pole with Shunt										
25	30	150	50	40	2	3	1.5	2.2	**C25CNB125_**	
30	40	150	75	50	2	5	1.5	3.7	**C25CNB130_**	
40	50	240	200	160	3	7-1/2	2.2	5.5	**C25CNB140_**	
Double-Pole										
20	30	120	100	80	1-1/2	3	1.1	2.2	**C25BNB220_**	
25	35	150	125	100	2	3	1.5	2.2	**C25BNB225_**	
30	40	150	125	100	2	5	1.5	3.7	**C25BNB230_**	
40	50	240	200	160	3	7-1/2	2.2	5.5	**C25BNB240_**	

① Rating per pole.
② Incomplete Catalog Number. Replace underscore (_) in Catalog Number with Coil Suffix letter from **Table 35-6**.
③ Bulk pack quantities are available in quantities of 50, contact local sales office.

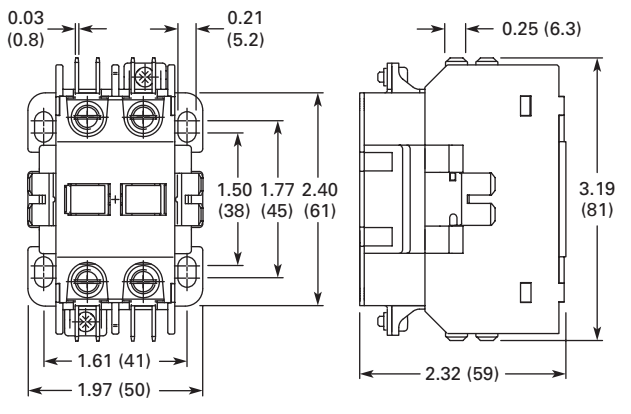
Table 35-6. Magnet Coil Selection

AC Coil Voltage 50/60 Hz	Coil Suffix
24	**T**
110 – 120	**A**
208 – 240	**B**
277	**H**
380 – 415 (50 Hz); 440 – 480 (60 Hz)	**C**

Dimensions



1-Pole and 1-Pole +Shunt
Ship. Wt.: 0.5 lb. (0.2 kg)



2-Pole
Ship. Wt.: 0.7 lb. (0.3 kg)

Figure 35-1. Compact Approximate Dimensions in Inches (mm) and Shipping Weights

Technical Data . . . . . **Page 35-3**
Options. . . . . **Page 35-3**
Discount Symbol **1CD-5C**

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50 mm DP Contactor

Product Description

Cutler-Hammer® Type C25 Definite Purpose Contactors 15A through 360A, from Eaton's electrical business incorporate most competitive contactor mounting dimensions into a single baseplate. Contactors are dual-rated with inductive and resistive ratings as well as horsepower and kilowatt ratings. C25 contactors are furnished with pressure plates and quick connect terminals as standard on 15, 25 and 30A devices and with box lugs and quick-connect terminals on 40, 50, 60 and 75A. Other terminal configurations are available, see **Table 35-14**. Contactors will accept add-on auxiliary contacts — order factory assembled or as kits for field installation.

The separately available snap-on mechanical interlock permits interlocking two contactors for reversing or two-speed applications.

Contactors rated 15 – 50A only are available with DIN rail mount as a factory installed option.

Standards and Certifications

- UL Recognized Components
  UL File #E-1491, Guide NLDX2
- CSA Certified Components
  File #LR353, Class 3211 04, 481301 & 122201
- IEC 60947-4-1
- EN 60947-4-1

- RoHS Compliance (15A to 50A Only)

Technical Data and Specifications

- Magnet coil:
  - Class B (C25E, F, G, H and K), 130°C
  - Class F (C25D and L), 155°C
  - Class H (C25D), 180°C (Available as factory installed option)
- Contacts: Double break
- Coil terminals: 10 – 14 AWG
- Ambient temperature: 150°F (65°C) maximum
- UL recognized, CSA certified and conform to ARI 780
- CE mark
- Terminal wire range:
  - #8–32 binding head screw: 14 – 12 AWG (one conductor-solid)
  - #8–32 screw/pressure plate:
    - 14 – 8 AWG (one conductor)
    - 14 – 8 AWG (two conductors)
  - Box lugs — 15 – 50A:
    - # 2 posidrive screw or 5/32 hex socket screw
    - Upper Level: 14 – 4 AWG (one conductor)
    - Lower Level: 14 – 6 AWG (one conductor)
  - Box lugs — 60 – 75A
    - Upper Level: 14 – 2 AWG
    - Lower Level: 14 – 6 AWG

    Note: The box lugs on the 15 – 75A device can accept two conductors per pole.
  - Box lugs — 90A: 1/0 – 14 AWG
  - Box lugs — 120A: 3/0 – 8 AWG
  - Box lugs — 200 – 300A: 350 MCM – 6 AWG
  - Box lugs — 360A: 750 MCM – 2 AWG

35

Table 35-7. Lighting Duty Ratings (25A to 50A Only)

C25D_ Inductive Rating	Tungsten & Ballast (480V)
25A	30A
30A	40A
40A	50A
50A	60A

Table 35-8. IEC/CE Ratings (IEC 60947-4-1, EN 60947-4-1) for 15A through 50A C25D_Contactors

C25D_ Inductive Rating	AC-1 (Ic)		AC-3 (Ie)		AC-4 (Ie)		AC-8a	
	480V	600V	480V	600V	480V	600V	480V	600V
15A	20A	20A	15A	15A	15A	—	15A	15A
25A	30A	30A	25A	25A	25A	—	25A	25A
30A	40A	40A	30A	30A	30A	—	30A	30A
40A	50A	—	40A	—	40A	—	40A	—
50A	65A	65A	50A	50A	50A	—	50A	50A

Table 35-9. DC Ratings (15A to 50A Only)

Voltage	2-Pole, 15 – 30A Inductive			2-Pole, 40A Inductive			3-Pole, 15 – 30A Inductive			3-Pole, 40A Inductive		
	UL/ CSA		DC-3/ DC-5	UL/ CSA		DC-3/ DC-5	UL/ CSA		DC-3/ DC-5	UL/ CSA		DC-3/ DC-5
	FLA	hp	I_e	FLA	hp	I_e	FLA	hp	I_e	FLA	hp	I_e
240V DC 3 Poles in Series	—	—	—	—	—	—	4	3/4	4	5	1	5
120V DC 3 Poles in Series	—	—	—	—	—	—	8	3/4	8	10	1	10
120V DC 2 Poles in Series	5.5	1/2	5.5	8	3/4	8	5.5	1/2	5.5	8	3/4	8
120V DC per Pole	2	1/10	2	3.5	1/4	3.5	2	1/10	2	3.5	1/4	3.5
24V DC per Pole	15	—	15	20	—	20	15	—	15	20	—	20

Table 35-10. Contactor Torque Ratings

Contactor Size	Terminal	Wire Range	Tightening Torque
15 – 50A ①	8–32 Binding Head Screw	12 – 14 AWG	22 lb-in
	Screw/Pressure Plate	8 – 14 AWG	15 lb-in
	Box Lug	12 – 14 AWG 10 AWG 8 AWG 4 – 6 AWG	15 lb-in 25 lb-in 40 lb-in 45 lb-in
60 – 75A ②	Box Lug	10 – 14 AWG 8 AWG 3 – 6 AWG	40 lb-in 45 lb-in 50 lb-in
90A	Box Lug	1/0 – 14 AWG	60 lb-in
120A	Box Lug	8 AWG 4 – 6 AWG 3 – 1/0 AWG	40 lb-in 45 lb-in 50 lb-in
200 – 300A	Box Lug	6 – 350 MCM	200 lb-in
360A	Box Lug	2 – 750 MCM	550 lb-in

① The box lugs on the 15 – 50A device can accept 2 conductors per pole, the upper section will accept 4 – 14 AWG and the lower section will accept 6 – 14 AWG.

② The box lugs on the 60 – 75A device can accept 2 conductors per pole, the upper section will accept 3 – 14 AWG and the lower section will accept 6 – 14 AWG.

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Product Selection

When Ordering Specify

- Catalog Number plus Magnet Coil Suffix, below
- Modify Catalog Number for any options required — see Options, **Page 35-7**
- Catalog Numbers of accessory kits required, **Page 35-7**

Table 35-11. Catalog Numbering System

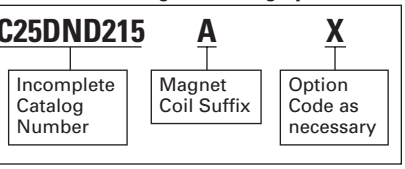


Table 35-12. C25 Contactors Product Selection— Open Type

Rating, Amperes				Maximum Motor Horsepower		Maximum Motor Kilowatts		Number of Poles	Open Type with Metal Mounting Plate		Open Type with DIN Rail Adapter	
Inductive Full Load	Resistive per Pole	Line Voltage	Locked Rotor	1-Phase	3-Phase	1-Phase	3-Phase		Catalog Number ①②	Price U.S. $	Catalog Number ①②	Price U.S. $
15	20	115 230 460 575	90 90 75 60	3/4 2 — —	— 3 5 5	0.40 1.5 — —	— 2.2 3.7 3.7	2 3	C25DND215_ C25DND315_		C25DRD215_ C25DRD315_	
25	35	115 230 460 575	150 150 125 100	2 3 — —	— 7-1/2 10 10	1.5 2.2 — —	— 5.5 7.5 7.5	2 3 4	C25DND225_ C25DND325_ C25END425_		C25DRD225_ C25DRD325_	
30	40	115 230 460 575	180 180 150 120	2 5 — —	— 10 15 15	1.5 3.7 — —	— 7.5 11 11	2 3 4	C25DND230_ C25DND330_ C25END430_		C25DRD230_ C25DRD330_	
40	50	115 230 460 575	240 240 200 160	3 7-1/2 — —	— 10 20 20	2.2 5.5 — —	— 7.5 15 15	2 3 4	C25DNF240_ C25DNF340_ C25ENF440_		C25DRF240_ C25DRF340_	
50	65	115 230 460 575	300 300 250 200	3 10 — —	— 15 30 30	2.2 7.5 — —	— 11 22 22	2 3	C25DNJ250_ C25DNJ350_		C25DRJ250_ C25DRJ350_	
60	75	115 230 460 575	360 360 300 240	5 10 — —	— 20 40 40	3.7 7.5 — —	— 15 30 30	2 3	C25FNF260_ C25FNF360_		NA	
75	90	115 230 460 575	450 450 375 300	5 15 — —	— 20 50 50	3.7 11 — —	— 18.5 37 37	2 3	C25FNF275_ C25FNF375_		NA	
90	120	115 230 460 575	540 540 450 360	7-1/2 20 — —	— 30 50 50	5.7 15.1 — —	— 22 37 37	2 3	C25GNF290_ C25GNF390_		NA	
120	140	230 460 575	720 720 570	— — —	— — —	— — —	— — —	3	C25HNE3120_		NA	
200	200	240 480 600	1200 1200 1000	— — —	— — —	— — —	— — —	3	C25KNE3200_		NA	
300	300	240 480 600	1800 1800 1500	— — —	— — —	— — —	— — —	3	C25KNE3300_		NA	
360	360	240 480 600	2320 2320 1900	— — —	— — —	— — —	— — —	3	C25LNE3360_		NA	

① Incomplete Catalog Number. Replace underscore (_) in Catalog Number with Magnet Coil Suffix from table below.

② Carton quantities including 20 individually packaged units are available for 2- and 3-pole units through 60A inductive.

③ Contactors with DC coils (only available up to 75A) include an early break NC auxiliary contact, C320KGD1. See **Page 35-34** for more details.

④ Available only for 15A through 75A contactors and 4-pole contactors.

⑤ Available through 75A.

⑥ Available through 120A.

⑦ Available 120 – 360A.

⑧ Available 15 – 90A, others 240V.

⑨ Available through 50A.

Table 35-13. Magnet Coil Selection

Voltage		Coil Suffix
60 Hertz	50 Hertz	
AC ⑪		
12 ⑤	12	R
24 ⑥	24	T
110 – 120 ⑩	110 – 120 ⑩	A
208 ⑦	—	E
208 – 240 ❽	208 – 240	B
240 ❾	220	J
277	—	H
—	380 – 415	L
440 – 480	440 – 480	C
550 – 600	550 – 600	D
DC ③		
12		1R
24		1T
48		1W
120		1A ④

⑩ 104 – 120V 50/60 Hz for 60A, 75A and all 4-Pole Contactors (25A – 40A).

⑪ Class H AC Coils available as option for 15A – 50A Contactor. Add **2** before AC Coil Suffix letter.

Technical Data . . . . . **Pages 35-5, 35-35**
Options. . . . . **Page 35-7**
Accessories . . . . . **Page 35-7**
Dimensions . . . . . **Page 35-31**
Discount Symbol **1CD-5C**

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Options — Factory Installed

To order C25, C65, A25 and B25 Contactors and Starters with the factory installed options listed below, change the basic Catalog Number listed in the Product Selection Table as noted.

Table 35-14. Factory Installed Options

Description	Code Letter	Number of Poles	Adder U.S. $
Terminals — 15A through 50A			
Binding Head Screws			
Without Quick Connect Terminals	**A**	2-, 3-, 4-Pole	
With Quick Connect Terminals (Side-by-Side)	**B**	2-, 3-, 4-Pole	
With Quick Connect Terminals (Vertical In-Line)	**G**	2-, 3-Pole	
Screw/Pressure Plate ②			
Without Quick Connect Terminals	**C**	2-, 3-, 4-Pole	
With Quick Connect Terminals (Side-by-Side)	**D**	2-, 3-, 4-Pole	
With Quick Connect Terminals (Vertical In-Line)	**H**	2-, 3-Pole	
Box Lugs (#2 Posidrive/Slotted Screw)			
Without Quick Connect Terminals	**E**	2-, 3-, 4-Pole ①	
With Quick Connect Terminals (Side-by-Side)	**F**	2-, 3-, 4-Pole ①	
With Quick Connect Terminals (Vertical In-Line)	**J**	2-, 3-Pole	
Box Lugs (Hex Socket Allen Head Screw)			
Without Quick Connect Terminals	**K**	2-, 3-Pole	
With Quick Connect Terminals (Side-by-Side)	**L**	2-, 3-Pole	
With Quick Connect Terminals (Vertical In-Line)	**M**	2-, 3-Pole	
Terminals — 60A through 75A			
Replace letter in the 6th position of Catalog Number with Code Letter listed below. EXAMPLE: Change C25FN**F**250 to C25FN**E**250.			
Box Lugs (Slotted Screw)			
Without Quick Connect Terminals	**E**	2-, 3-Pole	
With Quick Connect Terminals	**F**	2-, 3-Pole	

① 4-Pole contactors have box lugs with slotted screws.
② Screw/Pressure Plate terminals are not available on 50A Contactors.

Auxiliary Contacts (Side Mount)

Table 35-15. Auxiliary Contacts — Factory Installed

Add Code Letter listed below to complete Catalog Number. EXAMPLE: Change C25DND215A to C25DND215A**A**.

Description	With Standard Pressure Plate Terminals		With Quick Connect Terminals		Snap Switch Design with Quick Connect Terminals	
	Code Letter	Adder U.S. $	Code Letter	Adder U.S. $	Code Letter	Adder U.S. $
For 15 through 90A ③						
1NO	**A**		**F**		—	
1NC	**B**		**G**		—	
1NO-1NC	**C**		**H**		—	
2NO	**D**		**J**		—	
2NC	**E**		**K**		—	
For 15 through 75A						
1NO-1NC	—		—		**L**	
2NO-2NC	—		—		**M**	
For 120 through 360A						
1NO	**A**		—		—	
1NO-1NC	**C**		—		—	
2NO	**D**		—		—	
2NC	**E**		—		—	
Special Marking						
Special contactor marking, consult local sales office.						

③ 90A available only with binding head screw and quick connect terminals.

Accessories

Auxiliary Contact Kits (Side Mounted)



Side Mounted Auxiliary Contact

Table 35-16. Heavy-Duty Pilot Rated for 10A at 600V AC

Circuit	With Standard Pressure Plate Terminals		With Pressure Plate and Quick Connect Terminals	
	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
For 15 through 75A				
1NO	**C320KG1**		**C320KG11**	
1NC	**C320KG2**		**C320KG12**	
1NO-1NC	**C320KG3**		**C320KG13**	
2NO	**C320KG4**		**C320KG14**	
2NC	**C320KG5**		**C320KG15**	
For 90A				
1NO	—		**C320DPG10**	
1NC	—		**C320DPG01**	
1NO-1NC	—		**C320DPG11**	
2NO	—		**C320DPG20**	
For 120 through 360A				
1NO	**C320KGS20**		—	
1NC	**C320KGS21**		—	
1NO-1NC	**C320KGS22**		—	



Side Mounted Snap Switch

Table 35-17. Snap Switch Design Side Mounted Auxiliary Contacts

Circuit	Snap Switch Design with Quick Connect Terminals	
	Catalog Number	Price U.S. $
1NO-1NC	**C320SNP11**	
2NO-2NC	**C320SNP22**	

Discount Symbol **1CD-5C**

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Magnet Coil Quick Connect Terminal

Table 35-18. Magnet Coil Quick Connect Terminal

Description	Adder U.S. $
Extra Dual Quick Connect Terminals (U-shaped) for Magnet Coil Terminals ①	

① To order, add Suffix Number **9** to the complete Catalog Number. Example: C25DND215A**9**.

35

Auxiliary Contact Kits (Top Mounted)



Top Mounted Auxiliary Contact

Table 35-19. Heavy-Duty Pilot Rated for 10A at 600V AC

Circuit	With Standard Pressure Plate Terminals	
	Catalog Number	Price U.S. $
For 15 through 75A ②		
1NO 1NC	**C320KGT1** **C320KGT2**	
1NO-1NC 2NO 2NC	**C320KGT3** **C320KGT4** **C320KGT5**	
3NO 2NO-1NC 1NO-2NC 3NC 4NO	**C320KGT9** **C320KGT10** **C320KGT11** **C320KGT12** **C320KGT13**	
3NO-1NC 2NO-2NC 1NO-3NC 4NC	**C320KGT14** **C320KGT15** **C320KGT16** **C320KGT17**	

② Not available for 4-pole contactors (15 – 40 Amp).

Mechanical Interlock Kit



Mechanical Interlock

Table 35-20. Mechanical Interlock Kit for 15 through 75A

Catalog Number	Price U.S. $
C321KM60B	

Solid-State ON DELAY Timer



Solid-State ON DELAY Timer

Side Mounted on C25D, C25E and C25F Frame

This timer is designed to be **wired in series with the load** (typically a coil). When the START button is pushed (power applied to timer), the ON DELAY timing function starts. At the completion of the set timing period, timer and series wired load will both be energized.

Table 35-21. Solid-State ON DELAY Timer

Timing Range	Catalog Number ③④⑤	Price U.S. $
.1 – 1.0 Seconds 1 – 30 Seconds 30 – 300 Seconds 5 – 30 Minutes	**C320TDN1_** **C320TDN30_** **C320TDN300_** **C320TDN3000_**	

③ Add operating voltage Suffix to Catalog Number. **A** = 120V, **B** = 240V, **E** = 208V

④ Rated .5 ampere pilot duty — not to be used on larger contactors.

⑤ Terminal connections are quick connects only. Two per side.

Separate Enclosures



NEMA 1 Enclosure — Cat. No. C799B19

Table 35-22. Separate Enclosures — NEMA 1

Application	Catalog Number	Price U.S. $
15 through 50A, 2- and 3-Pole	**C799B18**	
60A, 2- and 3-Pole or 25 through 40A, 4-Pole	**C799B19**	

Discount Symbol **1CD-5C**

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Optional 3-Pole Fuse Block

Available only on 3-Pole, 15 – 50A Contactors

Designed to save space and reduce installation costs, these 3-pole Fuse Blocks will accommodate a variety of fuse classes and fuse holders to satisfy a wide range of electrical/electronic applications such as commercial space and water heaters, dishwashers, food coolers and sterilizing equipment. They are supplied either factory assembled, mounted and wired to the contactor or in kit form.

To order factory assembled, add Suffix Number from table below to Catalog Number of contactor listed on **Page 35-6** and make necessary price addition. EXAMPLE: C25DND325A**361**.



3-Pole Fuse Block

Table 35-23. 3-Pole Fuse Block

Fuse Holder		Fuse Dimensions in Inches (mm)		Terminal Type and Maximum Wire Size		Factory Installed Ordering Suffix	Field Installation Kit Catalog Number	Price/Adder U.S. $
Volts	Amperes	Diameter	Length					
Class M								
600	30	0.41 (10.4)	1.50 (38.1)	Pressure Plate	10 AWG Cu	**161**	**C350KM61**	
Class G								
600	15 20	0.41 (10.4)	1.31 (33.3) 1.41 (35.8)	Pressure Plate Pressure Plate	10 AWG Cu 10 AWG Cu	**237** **238**	**C350KG37** **C350KG38**	
480	30 60	0.41 (10.4)	1.63 (41.4) 2.25 (57.2)	Pressure Plate Box Lug	10 AWG Cu 2 AWG Cu/Al	**231** **232**	**C350KG31** **C350KG32**	
Class J								
600	30 60	0.81 (20.6) 1.06 (26.9)	2.25 (57.2) 2.38 (60.5)	Pressure Plate Box Lug	10 AWG Cu 2 AWG Cu/Al	**361** **362**	**C350KJ61** **C350KJ62**	
Class T								
300	30 60	0.41 (10.4) 0.56 (14.2)	0.88 (22.4) 0.88 (22.4)	Box Lug Box Lug	6 AWG Cu 2 AWG Cu/Al	**431** **432**	**C350KT31** **C350KT32**	
600	30 60	0.56 (14.2) 0.81 (20.6)	1.50 (38.1) 1.56 (39.6)	Box Lug Box Lug	6 AWG Cu 2 AWG Cu/Al	**461** **462**	**C350KT61** **C350KT62**	
Class H								
250	30 60	0.56 (14.2) 0.81 (20.6)	2.00 (50.8) 3.00 (76.2)	Pressure Plate Box Lug	10 AWG Cu 2 AWG Cu/Al	**521** **522**	**C350KH21** **C350KH22**	
Class R								
250	30 60	0.56 (14.2) 0.81 (20.6)	2.00 (50.8) 3.00 (76.2)	Pressure Plate Box Lug	10 AWG Cu 2 AWG Cu/Al	**621** **622**	**C350KR21** **C350KR22**	

Dimensions

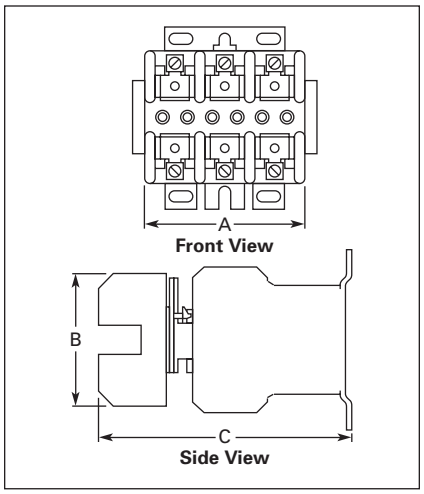


Figure 35-2. 3-Pole Fuse Block and Contactor Dimensions

Table 35-24. Approximate Dimensions for 3-Pole Fuse Block and Contactor

Fuse Size			Dimensions in Inches (mm)		
Class	Amps	Volts	Wide A	High B	Deep C
For Dimensions Not Shown, See Next Page.					
G	15 20	600	2.41 (61) 2.41 (61)	2.81 (71) 2.81 (71)	5.14 (131) 5.14 (131)
	30 60	480	2.41 (61) 2.62 (67)	2.81 (71) 4.25 (108)	5.14 (131) 5.18 (132)
H	30 60	250	3.00 (76) 4.22 (107)	3.03 (77) 4.75 (121)	5.33 (135) 5.86 (149)
J	30 60	600	4.81 (122) 4.81 (122)	4.12 (105) 4.12 (105)	5.92 (150) 5.92 (150)
M	30	600	2.41 (61)	2.81 (71)	5.14 (131)
R	30 60	250	3.00 (76) 4.22 (107)	3.03 (77) 4.75 (121)	5.33 (135) 5.86 (149)
T	30 60 30 60	300 300 600 600	3.44 (87) 3.44 (87) 3.75 (95) 4.87 (124)	2.75 (70) 2.75 (70) 3.19 (81) 2.94 (75)	5.43 (138) 5.43 (138) 5.36 (136) 5.68 (144)

Discount Symbol **1CD-5C**

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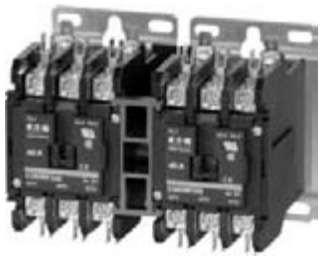
Product Description

Cutler-Hammer® C65 Reversing Contactors from Eaton's electrical business are furnished with pressure plates and quick connect terminals as standard on 15, 25 and 30A devices and with box lugs and quick connect terminals on 40, 50, 60 and 75A.

Other terminal configurations are available — see Factory Installed Options Table on **Page 35-7**. Reversing contactors will accept add-on Auxiliary Contacts on either side — order factory assembled or as kits for field installation. See **Page 35-7**.

Table 35-25. Catalog Numbering System

C65DND315	A	X
Incomplete Catalog Number	Magnet Coil Suffix	Option Code as necessary



C65 Reversing Contactor

Standards and Certifications

- UL Recognized Components
  UL File #E-1491, Guide NLDX2
- CSA Certified Components
  File #LR353, Guide 380w-1.14 Class 3211 04

Product Selection

Table 35-26. Reversing and 2-Speed Contactors Product Selection — Open Type — Unwired, Mechanically Interlocked Only

Rating, Amperes				Maximum Motor Horsepower		Maximum Motor Kilowatts		Number of Poles	Open Type with Metal Mounting Plate		Open Type with DIN Rail Adapter	
Inductive Full Load	Resistive per Pole	Line Voltage	Locked Rotor	1-Phase	3-Phase	1-Phase	3-Phase		Catalog Number ①	Price U.S. $	Catalog Number ①	Price U.S. $
15	20	115 230 460 575	90 90 75 60	3/4 2 — —	— 3 5 5	0.40 1.5 — —	— 2.2 3.7 3.7	2 3	C65DND215_ C65DND315_		C65DRD215_ C65DRD315_	
25	35	115 230 460 575	150 150 125 100	2 3 — —	— 7-1/2 10 10	1.5 2.2 — —	— 5.5 7.5 7.5	2 3	C65DND225_ C65DND325_		C65DRD225_ C65DRD325_	
30	40	115 230 460 575	180 180 150 120	2 5 — —	— 10 15 15	1.5 3.7 — —	— 7.5 11 11	2 3	C65DND230_ C65DND330_		C65DRD230_ C65DRD330_	
40	50	115 230 460 575	240 240 200 160	3 7-1/2 — —	— 10 20 20	2.2 5.5 — —	— 7.5 15 15	2 3	C65DNF240_ C65DNF340_		C65DRF240_ C65DRF340_	
50	65	115 230 460 575	300 300 250 200	3 10 — —	— 15 30 30	2.2 7.5 — —	— 11 22 22	2 3	C65DNJ250_ C65DNJ350_		C65DRJ250_ C65DRJ350_	
60	75	115 230 460 575	360 360 300 240	5 10 — —	— 20 40 40	3.7 7.5 — —	— 15 30 30	2 3	C65FNF260_ C65FNF360_		NA	
75	90	115 230 460 575	450 450 375 300	5 15 — —	— 20 50 50	3.7 11 — —	— 18.5 37 37	2 3	C65FNF275_ C65FNF375_		NA	

① Incomplete Catalog Number. Replace underscore (_) with Magnet Coil Suffix from **Table 35-27.**

② Available through 50A.

③ 104 – 120V 50/60 Hz for 60A, 75A.

④ Class H AC Coils available as option for 15A – 50A Contactor. Add **2** before AC Coil Suffix letter.

Table 35-27. Magnet Coil Selection

Volts		Coil Suffix ④
60 Hz	50 Hz	
12	12	**R**
24	24	**T**
110 – 120 ③	110 – 120 ③	**A**
208 – 240	208 – 240	**B**
240 ②	220	**J**
277	—	**H**
—	380 – 415	**L**
440 – 480	440 – 480	**C**
550 – 600	550 – 600	**D**

Table 35-28. Magnet Coil Options

Description	Adder U.S. $
Extra dual quick connect terminals ("U" shaped) for magnet coil terminals. To order, add Suffix Number **9** to the complete Catalog Number. EXAMPLE: C65DND315A**9**.	

Torque Ratings . . . . . **Page 35-5**
Options . . . . . **Page 35-7**
Dimensions . . . . . **Page 35-31**
Discount Symbol **1CD-5C**

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Contents

Description *Page*

Starters 25 – 60A

Product Description . . **35-11**
Features **35-11**
Standards and Certifications **35-11**
Technical Data and Specifications. . . **35-11, 35-35**
Product Selection. . . . **35-12**
Overload Relay. **35-13**
Accessories. **35-13**
Heater Packs. **35-14**
Dimensions. **35-29**
Renewal Parts. **35-32**

Product Description

Cutler-Hammer® A25 and B25 Definite Purpose Starters from Eaton's electrical business combine the features and flexibility of the C25 Definite Purpose Contactors and Freedom Series Bi-metallic Ambient Compensated Overload Relays mounted on a common mounting plate.



A25 Starter

Features

Overload Relay

- Selectable Manual or Automatic Reset operation
- Interchangeable Heater Packs adjustable ±24% to match motor FLA and calibrated for use with 1.0 and 1.15 service factor motors
- Class 10 or 20 heater packs
- Bimetallic, ambient compensated operated. Trip free mechanism.
- Electrically isolated NO-NC contacts (pull RESET button to test)
- Overload trip indication
- Shrouded or fingerproof terminals to reduce possibility of electrical shock
- Single-phase sensitivity

Standards and Certifications

- UL Recognized Components UL File #E-1491, Guide NLDX2
- CSA Certified Components File #LR353, Guide 380W-1.14 Class 3211 04

Technical Data and Specifications

Table 35-29. Terminal Wire Sizes

Line Side (Contactor) ①		
Terminal Type	**Wire Range — Solid or Stranded**	
	Power Terminals	**Coil Terminals**
Screw/ Pressure Plate	8 – 14 AWG	12 – 16 AWG
Box Lug — 25 – 50A	4 – 14 AWG	12 – 16 AWG
Box Lug — 60A	3 – 14 AWG	12 – 16 AWG

① Line side (contactor) torque ratings can be found on **Page 35-5.**

Table 35-30. Power Terminals — Load — Cu Only (Stranded or Solid)

Terminal	Range	Torque Rating
25 and 30 Ampere	14 – 6 AWG	20 lb-in (14 – 10 AWG)
40, 50 and 60 Ampere	14 – 2 AWG	35 lb-in (14 – 10 AWG) 40 lb-in (8 AWG) 45 lb-in (6 – 4 AWG) 50 lb-in (3 – 2 AWG)

Control Terminals — Cu Only

12 – 16 AWG stranded, 12 – 14 AWG solid

Table 35-31. Overload Relay UL/CSA Contact Ratings Control Circuit

AC Volts	120V	240V	480V	600V
NC Contact B600				
Make and Break	30A	15A	7.5A	6A
Break	3A	1.5A	0.75A	0.6A
Continuous	5A	5A	5A	5A
NO Contact C600				
Make and Break	15A	7.5A	3.375A	3A
Break	1.5A	0.75A	0.375A	0.3A
Continuous	2.5A	2.5A	2.5A	2.5A

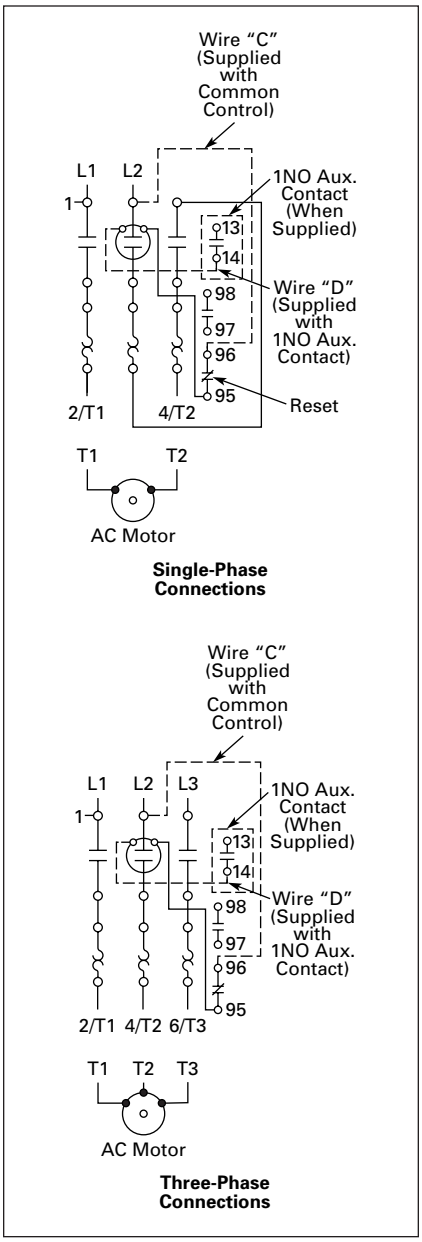


Figure 35-3. Starter Wiring Diagrams

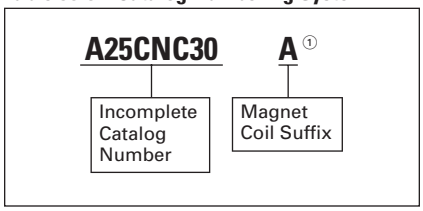
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Product Selection

When Ordering Specify

- Catalog Number plus Magnet Coil Suffix
- Heater Packs for specific FLA of motor, see **Page 35-14**

Table 35-32. Catalog Numbering System



① Order Catalog Number **A25CNC30A**.

Note: Modify Catalog Number for any options required.

Table 35-33. Single- and Three-Phase Starters Product Selection— Open Type

Ampere Rating			Max. Motor hp		Max. Motor kW		Single-Phase ③④			Three-Phase ③		
Inductive Full Load	Line Voltage	Locked Rotor	1-Phase	3-Phase	1-Phase	3-Phase	Common Control	Separate Control	Price U.S. $	Common Control	Separate Control	Price U.S. $
							Catalog Number ②	Catalog Number ②		Catalog Number ②	Catalog Number ②	
25	115 230 460 575	150 150 125 100	2 3 — —	— 7-1/2 10 10	1.5 2.2 — —	— 5.5 7.5 7.5	**B25CNC25_**	**B25SNC25_**		**A25CNC25_**	**A25SNC25_**	
30	115 230 460 575	180 180 150 120	2 5 — —	— 10 15 15	1.5 3.7 — —	— 7.5 11 11	**B25CNC30_**	**B25SNC30_**		**A25CNC30_**	**A25SNC30_**	
40	115 230 460 575	240 240 200 160	3 7-1/2 — —	— 10 20 20	2.2 5.5 — —	— 7.5 15 15	**B25CNE40_**	**B25SNE40_**		**A25CNE40_**	**A25SNE40_**	
50	115 230 460 575	300 300 250 200	— — — —	— 15 30 30	— — — —	— 11 22 22	**—**	**—**		**A25CNE50_**	**A25SNE50_**	
60	115 230 460 575	360 360 300 240	— — — —	— 20 40 40	— — — —	— 15 30 30	**—**	**—**		**A25CNE60_**	**A25SNE60_**	

② Incomplete Catalog Number. Replace underscore (_) with Magnet Coil Suffix from **Table 35-34.**

③ Starters do not include heater packs. Select heater pack from tables, **Page 35-14**.

④ Set of 3 heater packs required for single-phase applications.

Table 35-34. Magnet Coil Selection

AC ⑧			DC ⑤	
Voltage		Coil Suffix	Voltage	Coil Suffix
60 Hertz	50 Hertz			
12	12	**R**	12	**1R**
24	24	**T**	24	**1T**
110 – 120 ⑦	110 – 120 ⑦	**A**	48	**1W**
208 – 240	208 – 240	**B**	120	**1A**
240 ⑥	220	**J**		
277	—	**H**		
—	380 – 415	**L**		
440 – 480	440 – 480	**C**		
550 – 600	550 – 600	**D**		

⑤ Starters with DC coils include an early breaking auxiliary contact, C320KGD1. See **Page 35-34** for more detail.

⑥ Available through 50A.

⑦ 104 – 120V 50/60 Hz for 60A Contactor.

⑧ Class H AC Coils available as option for 15A – 50A Contactor. Add **2** before AC Coil Suffix letter.

Technical Data ..... **Pages 35-11, 35-35**
Accessories ..... **Page 35-7**
Dimensions ..... **Page 35-29**
Discount Symbol **1CD-5C**

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Overload Relay

General

Overload relays are provided to protect motors, motor control apparatus and motor-branch circuit conductors against excessive heating due to motor overloads and failure to start. This definition does not include: 1) motor circuits over 600 volts, 2) short circuits, 3) ground faults and 4) fire pump control. (NEC Art. 430-31)

Time Current Characteristics

The time-current characteristics of an overload relay is an expression of performance which defines its operating time at various multiples of its current setting. Tests are run at Underwriters Laboratory (UL) in accordance with NEMA Standards and the NEC.

UL requires

- When tested at 100 percent of its current rating, the overload relay shall trip ultimately.
- When tested at 200 percent of its current rating, the overload relay shall trip in not more than 8 minutes.
- When tested at 600 percent of its current rating, the overload relay shall trip in not more than 10 or 20 seconds, depending on the Class of the relay or heater packs.

"Current Rating" is defined as the minimum current at which the relay will trip. Per NEC, an overload must ultimately trip at 125% of FLA current (heater) setting for a 1.15 service factor motor and 115% FLA for a 1.0 service factor motor.

"Current Setting" is defined as the FLA (Full Load Amperes) of the motor and thus the overload heater pack setting.

Example: 600% of current rating is defined as 750% (600 x 1.25) of FLA current (heater) setting for a 1.15 service factor motor. A 10 ampere heater setting must trip in 20 seconds or less at 75 amperes motor current for a Class 20 relay.

Overload Relay Setting

FLA Dial Adjustment

For motors having a 1.15 service factor, rotate the FLA adjustment dial to correspond to the motor's FLA rating. Estimate the dial position when the motor FLA falls between two letter values as shown in the example.

For motors having a 1.0 service factor, rotate the FLA dial one-half position counterclockwise (CCW).

Manual/Automatic Reset

The overload relay is factory set at M for manual reset operation. For automatic reset operation, turn the reset adjustment dial to the A position as shown in the illustration.

Automatic reset is not intended for two-wire control devices.

Test for Trip Indication

To test overload relay for trip indication when in manual reset, pull out the blue RESET button. An orange flag will appear indicating that the device has tripped. Push RESET button in to reset.

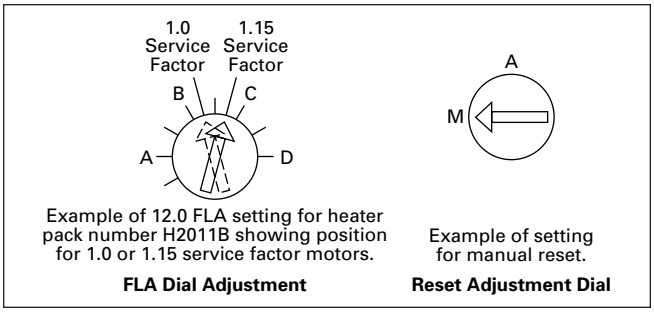


Figure 35-4. FLA Dial Adjustment

Table 35-35. Replacement Overload with Connectors

Starter Size	Overload Part Number	Price U.S. $
25 and 30A 40A and 50A 60A	**10-7125** **10-7132** **10-7131**	

Accessories

Contactor Accessories

See **Pages 35-7** and **35-8**.

Locking Cover for Overload Relay

Snap-on transparent or opaque plastic panel for covering access port to the overload relay trip setting dial — helps prevent accidental or unauthorized changes to trip and reset setting.



Table 35-36. Locking Cover for Overload Relay

Description	Min. Order Quantity (Std. Pkg.)	Catalog Number	Price U.S. $
Clear cover, no accessibility	50	**C320PC3**	
Gray cover, no accessibility, with Auto only nib	50	**C320PC4**	
Gray cover, no accessibility, with Manual only nib	50	**C320PC5**	
Gray cover with FLA dial accessibility, A, B, C, D positions and Auto only nib	50	**C320PC6**	
Gray cover with FLA dial accessibility, A, B, C, D positions and Manual only nib	50	**C320PC7**	

Separate Enclosures

Table 35-37. Separate Enclosures — NEMA 1

Application	Catalog Number	Price U.S. $
25 and 30A 40, 50 and 60A	**C799B11** **C799B13**	

Discount Symbol **1CD-1C**

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Heater Packs

Fast Trip — Class 10 Heater Packs

Manual or Automatic Reset

Note: Heater packs are shipped 3 to a carton. Catalog Numbers listed below are for 3 heater packs.

Table 35-38. Fast Trip Ratings

Motor Full Load Ampere Rating ① Dial Position A	B	C	D	Catalog Number ② (Includes 3 Heater Packs)	Price U.S. $
0.260	0.313	0.367	0.420	H2101B-3	
0.384	0.464	0.543	0.623	H2102B-3	
0.570	0.688	0.806	0.924	H2103B-3	
0.846	1.02	1.20	1.37	H2104B-3	
1.28	1.55	1.83	2.10	H2105B-3	
1.92	2.33	2.74	3.15	H2106B-3	
2.30	2.79	3.28	3.77	H2107B-3	
3.38	4.10	4.82	5.54	H2108B-3	
4.96	6.03	7.09	8.16	H2109B-3	
7.07	8.58	10.1	11.6	H2110B-3	
9.60	11.2	12.8	14.4	H2111B-3	
14.4	17.5	20.7	23.8	H2112B-3	
18.7	21.8	25.0	28.1	H2113B-3	
23.5	27.3	31.0	34.8	H2114B-3	
28.3	32.6	37.0	41.3	H2115B-3	
36.6	42.3	48.1	53.8	H2116B-3	
53.8	60.8	67.9	74.9	H2117B-3	

① For motor full load amperes between listed values, adjust dial clockwise for higher or counterclockwise for lower motor currents. The currents listed are for 1.5 service factor motors. A position adjustment is provided for 1.0 service factor motors.

② Set of three heater packs are required for both single- and three-phase applications.

Standard Trip — Class 20 Heater Packs

Manual or Automatic Reset

Note: Heater packs are shipped 3 to a carton. Catalog Numbers and prices listed below are for 3 heater packs.

Table 35-39. Standard Trip Ratings

Motor Full Load Ampere Rating ③ Dial Position A	B	C	D	Catalog Number ④ (Includes 3 Heater Packs)	Price U.S. $
0.254	0.306	0.359	0.411	H2001B-3	
0.375	0.452	0.530	0.607	H2002B-3	
0.560	0.676	0.791	0.907	H2003B-3	
0.814	0.983	1.15	1.32	H2004B-3	
1.20	1.45	1.71	1.96	H2005B-3	
1.79	2.16	2.53	2.90	H2006B-3	
2.15	2.60	3.04	3.49	H2007B-3	
3.23	3.90	4.56	5.23	H2008B-3	
4.55	5.50	6.45	7.40	H2009B-3	
6.75	8.17	9.58	11.0	H2010B-3	
9.14	10.8	12.4	14.0	H2011B-3	
14.0	16.9	19.9	22.8	H2012B-3	
18.7	22.7	26.7	30.7	H2013B-3	
23.5	28.5	33.5	38.5	H2014B-3	
29.0	34.0	39.1	44.1	H2015B-3	
39.6	45.5	51.5	57.4	H2016B-3	
53.9	60.9	67.9	74.9	H2017B-3	

③ For motor full load amperes between listed values, adjust dial clockwise for higher or counterclockwise for lower motor currents. The currents listed are for 1.5 service factor motors. A position adjustment is provided for 1.0 service factor motors.

④ Set of three heater packs are required for both single- and three-phase applications.

Trip Curves — Bimetallic Ambient Compensated Overload Relay — 25°C Open Rating

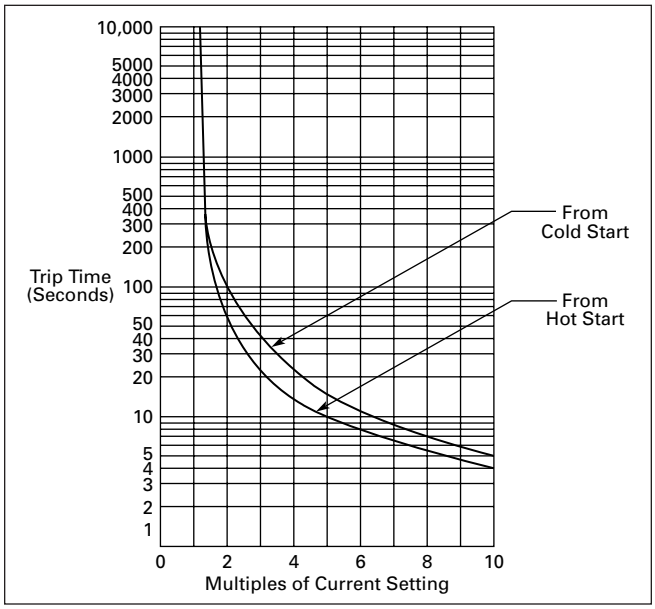


Figure 35-5. Class 10 Overload Relay
25°C Open Rating

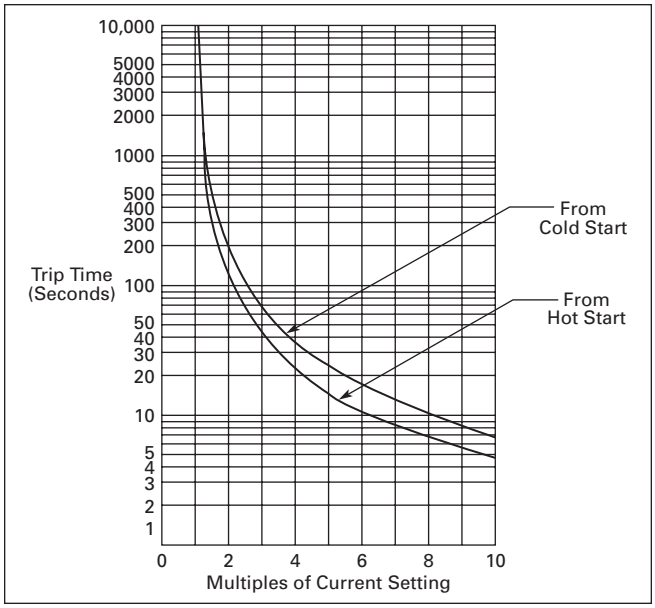


Figure 35-6. Class 20 Overload Relay
25°C Open Rating

Discount Symbol **1CD-1C**

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Contents

Description	*Page*
Starters 15 – 45A	
Product Description	**35-15**
Features	**35-15**
Standards and Certifications	**35-15**
Technical Data and Specifications	**35-15**
Product Selection	**35-16**
Overload Relay Specifications	**35-18**
Dimensions	**35-30**
Renewal Parts	**35-32**

Product Description

Cutler-Hammer® A27 and B27 Definite Purpose Starters from Eaton's electrical business combine the features and flexibility of the C25 Definite Purpose Contactors and ***XT*** Series Bi-metallic Ambient Compensated Overload Relays.



A27 Starter

Features

- Selectable Manual or Automatic Reset operation
- Class 10 Trip Class
- Bimetallic, ambient compensated operated. Trip free mechanism.
- Electrically isolated NO-NC contacts (pull TEST button to test)
- Shrouded or fingerproof terminals to reduce possibility of electrical shock
- Single-phase sensitivity

Standards and Certifications

- UL Recognized Components UL File #E-1491, Guide NLDX2
- CSA Certified Components File #LR353, Guide 380W-1.14 Class 3211 04

Technical Data and Specifications

Table 35-40. Terminal Wire Sizes

Line Side (Contactor) ①		
Terminal Type	**Wire Range — Solid or Stranded**	
	Power Terminals	**Coil Terminals**
Screw/ Pressure Plate	8 – 14 AWG	12 – 16 AWG
Box Lug — 15 – 45A	4 – 14 AWG	12 – 16 AWG

① Line side (contactor) torque ratings can be found on **Page 35-5.**

Table 35-41. Power Terminals — Load — Cu Only (Stranded or Solid)

Terminal	Range	Torque Rating
15 and 25 Ampere	14 – 8 AWG	16 lb-in (14 – 8 AWG)
30, 40 and 45 Ampere	14 – 2 AWG	31 lb-in (14 – 2 AWG)

Control Terminals — Cu Only

12 – 16 AWG stranded, 12 – 14 AWG solid

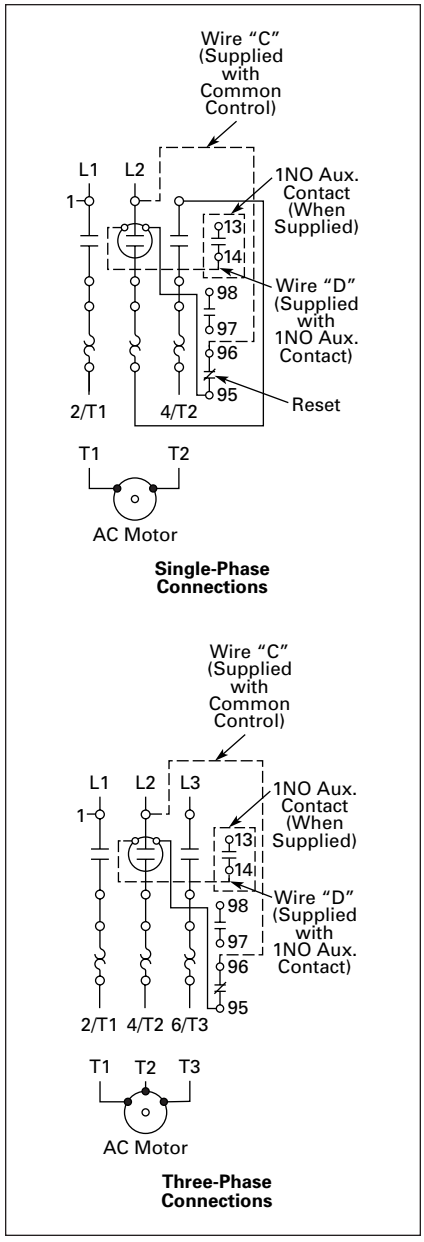


Figure 35-7. Starter Wiring Diagrams

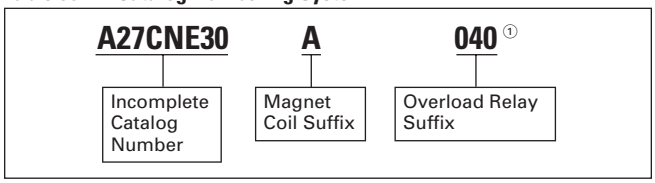
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Product Selection

When Ordering Specify

- Catalog Number plus Magnet Coil Suffix plus Overload Relay Suffix (see example at right)

Table 35-42. Catalog Numbering System



① Order Catalog Number **A27CNE30A040**.
Note: Modify Catalog Number for any options required.

35

Table 35-43. Three-Phase Starter Product Selection — Open Type

Ampere Rating			Max. Motor hp	Max. Motor kW	Common Control		Separate Control		Price U.S. $
Inductive Full Load	Line Voltage	Locked Rotor			Metal Mounting Plate	DIN Rail Adapter	Metal Mounting Plate	DIN Rail Adapter	
					Catalog Number ②	Catalog Number ②	Catalog Number ②	Catalog Number ②	
15	115 230 460 575	90 90 75 60	— 3 5 5	— 2.2 3.7 3.7	**A27CNC15_**	**A27CRC15_**	**A27SNC15_**	**A27SRC15_**	
25	115 230 460 575	150 150 125 100	— 7-1/2 10 10	— 5.5 7.5 7.5	**A27CNC25_**	**A27CRC25_**	**A27SNC25_**	**A27SRC25_**	
30	115 230 460 575	180 180 150 120	— 10 15 15	— 7.5 11 11	**A27CNE30_**	**A27CRE30_**	**A27SNE30_**	**A27SRE30_**	
40	115 230 460 575	240 240 200 160	— 10 20 20	— 7.5 15 15	**A27CNE40_**	**A27CRE40_**	**A27SNE40_**	**A27SRE40_**	
45	115 230 460 575	270 270 225 180	— 15 30 30	— 11 22 22	**A27CNE45_**	**A27CRE45_**	**A27SNE45_**	**A27SRE45_**	

② Incomplete Catalog Number. Replace underscore (_) with Magnet Coil Suffix from **Table 35-44** and Overload Relay Suffix from **Table 35-45**.

Table 35-44. Magnet Coil Selection

AC ⑤			DC ③	
Voltage		Coil Suffix	Voltage	Coil Suffix
60 Hertz	50 Hertz			
12	12	**R**	12	**1R**
24	24	**T**	24	**1T**
110 – 120	110 – 120	**A**	48	**1W**
208 – 240	208 – 240	**B**	120	**1A**
240 ④	220	**J**		
277	—	**H**		
—	380 – 415	**L**		
440 – 480	440 – 480	**C**		
550 – 600	550 – 600	**D**		

③ Starters with DC coils include an early breaking auxiliary contact, C320KGD1. See **Page 35-34** for more detail.
④ Available through 45A.
⑤ Class H AC Coils available as option. Add **2** before AC Coil Suffix letter.

Table 35-45. Overload Relay Suffix

Motor Full Load Amperes	Suffix Code	For use with Contactor Amp Range
Frame C		
0.1 – 0.16	**P16**	15 – 25A
0.16 – 0.24	**P24**	15 – 25A
0.24 – 0.4	**P40**	15 – 25A
0.4 – 0.6	**P60**	15 – 25A
0.6 – 1	**001**	15 – 25A
1 – 1.6	**1P6**	15 – 25A
1.6 – 2.4	**2P4**	15 – 25A
2.4 – 4	**004**	15 – 25A
4 – 6	**006**	15 – 25A
6 – 10	**010**	15 – 25A
10 – 16	**016**	15 – 25A
16 – 24	**024**	15 – 25A
24 – 32	**032**	15 – 25A
Frame D		
6 – 10	**010**	30 – 45A
10 – 16	**016**	30 – 45A
16 – 24	**024**	30 – 45A
24 – 40	**040**	30 – 45A
40 – 57	**057**	30 – 45A

Discount Symbol **1CD-5C**

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Table 35-46. Single-Phase Starter Product Selection — Open Type

Ampere Rating			Max. Motor hp	Max. Motor kW	Common Control		Separate Control		Price U.S. $
Inductive Full Load	Line Voltage	Locked Rotor			Metal Mounting Plate	DIN Rail Adapter	Metal Mounting Plate	DIN Rail Adapter	
					Catalog Number ①	Catalog Number ①	Catalog Number ①	Catalog Number ①	
15	115 230 460 575	90 90 75 60	3/4 2 — —	0.4 1.5 — —	**B27CNC15_**	**B27CRC15_**	**B27SNC15_**	**B27SRC15_**	
25	115 230 460 575	150 150 125 100	2 3 — —	1.5 2.2 — —	**B27CNC25_**	**B27CRC25_**	**B27SNC25_**	**B27SRC25_**	
30	115 230 460 575	180 180 150 120	2 5 — —	1.5 3.7 — —	**B27CNE30_**	**B27CRE30_**	**B27SNE30_**	**B27SRE30_**	
40	115 230 460 575	240 240 200 160	3 7-1/2 — —	2.2 5.5 — —	**B27CNE40_**	**B27CRE40_**	**B27SNE40_**	**B27SRE40_**	
45	115 230 460 575	270 270 225 180	3 7-1/2 — —	2.2 7.5 — —	**B27CNE45_**	**B27CRE45_**	**B27SNE45_**	**B27SRE45_**	

① Incomplete Catalog Number. Replace underscore (_) with Magnet Coil Suffix from **Table 35-47** and Overload Relay Suffix from **Table 35-48**.

Table 35-47. Magnet Coil Selection

AC ④			DC ②	
Voltage		Coil Suffix	Voltage	Coil Suffix
60 Hertz	50 Hertz			
12	12	**R**	12	**1R**
24	24	**T**	24	**1T**
110 – 120	110 – 120	**A**	48	**1W**
208 – 240	208 – 240	**B**	120	**1A**
240 ③	220	**J**		
277	—	**H**		
—	380 – 415	**L**		
440 – 480	440 – 480	**C**		
550 – 600	550 – 600	**D**		

② Starters with DC coils include an early breaking auxiliary contact, C320KGD1. See **Page 35-34** for more detail.
③ Available through 45A.
④ Class H AC Coils available as option. Add **2** before AC Coil Suffix letter.

Table 35-48. Overload Relay Suffix

Motor Full Load Amperes	Suffix Code	For use with Contactor Amp Range
Frame C		
0.1 – 0.16	**P16**	15 – 25A
0.16 – 0.24	**P24**	15 – 25A
0.24 – 0.4	**P40**	15 – 25A
0.4 – 0.6	**P60**	15 – 25A
0.6 – 1	**001**	15 – 25A
1 – 1.6	**1P6**	15 – 25A
1.6 – 2.4	**2P4**	15 – 25A
2.4 – 4	**004**	15 – 25A
4 – 6	**006**	15 – 25A
6 – 10	**010**	15 – 25A
10 – 16	**016**	15 – 25A
16 – 24	**024**	15 – 25A
24 – 32	**032**	15 – 25A
Frame D		
6 – 10	**010**	30 – 45A
10 – 16	**016**	30 – 45A
16 – 24	**024**	30 – 45A
24 – 40	**040**	30 – 45A
40 – 57	**057**	30 – 45A

Discount Symbol **1CD-5C**

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Overload Relays

These tripping characteristics are the mean values of the spread at 20°C ambient temperature in a cold state.

Tripping time depends on response current. With devices at operating temperature, the tripping time of the overload relay reduces to approximately 25% of the read off value. Specific characteristics for each individual setting range can be found in MN03402001E.

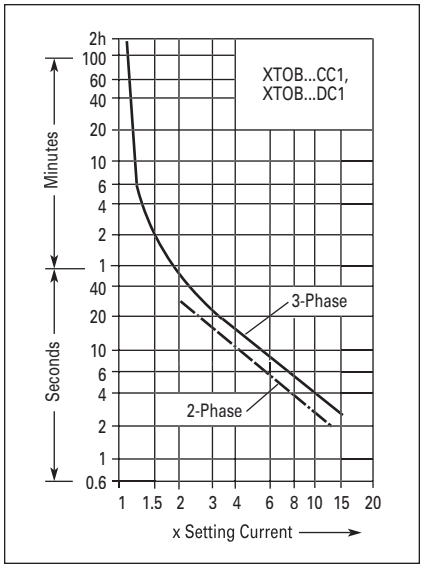


Figure 35-8. Tripping Characteristics

Table 35-49. Overload Relay — Technical Data and Specifications

Description	XTOB...CC1	XTOB...DC1
General		
Standards	IEC/EN 60947, VDE 0660, UL, CSA	IEC/EN 60947, VDE 0660, UL, CSA
Climatic Proofing	Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60 068-2-30	Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60 068-2-30
Ambient Temperature ①	-25 to 50°C [-13 to 122°F]	-25 to 50°C [-13 to 122°F]
Temperature Compensation	Continuous	Continuous
Mechanical Shock Resistance (IEC/EN 60068-2-27) Half-sinusoidal Shock 10 mS	 10g	 10g
Degree of Protection	IP20	IP20
Protection against Direct Contact when Actuated from Front (IEC 536)	Finger and back of hand proof	Finger and back of hand proof
Insulation Voltage (U_i) VAC	690	690
Overvoltage Category /Pollution Degree	III/3	III/3
Impulse Withstand Voltage (U_{imp}) VAC	6000	6000
Operational Voltage (U_e) VAC	690	690
Safe Isolation to VDE 0106 Part 101 and Part 101/A1 Between auxiliary contacts and main contacts (VAC) Between main contacts (VAC)	 440 440	 440 440
Overload Relay Setting Range	0.1 – 32A	6 – 75A
Temperature Compensation Residual Error >20°C (%/K)	≤ 0.25	≤ 0.25
Current Heat Loss (3 Conductors) Lower value of setting range, W Upper value of setting range, W	 2.5 6	 3 7.5
Terminal Capacity Solid, mm^2 Flexible with ferrule, mm^2	2 x (1 – 6) 2 x (1 – 4) 2 x (1 – 6) ②	2 x (1 – 16) 1 x 25 2 x (1 – 10) ③
Solid or Stranded, AWG	14-8	14-2
Terminal Screw Tightening Torque Nm Lb-in	M4 1.8 16	M6 3.5 31
Tools Pozidrive screwdriver Standard screwdriver	 Size 2 1 x 6	 Size 2 1 x 6

① Ambient temperature operating range to IEC/EN 60947, PTB: -5°C to +50°C.
② 6 mm^2 flexible with ferrules to DIN 46228.
③ Main contact terminal capacity, solid and stranded conductors with ferrules: When using 2 conductors use identical cross-section.

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Table 35-49. Overload Relay — Technical Data and Specifications (Continued)

Description	XTOB…CC1	XTOB…DC1
Auxiliary and Control Circuit Connections		
Impulse Withstand Voltage (U_{imp}) VAC	6000	6000
Overvoltage Category/Pollution Degree	III/3	III/3
Terminal Capacity Solid, mm^2 Flexible with ferrule, mm^2 Solid or stranded, AWG	 2 x (0.75 – 4) 2 x (0.75 – 2.5) 2 x (18 – 12)	 2 x (0.75 – 4) 2 x (0.75 – 2.5) 2 x (18 – 12)
Terminal Screw Tightening Torque Nm Lb-in	M3.5 0.8 – 1.3 7 – 11.5	M3.5 0.8 – 1.3 7 – 11.5
Tools Pozidrive screwdriver Standard screwdriver	 Size 2 1 x 6	 Size 2 1 x 6
Auxiliary Circuit Rated Insulation Voltage (U_i) VAC	500	500
Rated Operational Voltage (U_e) VAC	500	500
Safe Isolation to VDE 0106 Part 101 and Part 101/A1 Between the auxiliary contacts (VAC)	 240	 240
Conventional Thermal Current, I_{th}	6	6
Rated Operational Current — AC-15 NO Contact 120V 240V 415V 500V	 1.5 1.5 0.5 0.5	 1.5 1.5 0.5 0.5
NC Contact 120V 240V 415V 500V	 1.5 1.5 0.9 0.8	 1.5 1.5 0.9 0.8
Rated Operational Current — DC-13 L/R ≤15 mS ① 24V 60V 110V 220V	 0.9 0.75 0.4 0.2	 0.9 0.75 0.4 0.2
Short Circuit Rating without Welding Maximum fuse, A gG/gL	 6	 6

① Rated operational current: Making and breaking conditions to DC-13, L/R constant as stated.

Table 35-50. Overload Relay Replacement Catalog Numbers

Motor Full Load Amperes	Suffix Code	For use with Contactor Amp Range	Overload Relay Catalog Number	Price U.S. $
Frame C				
0.1 – 0.16	**P16**	15 – 25A	**XTOBP16CC1DP**	
0.16 – 0.24	**P24**	15 – 25A	**XTOBP24CC1DP**	
0.24 – 0.4	**P40**	15 – 25A	**XTOBP40CC1DP**	
0.4 – 0.6	**P60**	15 – 25A	**XTOBP60CC1DP**	
0.6 – 1	**001**	15 – 25A	**XTOB001CC1DP**	
1 – 1.6	**1P6**	15 – 25A	**XTOB1P6CC1DP**	
1.6 – 2.4	**2P4**	15 – 25A	**XTOB2P4CC1DP**	
2.4 – 4	**004**	15 – 25A	**XTOB004CC1DP**	
4 – 6	**006**	15 – 25A	**XTOB006CC1DP**	
6 – 10	**010**	15 – 25A	**XTOB010CC1DP**	
10 – 16	**016**	15 – 25A	**XTOB016CC1DP**	
16 – 24	**024**	15 – 25A	**XTOB024CC1DP**	
24 – 32	**032**	15 – 25A	**XTOB032CC1DP**	
Frame D				
6 – 10	**010**	30 – 45A	**XTOB010DC1DP**	
10 – 16	**016**	30 – 45A	**XTOB016DC1DP**	
16 – 24	**024**	30 – 45A	**XTOB024DC1DP**	
24 – 40	**040**	30 – 45A	**XTOB040DC1DP**	
40 – 57	**057**	30 – 45A	**XTOB057DC1DP**	

Discount Symbol **1CD-1C**

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35

Contents

Description	*Page*
Starters 15 – 75A	
Product Description	**35-20**
Features	**35-20**
Standards and Certifications	**35-20**
Catalog Number Selection	**35-21**
Product Selection	**35-22**
Overload Relay Specifications	**35-24**
Stand-Alone Overload Relay	**35-25**



A29 Starter

Product Description

Cutler-Hammer® A29 and B29 Definite Purpose Starters from Eaton's electrical business combine the features and flexibility of the C25 Definite Purpose Contactors and C396 Electronic Overload Relays.

Features

- Standard Version: Selectable Trip Class (5, 10, 20, 30) with Selectable Manual or Auto Reset (45 and 65 mm Frames)
- Current Adjustment Range: 5:1
- Self-Powered Design — will accept AC voltages from 12 to 690V 50/60 Hz
- Ambient Temperature Compensation
- Low Heat Generation
- Phase Loss Protection
- Phase Unbalance Protection
- Electrically isolated 1NO-1NC Contacts (Push-to-Test)
- Trip Status Indicator

Standards and Certifications

- UL Listed Components
- CSA Certified Components
- IEC EN 60947-4-1, EN 60947-5-1
- CE Certified Components
- CCC Certified Components
- RoHS Certified Components

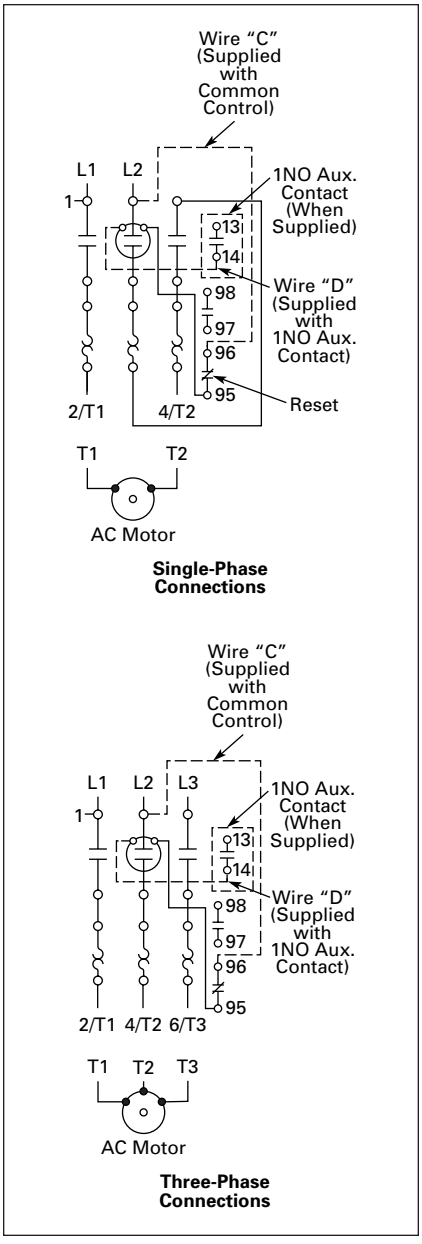


Figure 35-9. Starter Wiring Diagrams

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Catalog Number Selection

Table 35-51. A29 and B29 DP Catalog Numbering System

A 29 C N C 25 A X 3E 005

Designation
A = Three-Phase Starter
B = Single-Phase Starter

Type
29 = Non-reversing

Control
C = Common Control
S = Separate Control

Enclosure Type
N = Open with Metal Mounting Plate
R = Open with DIN Rail Mounting Adapter (2- and 3-Pole, 15 – 50A Contactors Only)
G = NEMA Type 1 Enclosed

Power Terminals

15 – 40A Contactor
A = Binding Head Screws without Quick Connect Terminals
B = Binding Head Screws with Quick Connect Terminals
C = Pressure Plate without Quick Connect Terminals
D = Pressure Plate with Quick Connect Terminals
E = Lugs without Quick Connect Terminals
F = Lugs with Quick Connect Terminals

50 – 75A Contactor
E = Lugs without Quick Connect Terminals
F = Lugs with Quick Connect Terminals

Current Ratings

15 = 15A	**50** = 50A
25 = 25A	**60** = 60A
30 = 30A	**75** = 75A
40 = 40A	

AC Coil Codes

R = 12V	**D** = 550/600V
T = 24V	**H** = 277V
A = 110/120V	**L** = 380/415V
B = 208/240V	**J** = 240V/60 Hz; 220V/50 Hz (Available through 50A)
C = 440/480V	

Auxiliary Contacts (Side Mount)
A = 1NO Pressure Plate
B = 1NC Pressure Plate
C = 1NO-1NC Pressure Plate
D = 2NO Pressure Plate
E = 2NC Pressure Plate
F = 1NO Pressure Plate and QC
G = 1NC Pressure Plate and QC
H = 1NO-1NC Pressure Plate and QC
J = 2NO Pressure Plate and QC
K = 2NC Pressure Plate and QC
L = 1NO-1NC Snap Switch QC Only
M = 2NO-2NC Snap Switch QC Only
X = none

OLR Model Designation
3E = Standard C396 OLR SEL Reset, SEL Class

Overload Range
DP Starters with C396 Electronic Overload

15A – 75A Contactor
P50 = 0.1 – 0.5A
002 = 0.4 – 2.0A
005 = 1 – 5A
008 = 1.6 – 8.0A
032 = 6.4 – 32A
045 = 9 – 45A
075 = 15 – 75A

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Product Selection

When Ordering Specify

- Catalog Number plus AC Coil Code, Auxiliary Contact Code, OLR Model Designation and Overload Range Code (see **Table 35-52**)

Table 35-52. Catalog Numbering System

A29CNC15 A X 3E 005

Incomplete Catalog Number

AC Coil Codes

R = 12V	**D** = 550/600V
T = 24V	**H** = 277V
A = 110/120V	**L** = 380/415V
B = 208/240V	**J** = 240V/60 Hz; 220V/50 Hz (Available through 50A)
C = 440/480V	

Auxiliary Contacts (Side Mount)

A = 1NO Pressure Plate
B = 1NC Pressure Plate
C = 1NO-1NC Pressure Plate
D = 2NO Pressure Plate
E = 2NC Pressure Plate
F = 1NO Pressure Plate and QC
G = 1NC Pressure Plate and QC
H = 1NO-1NC Pressure Plate and QC
J = 2NO Pressure Plate and QC
K = 2NC Pressure Plate and QC
L = 1NO-1NC Snap Switch QC Only
M = 2NO-2NC Snap Switch QC Only
X = none

OLR Model Designation

3E = Standard C396 OLR SEL Reset, SEL Class

Overload Range

DP Starters with C396 Electronic Overload

15A, 25A and 30A Contactor
P50 = 0.1 – 0.5A
002 = 0.4 – 2.0A
005 = 1 – 5A
008 = 1.6 – 8.0A
032 = 6.4 – 32A
045 = 9 – 45A
075 = 15 – 75A

Table 35-53. Three-Phase Starter Product Selection — Open Type

Ampere Rating			Max. Motor hp	Max. Motor kW	Common Control		Separate Control		Price U.S. $
Inductive Full Load	Line Voltage	Locked Rotor			Metal Mounting Plate	DIN Rail Adapter	Metal Mounting Plate	DIN Rail Adapter	
					Catalog Number ①	Catalog Number ①	Catalog Number ①	Catalog Number ①	
15	115	90	—	—	**A29CNC15_**	**A29CRC15_**	**A29SNC15_**	**A29SRC15_**	
	230	90	3	2.2					
	460	75	5	3.7					
	575	60	5	3.7					
25	115	150	—	—	**A29CNC25_**	**A29CRC25_**	**A29SNC25_**	**A29SRC25_**	
	230	150	7-1/2	5.5					
	460	125	10	7.5					
	575	100	10	7.5					
30	115	180	—	—	**A29CNE30_**	**A29CRE30_**	**A29SNE30_**	**A29SRE30_**	
	230	180	10	7.5					
	460	150	15	11					
	575	120	15	11					
40	115	240	—	—	**A29CNE40_**	**A29CRE40_**	**A29SNE40_**	**A29SRE40_**	
	230	240	10	7.5					
	460	200	20	15					
	575	160	20	15					
50	115	300	—	—	**A29CNE45_**	**A29CRE45_**	**A29SNE45_**	**A29SRE45_**	
	230	300	15	11					
	460	250	30	22					
	575	200	30	22					
60	115	360	—	—	**A29CNE60_**	**—**	**A29SNE60_**	**—**	
	230	360	20	15					
	460	300	40	30					
	575	240	40	30					
75	115	450	—	—	**A29CNE75_**	**—**	**A29SNE75_**	**—**	
	230	450	20	18.5					
	460	375	50	37					
	575	300	50	37					

① Incomplete Catalog Number. Replace underscore (_) with Suffix (see **Table 35-52**).

Discount Symbol **1CD-5C**

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Product Selection

When Ordering Specify

- Catalog Number plus AC Coil Code, Auxiliary Contact Code, OLR Model Designation and Overload Range Code (see **Table 35-54**)

Table 35-54. Catalog Numbering System

B29CNC15 A X 3E 005

Incomplete Catalog Number

AC Coil Codes

R = 12V	**D** = 550/600V
T = 24V	**H** = 277V
A = 110/120V	**L** = 380/415V
B = 208/240V	**J** = 240V/60 Hz; 220V/50 Hz (Available through 50A)
C = 440/480V	

Auxiliary Contacts (Side Mount)

A = 1NO Pressure Plate
B = 1NC Pressure Plate
C = 1NO-1NC Pressure Plate
D = 2NO Pressure Plate
E = 2NC Pressure Plate
F = 1NO Pressure Plate and QC
G = 1NC Pressure Plate and QC
H = 1NO-1NC Pressure Plate and QC
J = 2NO Pressure Plate and QC
K = 2NC Pressure Plate and QC
L = 1NO-1NC Snap Switch QC Only
M = 2NO-2NC Snap Switch QC Only
X = none

OLR Model Designation

3E = Standard C396 OLR SEL Reset, SEL Class

Overload Range

DP Starters with C396 Electronic Overload

15A, 25A and 30A Contactor
P50 = 0.1 – 0.5A
002 = 0.4 – 2.0A
005 = 1 – 5A
008 = 1.6 – 8.0A
032 = 6.4 – 32A
045 = 9 – 45A
075 = 15 – 75A

Table 35-55. Single-Phase Starter Product Selection — Open Type

Ampere Rating			Max. Motor hp	Max. Motor kW	Common Control		Separate Control		Price U.S. $
Inductive Full Load	Line Voltage	Locked Rotor			Metal Mounting Plate	DIN Rail Adapter	Metal Mounting Plate	DIN Rail Adapter	
					Catalog Number ①	Catalog Number ①	Catalog Number ①	Catalog Number ①	
15	115 230 460 575	90 90 75 60	3/4 2 — —	0.4 1.5 — —	**B29CNC15_**	**B29CRC15_**	**B29SNC15_**	**B29SRC15_**	
25	115 230 460 575	150 150 125 100	2 3 — —	1.5 2.2 — —	**B29CNC25_**	**B29CRC25_**	**B29SNC25_**	**B29SRC25_**	
30	115 230 460 575	180 180 150 120	2 5 — —	1.5 3.7 — —	**B29CNE30_**	**B29CRE30_**	**B29SNE30_**	**B29SRE30_**	
40	115 230 460 575	240 240 200 160	3 7-1/2 — —	2.2 5.5 — —	**B29CNE40_**	**B29CRE40_**	**B29SNE40_**	**B29SRE40_**	
50	115 230 460 575	300 300 250 200	3 10 — —	2.2 7.5 — —	**B29CNE45_**	**B29CRE45_**	**B29SNE45_**	**B29SRE45_**	

① Incomplete Catalog Number. Replace underscore (_) with Suffix (see **Table 35-54**).

Discount Symbol **1CD-5C**

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35

Technical Data and Specifications

Table 35-56. Overload Relay Specifications

General Description	C396_2_
	Standard
Protection	
Thermal	1.05 x FLA: Does not trip 1.25 x FLA: Overload trip
Phase Loss	1 Phase = 0, Trip time = 3s (Hot Status)
Phase Imbalance	Max - Min / Max > 40%, Trip time = 3s (Hot Status)
Inrush Current	> 8 x Max FLA, Trip time is 0.3s (Cold Status)
Trip Class	
Class 5, 10, 20, 30	Selectable
Reset	
M / M-O A / A-O	Manual / Manual + Stop Auto / Auto + Stop Auto Reset Time = 165s
Indications	
Test Indicator	Yellow
Trip Indicator	Yellow
PCBA	
Power Sensing	3 phase
Instant Reset by Power ON	CPU reset by Power ON after 2 – 3s
Thermal memory	< 3 min.
Cold and Hot Trip Curves	Power ON > 20 min. is Hot Status
Power Consumption	< 300 mW
Options	
Safety Cover	Covers FLA dial, DIP switches
Remote Reset	24V DC, 24V AC, 120V AC, 240V AC

Table 35-56. Overload Relay Specifications (Continued)

General Description	C396_2_
	Standard
Climate Considerations	
Ambient Temperature (Operating)	-25° to 65°C (-13° to 149°F) inside enclosure
Ambient Temperature (Storage / Transportation)	-40° to 80°C (-40° to 176°F)
Humidity	UL991 (H3): 20 – 95% non-condensing
Altitude (Operating)	NEMA ICS1: 2000 meters max above sea level
Pollution (Operating — External)	Pollution degree 3
Mechanical Shock Resistance (IEC/EN 68-2-17)	15g
Vibration (Lloyd's Register of Shipping, Vibration Test 2)	6g
Temperature Compensation	Continuous
Voltages	
Control Voltage	12 – 690V AC, 50/60 Hz
Insulation Voltage (Ui) — Main Circuit	1000V AC
Insulation Voltage (Ui) — Control Circuit	690V AC
Impulse Withstand Voltage (Uimp) VAC	6000
FLA Range	
45 mm Frame: C396A_	0.1 – 45A
65 mm Frame: C396B_	15 – 110A
110 mm Frame: C396C_	30 – 150A
Safety	
Degree of Protection	IP20 (Stand-Alone Version Only)
Capacity	
Control Terminal Capacity	18 – 14 AWG
Control Terminal Tightening Torque in Nm (lb-in)	0.79 (7)
Load Terminal Capacity	
45 mm Frame: C396A_	14 – 6 AWG
65 mm Frame: C396B_	10 – 1 AWG
110 mm Frame: C396C_	6 AWG – 250 mcm
Load Terminal Tightening Torque in Nm (lb-in)	
45 mm Frame: C396A_	3.2 (28)
65 mm Frame: C396B_	9.0 (80)
110 mm Frame: C396C_	22.6 (200)

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Cat. No.
C396A2A045SELDF

Table 35-57. C396 Overload Relay for Integrated Use with DP Contactors by Feature Set ①

FLA Range (Amps)	DP Contactor Rating	Catalog Number	Price U.S. $
45 mm Overload Frame Size			
0.1 – 0.5	15, 25, 30	**C396A2AP05SELDC**	
0.4 – 2.0	15, 25, 30	**C396A2A002SELDC**	
1 – 5	15, 25, 30	**C396A2A005SELDC**	
1.6 – 8	15, 25, 30, 40	**C396A2A008SELDE**	
6.4 – 32	15, 25, 30, 40, 50	**C396A2A032SELDF**	
9 – 45	40, 50	**C396A2A045SELDF**	
65 mm Overload Frame Size			
15 – 75	60, 75	**C396B2A075SELDG**	

① Discount Symbol **1CD-5C**.

Discount Symbol **1CD-5C**

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NEMA 1 Enclosed DP Contactor

Product Selection

When Ordering Specify

- Catalog Number plus Magnet Coil Suffix, below
- Modify Catalog Number for any options required — see Options, **Page 35-7**

Table 35-58. Catalog Numbering System

C25DGD215	A	X
Incomplete Catalog Number	Magnet Coil Suffix	Option Code as necessary

Table 35-59. 2-, 3- and 4-Pole NEMA Type 1 Enclosed Contactors Product Selection

Rating, Amperes				Maximum Motor Horsepower		Maximum Motor Kilowatts		Number of Poles	NEMA Type 1	
Inductive Full Load	Resistive per Pole	Line Voltage	Locked Rotor	1-Phase	3-Phase	1-Phase	3-Phase		Catalog Number ①	Price U.S. $
15	20	115 230 460 575	90 90 75 60	3/4 2 — —	— 3 5 5	0.40 1.5 — —	— 2.2 3.7 3.7	2 3	**C25DGD215_** **C25DGD315_**	
25	35	115 230 460 575	150 150 125 100	2 3 — —	— 7-1/2 10 10	1.5 2.2 — —	— 5.5 7.5 7.5	2 3 4	**C25DGD225_** **C25DGD325_** **C25EGD425_**	
30	40	115 230 460 575	180 180 150 120	2 5 — —	— 10 15 15	1.5 3.7 — —	— 7.5 11 11	2 3 4	**C25DGD230_** **C25DGD330_** **C25EGD430_**	
40	50	115 230 460 575	240 240 200 160	3 7-1/2 — —	— 10 20 20	2.2 5.5 — —	— 7.5 15 15	2 3 4	**C25DGF240_** **C25DGF340_** **C25EGF440_**	
50	65	115 230 460 575	300 300 250 200	3 10 — —	— 15 30 30	2.2 7.5 — —	— 11 22 22	2 3	**C25DGJ250_** **C25DGJ350_**	
60	75	115 230 460 575	360 360 300 240	5 10 — —	— 20 40 40	3.7 7.5 — —	— 15 30 30	2 3	**C25FGF260_** **C25FGF360_**	

① Incomplete Catalog Number. Replace underscore (_) in Catalog Number with Magnet Coil Suffix from table below.

Table 35-60. Magnet Coil Selection

Voltage		Coil Suffix
60 Hertz	**50 Hertz**	
AC ⑤		
12	12	**R**
24	24	**T**
110 – 120 ④	110 – 120 ④	**A**
208 – 240	208 – 240	**B**
240 ③	220	**J**
277	—	**H**
—	380 – 415	**L**
440 – 480	440 – 480	**C**
550 – 600	550 – 600	**D**
DC ②		
12		**1R**
24		**1T**
48		**1W**
120		**1A**

② Contactors with DC coils include an early break NC auxiliary contact, C320KGD1. See **Page 35-34** for more details.

③ Available through 50A.

④ 104 – 120A 50/60 Hz for 60A Contactor.

⑤ Class H AC Coils available as option. Add **2** before Coil Suffix letter.

Technical Data . . . . . **Pages 35-5, 35-35**
Options. . . . . **Page 35-7**
Accessories . . . . . **Page 35-7**
Dimensions . . . . . **Page 35-31**
Discount Symbol **1CD-5C**

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NEMA 1 Enclosed DP Starter

Product Description

Cutler-Hammer® A25 and B25 Definite Purpose Starters from Eaton's electrical business combine the features and flexibility of the C25 Definite Purpose Contactors and Freedom Series Bi-metallic Ambient Compensated Overload Relays mounted on a common mounting plate.

Standards and Certifications

- UL Recognized Components UL File #E-1491, Guide NLDX2
- CSA Certified Components File #LR353, Guide 380W-1.14 Class 3211 04

Product Selection

When Ordering Specify

- Catalog Number plus Magnet Coil Suffix
- Heater Packs for specific FLA of motor, see **Page 35-14**

Table 35-61. Catalog Numbering System

A25CGC30	A	X
Incomplete Catalog Number	Magnet Coil Suffix	Option Code as necessary

35

Table 35-62. Single- and Three-Phase NEMA Type 1 Enclosed Starters Product Selection

Ampere Rating			Max. Motor hp		Max. Motor kW		Single-Phase ②③			Three-Phase ③		
Inductive Full Load	Line Voltage	Locked Rotor	1-Phase	3-Phase	1-Phase	3-Phase	Common Control Catalog Number ①	Separate Control Catalog Number ①	Price U.S. $	Common Control Catalog Number ①	Separate Control Catalog Number ①	Price U.S. $
25	115 230 460 575	150 150 125 100	2 3 — —	— 7-1/2 10 10	1.5 2.2 — —	— 5.5 7.5 7.5	B25CGC25_	B25SGC25_		A25CGC25_	A25SGC25_	
30	115 230 460 575	180 180 150 120	2 5 — —	— 10 15 15	1.5 3.7 — —	— 7.5 11 11	B25CGC30_	B25SGC30_		A25CGC30_	A25SGC30_	
40	115 230 460 575	240 240 200 160	3 7-1/2 — —	— 10 20 20	2.2 5.5 — —	— 7.5 15 15	B25CGE40_	B25SGE40_		A25CGE40_	A25SGE40_	
50	115 230 460 575	300 300 250 200	— — — —	— 15 30 30	— — — —	— 11 22 22	—	—		A25CGE50_	A25SGE50_	
60	115 230 460 575	360 360 300 240	— — — —	— 20 40 40	— — — —	— 15 30 30	—	—		A25CGE60_	A25SGE60_	

① Incomplete Catalog Number. Replace underscore (_) with Magnet Coil Suffix from **Table 35-63.**

② Starters do not include heater packs. Select heater pack from tables, **Page 35-14.**

③ Set of 3 heater packs required for single-phase applications.

④ Starters with DC coils include an early breaking auxiliary contact, C320KGD1. See **Page 35-34** for more detail.

⑤ Available through 50A.

⑥ 104 – 120A 50/60 Hz for 60A Contactor.

⑦ Class H AC Coils available as option. Add **2** before Coil Suffix letter.

Table 35-63. Magnet Coil Selection

Voltage		Coil Suffix
60 Hertz	50 Hertz	
AC ⑦		
12	12	R
24	24	T
110 – 120 ⑥	110 – 120 ⑥	A
208 – 240	208 – 240	B
240 ④	220	J
277	—	H
—	380 – 415	L
440 – 480	440 – 480	C
550 – 600	550 – 600	D
DC ⑤		
12		1R
24		1T
48		1W
120		1A

Technical Data..... **Pages 35-11, 35-35**
Accessories..... **Page 35-7**
Dimensions..... **Page 35-29**
Discount Symbol..... **1CD-5C**

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NEMA 1 Enclosed DP Starter

Product Description

Cutler-Hammer® A27 and B27 Definite Purpose Starters from Eaton's electrical business combine the features and flexibility of the C25 Definite Purpose Contactors and ***XT*** Series Bi-metallic Ambient Compensated Overload Relays.

Standards and Certifications

- UL Recognized Components UL File #E-1491, Guide NLDX2
- CSA Certified Components File #LR353, Guide 380W-1.14 Class 3211 04

Product Selection

When Ordering Specify

- Catalog Number plus Magnet Coil Suffix plus Overload Relay Suffix

Table 35-64. Catalog Numbering System

A27CGE30	A	040
Incomplete Catalog Number	Magnet Coil Suffix	Overload Relay Suffix

Table 35-65. Single- and Three-Phase NEMA Type 1 Enclosed Starters Product Selection

Ampere Rating			Max. Motor hp		Max. Motor kW		Single-Phase			Three-Phase		
Inductive Full Load	Line Voltage	Locked Rotor	1-Phase	3-Phase	1-Phase	3-Phase	Common Control Catalog Number ①	Separate Control Catalog Number ①	Price U.S. $	Common Control Catalog Number ①	Separate Control Catalog Number ①	Price U.S. $
15	115 230 460 575	90 90 75 60	3/4 2 — —	— 3 5 5	0.4 1.5 — —	— 2.2 3.7 3.7	B27CGC15_	B27SGC15_		A27CGC15_	A27SGC15_	
25	115 230 460 575	150 150 125 100	2 3 — —	— 7-1/2 10 10	1.5 2.2 — —	— 5.5 7.5 7.5	B27CGC25_	B27SGC25_		A27CGC25_	A27SGC25_	
30	115 230 460 575	180 180 150 120	2 5 — —	— 10 15 15	1.5 3.7 — —	— 7.5 11 11	B27CGE30_	B27SGE30_		A27CGE30_	A27SGE30_	
40	115 230 460 575	240 240 200 160	3 7-1/2 — —	— 10 20 20	2.2 5.5 — —	— 7.5 15 15	B27CGE40_	B27SGE40_		A27CGE40_	A27SGE40_	
45	115 230 460 575	270 270 225 180	3 7-1/2 — —	— 15 30 30	2.2 7.5 — —	— 11 22 22	B27CGE45_	B27SGE45_		A27CGE45_	A27SGE45_	

① Incomplete Catalog Number. Replace underscore (_) with Magnet Coil Suffix from **Table 35-66** and Overload Relay Suffix from **Table 35-67**.

Table 35-66. Magnet Coil Selection

Voltage		Coil Suffix
60 Hertz	50 Hertz	
AC ④		
12	12	**R**
24	24	**T**
110 – 120	110 – 120	**A**
208 – 240	208 – 240	**B**
240 ②	220	**J**
277	—	**H**
—	380 – 415	**L**
440 – 480	440 – 480	**C**
550 – 600	550 – 600	**D**
DC ③		
12		**1R**
24		**1T**
48		**1W**
120		**1A**

② Available through 45A.

③ Starters with DC coils include an early breaking auxiliary contact, C320KGD1. See **Page 35-34** for more detail.

④ Class H AC Coils available as option. Add **2** before Coil Suffix letter.

Table 35-67. Overload Relay Suffix

Motor Full Load Amperes	Suffix Code	For use with Contactor Amp Range
Frame C		
0.1 – 0.16	**P16**	15 – 25A
0.16 – 0.24	**P24**	15 – 25A
0.24 – 0.4	**P40**	15 – 25A
0.4 – 0.6	**P60**	15 – 25A
0.6 – 1	**001**	15 – 25A
1 – 1.6	**1P6**	15 – 25A
1.6 – 2.4	**2P4**	15 – 25A
2.4 – 4	**004**	15 – 25A
4 – 6	**006**	15 – 25A
6 – 10	**010**	15 – 25A
10 – 16	**016**	15 – 25A
16 – 24	**024**	15 – 25A
24 – 32	**032**	15 – 25A
Frame D		
6 – 10	**010**	30 – 45A
10 – 16	**016**	30 – 45A
16 – 24	**024**	30 – 45A
24 – 40	**040**	30 – 45A
40 – 57	**057**	30 – 45A

Technical Data ..... **Pages 35-15, 35-35**
Accessories ..... **Page 35-7**
Dimensions ..... **Page 35-30**
Discount Symbol **1CD-5C**

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A25 and B25 Starters

Table 35-68. Approximate Dimensions and Shipping Weights

Ampere Size	Dimensions in Inches (mm)							Ship. Wt. Lbs. (kg)
	Wide A	High B	Deep		Mounting		Auxiliary Contact Adder	
			C	D	E	G	H	
Open Type								
25 and 30	2.50 (64.0)	7.14 (181.0)	3.56 (90.4)	3.69 (93.7)	6.55 (166.0)	.20 (5.1)	.54 (13.7)	1.8 (.8)
40	2.56 (65.0)	8.08 (205.0)	3.50 (89.0)	3.66 (93.0)	7.50 (190.5)	2.00 (51.0)	.54 (13.7)	1.8 (.8)
50 and 60	2.56 (65.0)	8.08 (205.0)	4.15 (105.0)	3.66 (93.0)	7.50 (190.5)	2.00 (51.0)	.54 (13.7)	3.6 (1.6)
NEMA 1 Enclosed								
25 and 30	5.63 (143.0)	10.17 (258.0)	5.81 (148.0)	—	8.00 (203.0)	4.50 (114.0)	—	4.8 (2.2)
40, 50 and 60	7.64 (194.0)	13.27 (337.0)	6.67 (169.0)	—	10.75 (273.0)	6.00 (152.0)	—	10.6 (4.8)

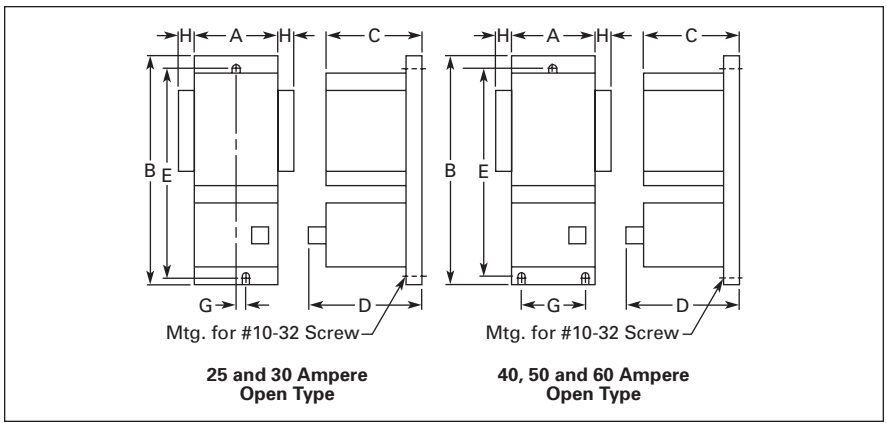


Figure 35-10. Approximate Dimensions — Open Type

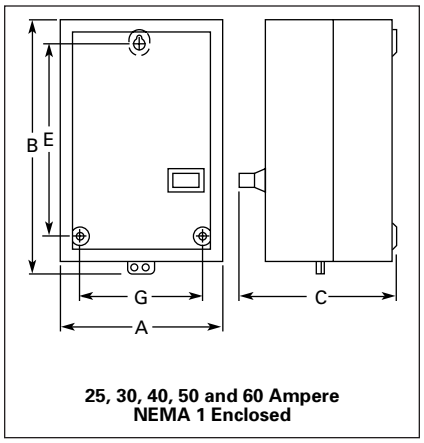


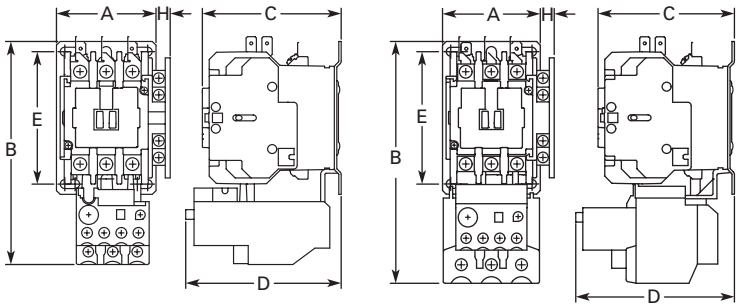
Figure 35-11. NEMA 1 Enclosed Dimensions

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A27 and B27 Starters

Table 35-69. Approximate Dimensions and Shipping Weights

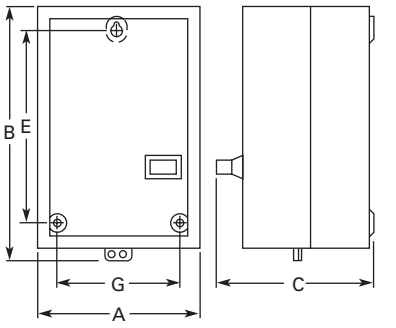
Ampere Size	Dimensions in Inches (mm)							Ship. Wt. Lbs. (kg)
	Wide A	High B	Deep		Mounting		Auxiliary Contact Adder	
			C	D	E	G	H	
Open Type								
15 and 25 (Metal Plate)	2.40 (61.0)	5.50 (139.0)	3.35 (85.0)	3.70 (94.0)	3.13 (82.6)	—	.54 (13.7)	1.6 (.7)
15 and 25 (DIN Rail Mount)	2.23 (56.5)	5.20 (133.0)	3.35 (85.0)	3.70 (94.0)	—	—	.54 (13.7)	1.6 (.7)
30, 40 and 45 (Metal Plate)	2.40 (61.0)	6.00 (152.0)	3.35 (85.0)	3.90 (98.0)	3.13 (82.6)	—	.54 (13.7)	1.11 (.9)
30, 40 and 45 (DIN Rail Mount)	2.23 (56.5)	5.70 (145.0)	3.35 (85.0)	3.90 (98.0)	—	—	.54 (13.7)	1.11 (.9)
NEMA 1 Enclosed								
15, 25 and 30	5.63 (143.0)	10.17 (258.0)	5.81 (148.0)	—	8.00 (203.0)	4.50 (114.0)	—	4.8 (2.2)
40 and 45	7.64 (194.0)	13.27 (337.0)	6.67 (169.0)	—	10.75 (273.0)	6.00 (152.0)	—	10.6 (4.8)



15 and 25 Ampere Open Type

30, 40 and 45 Ampere Open Type

Figure 35-12. Approximate Dimensions — Open Type



15, 25, 30, 40 and 50 Ampere NEMA 1 Enclosed

Figure 35-13. NEMA 1 Enclosed Dimensions

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C25 Contactors

Table 35-70. Approximate Dimensions and Shipping Weights

Ampere Size	Number of Poles	Dimensions in Inches (mm)									Ship. Wt. Lbs. (kg)
		Wide A	High B	Deep C	Mounting					Side Auxiliary Contact Adder	
					D	E	F	G	H	J	
Open Type											
15 – 50	2 and 3	2.40 (61.0) ①	3.75 (95.0)	3.35 (85.0)	3.25 (83.0)	2.00 (51.0)	—	3.13 (79.0)	1.50 (38.0)	0.34 (8.6)	1.3 (.6)
25 – 40	4	2.68 (68.0) ①	3.75 (95.0)	3.38 (86.0)	3.25 (83.0)	2.00 (51.0)	1.5 (38.0)	3.13 (79.0)	1.50 (38.0)	0.50 (12.5)	2.3 (1.0)
60 – 75	2 and 3	2.63 (67.0) ①	3.75 (95.0)	3.97 (101.0)	3.25 (83.0)	2.00 (51.0)	1.5 (38.0)	3.13 (79.0)	1.50 (38.0)	0.37 (9.5)	2.8 (1.3)
90	2 and 3	3.39 (86.0)	5.12 (130.0)	4.76 (121.0)	4.44 (113.0)	2.87 (73.0)	—	—	2.50 (63.5)	0.54 (13.7)	4.0 (1.8)
120	2 and 3	4.08 (104.0)	7.17 (182.0)	5.94 (151.0)	3.00 (76.0)	6.63 (168.0)	—	—	—	0.54 (13.7)	8.5 (3.9)
200 and 300	2 and 3	7.05 (179.0)	9.11 (232.0)	7.25 (184.0)	6.00 (152.0)	8.50 (216.0)	—	—	—	—	20.0 (9.1)
360	2 and 3	7.05 (179.0)	13.12 (333.0)	7.78 (198.0)	6.00 (152.0)	12.50 (318.0)	—	—	—	—	23.0 (10.4)
Open Type — Reversing											
15 – 50	2 and 3	5.0 (127)	3.75 (95)	3.35 (85)	3.25 (83)	4.53 (118)	—	3.13 (79)	4.13 (105)	0.34 (8.6)	2.6 (1.2)
60 – 75	2 and 3	5.77 (147)	3.75 (95)	3.97 (101)	3.25 (83)	5.15 (131)	3.15 (80)	3.13 (79)	4.65 (118)	0.37 (9.5)	5.6 (2.5)
NEMA 1 Enclosed											
15 – 50	2 and 3	4.10 (104.0)	6.75 (171.0)	3.50 (89.0)	2.75 (70).0	4.88 (124.0)	—	—	—	—	3.4 (1.5)
25 – 40	4	5.62 (142.0)	9.51 (241.0)	4.81 (122.0)	4.50 (114.0)	8.00 (203.0)	—	—	—	—	5.8 (2.6)
60	2 and 3										6.3 (2.9)

① Add 0.30 inch (8 mm) to width for C25 contactors with DC coils.

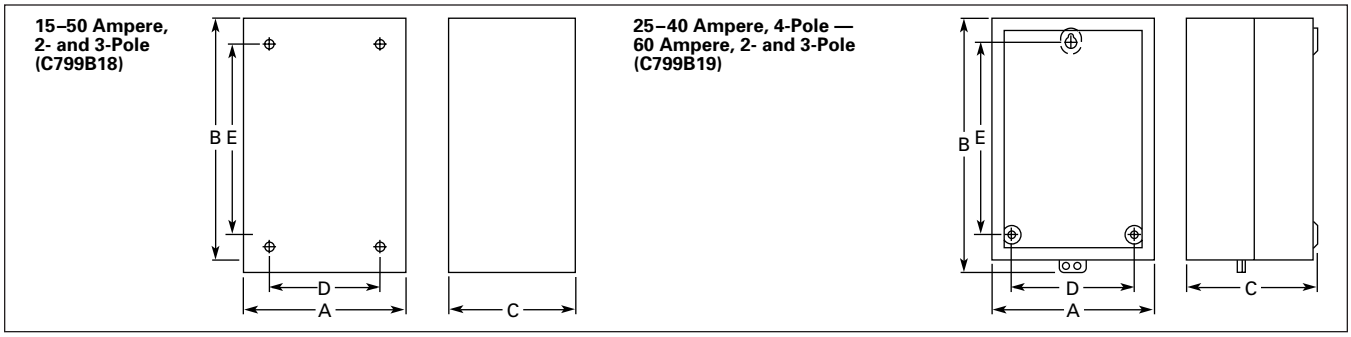


Figure 35-14. Enclosures

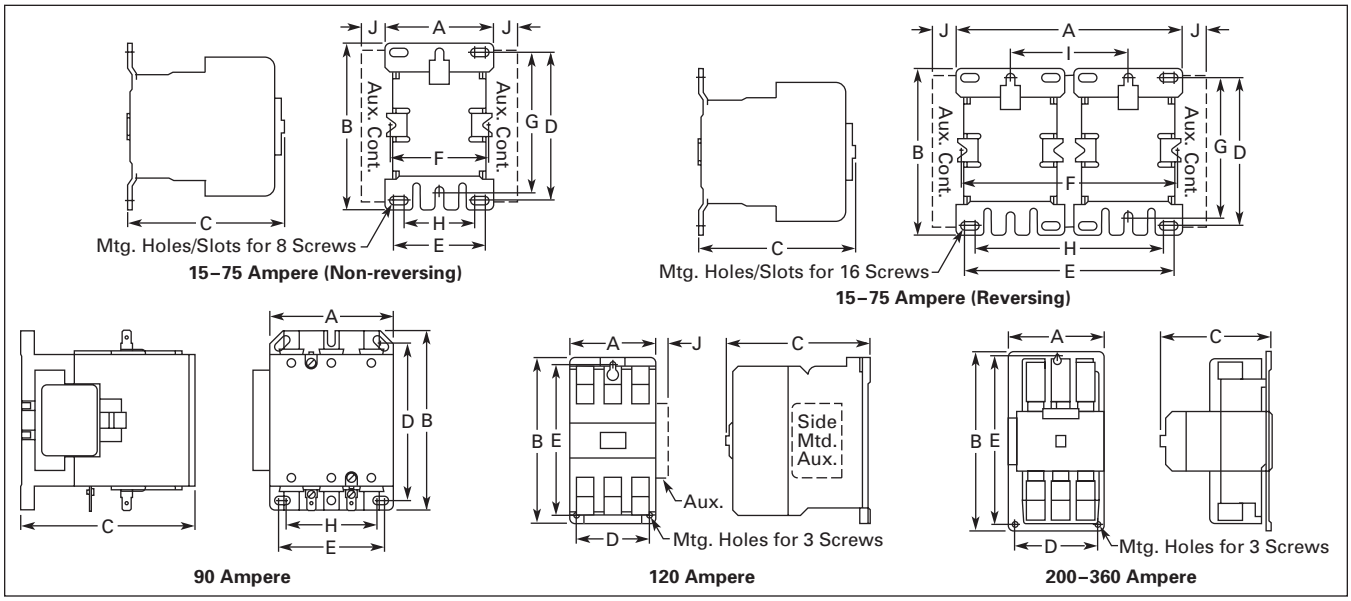


Figure 35-15. 15 – 360A, 2-, 3- and 4-Pole

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Renewal Parts

Renewal Contact Kits for C25 Definite Purpose Contactors

- Replace complete contactor for:
  - C25A...
  - C25B...
  - C25C...
  - C25D...

35

Table 35-71. Renewal Contact Kits for C25 Definite Purpose Contactors

Catalog Number	1-Pole Kit Part No.	Price U.S. $	2-Pole Kit Part No.	Price U.S. $	3-Pole Kit Part No.	Price U.S. $
C25FNF250	—		6-65-5		—	
C25FNF350	—		—		6-65-6	
C25FNF260	—		6-65-7		—	
C25FNF360	—		—		6-65-8	
C25FNF275	—		6-65-20		—	
C25FNF375	—		—		6-65-19	
C25GNF290	6-647-1 ①		—		—	
C25GNF390	6-647-1 ①		—		—	
C25HNE3120	—		—		6-43-6	
C25KNE3200	—		—		6-288	
C25KNE3300	—		—		6-286	
C25LNE3360	—		—		6-45-2	

① Order one kit per pole, 2 for 2-pole and 3 for 3-pole devices.

AC Coils

Table 35-72. AC Coil Selection

AC Coil Voltage	Frequency	Inrush (Maximum)		Sealed (Maximum)		Coil Suffix	Coil Part Number		Price U.S. $
		VA	Watts	VA	Watts		Class	Standard	
15, 25, 30 and 40A — 2- and 3-Pole (Series D1)									
12	60	74.85	46.1	5.53	1.68	R	Class F, 155°C	9-3185-5	
24		81.35	49.7	5.83	1.74	T		9-3185-6	
110/120		74.69	51.6	5.79	1.81	A		9-3185-1	
208/240		82.64	59.1	6.96	2.38	B		9-3185-2	
220/240	60	74.03	51.8	5.85	1.99	J	Class F, 155°C	9-3185-10	
440/480		73.39	52.1	6.09	2.58	C		9-3185-3	
550/600		79.47	51.7	6.56	3.05	D		9-3185-4	
277		72.88	52.4	6.09	2.58	H		9-3185-7	
380/415	50	64.50	50.6	6.08	2.43	L	Class F, 155°C	9-3185-8	
15, 25, 30 and 40A — 2- and 3-Pole (Series C1)									
12	60	65.00	30.0	11.00	2.50	R	Class F, 155°C	9-3125-5	
24		65.00	30.0	11.00	2.50	T		9-3125-6	
104/120		65.00	30.0	11.00	2.50	A		9-3125-1	
208/240	50	75.00	35.0	17.00	3.50	B	Class F, 155°C	9-3125-2	
440/480		75.00	35.0	17.00	3.50	C		9-3125-3	
550/600		75.00	35.0	17.00	3.50	D		9-3125-4	
277	60	65.00	30.0	11.00	2.50	H	Class F, 155°C	9-3125-8	
380/415	50	75.00	35.0	17.00	3.50	L	Class F, 155°C	9-3125-8	
15, 25, 30 and 40A — 2- and 3-Pole (Series D1)									
12	60	74.85	46.1	5.53	1.68	R	Class H, 180°C	9-3252-5	
24		81.35	49.7	5.83	1.74	T		9-3252-6	
110/120		74.69	51.6	5.79	1.81	A		9-3252-1	
208/240		82.64	59.1	6.96	2.38	B		9-3252-2	
220/240	60	74.03	51.8	5.85	1.99	J	Class H, 180°C	9-3252-10	
440/480		73.39	52.1	6.09	2.58	C		9-3252-3	
550/600		79.47	51.7	6.56	3.05	D		9-3252-4	
277		72.88	52.4	6.09	2.58	H		9-3252-7	
380/415	50	64.50	50.6	6.08	2.43	L	Class H, 180°C	9-3252-8	
50A — 2- and 3-Pole (Series D1)									
12	60	115.8	73.6	7.71	2.80	R	Class F, 155°C	9-3186-5	
24		118.1	70.7	7.58	2.79	T		9-3186-6	
110/120		110.7	73.3	7.67	2.89	A		9-3186-1	
208/240		124.9	90.3	10.04	3.74	B		9-3186-2	
220/240	60	112.9	76.2	7.60	3.02	J	Class F, 155°C	9-3186-10	
440/480		114.7	75.6	8.01	3.68	C		9-3186-3	
550/600		109.0	78.6	8.21	4.11	D		9-3186-4	
277		115.4	73.1	7.73	3.12	H		9-3186-7	
380/415	50	110.3	77.0	8.66	3.31	L	Class F, 155°C	9-3186-8	

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Table 35-72. AC Coil Selection — Continued

AC Coil Voltage	Frequency	Inrush (Maximum)		Sealed (Maximum)		Coil Suffix	Coil Part Number		Price U.S. $
		VA	Watts	VA	Watts		Class	Standard	
50A — 2- and 3-Pole (Series D1)									
12 24 110/120 208/240	60	115.8 118.1 110.7 124.9	73.6 70.7 73.3 90.3	7.71 7.58 7.67 10.04	2.80 2.79 2.89 3.74	**R** **T** **A** **B**	Class H, 180°C	**9-3253-5** **9-3253-6** **9-3253-1** **9-3253-2**	
220/240 440/480 550/600 277	60	112.9 114.7 109.0 115.4	76.2 75.6 78.6 73.1	7.60 8.01 8.21 7.73	3.02 3.68 4.11 3.12	**J** **C** **D** **H**	Class H, 180°C	**9-3253-10** **9-3253-3** **9-3253-4** **9-3253-7**	
380/415	50	110.3	77.0	8.66	3.31	**L**	Class H, 180°C	**9-3253-8**	
60 and 75A — 2- and 3-Pole; 25, 30 and 40A — 4-Pole									
12 24 104/120	60	204.0	84.0	36.5	8.00	**R** **T** **A**	Class B, 130°C	**9-3256-5** **9-3256-6** **9-3256-1**	
208/240 440/480 550/600	50	240.0	100.8	50.4	10.80	**B** **C** **D**	Class B, 130°C	**9-3256-2** **9-3256-3** **9-3256-4**	
277	60	204.0	84.0	36.5	8.00	**H**	Class B, 130°C	**9-3256-7**	
380/415	50	199.0	88.8	37.8	8.80	**L**	Class B, 130°C	**9-3256-8**	
90A — 2- and 3-Pole									
24 110/120 208/240	60	214.0	—	19.0	6.80	**T** **A** **B**	Class B, 130°C	**9-3079-1** **9-3079-2** **9-3079-3**	
440/480 550/600	50	247.0	—	19.0	6.80	**C** **D**	Class B, 130°C	**9-3079-5** **9-3079-6**	
277	60	214.0	—	19.0	6.80	**H**	Class B, 130°C	**9-3079-4**	
120A — 3-Pole									
24 110/120 220/240 440/480 550/600	50/60	390.0	112.0	49.8	13.00	**T** **A** **B** **C** **D**	Class B, 130°C	**9-2756-16** **9-2756-1** **9-2756-2** **9-2756-3** **9-2756-4**	
208 277	60	390.0	112.0	49.8	13.00	**E** **H**	Class B, 130°C	**9-2756-5** **9-2756-9**	
200, 300 and 360A — 3-Pole									
110/120 220/240 440/480 550/600	50/60	1040.0	216.0	116.0	17.00	**A** **B** **C** **D**	Class F, 155°C	**9-1891-1** **9-1891-2** **9-1891-3** **9-1891-4**	
208 277	60	1040.0	216.0	116.0	17.00	**E** **H**	Class F, 155°C	**9-1891-13** **9-1891-26**	

Discount Symbol **1CD-1C**

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DC Coils

Table 35-73. DC Coil Selection ①

DC Coil Voltage	Max. Inrush Amperes	Max. Inrush Watts	Max. Sealed Amperes	Max. Sealed Watts	Coil Suffix	Class	Part Number	Price U.S. $
15, 25, 30 and 40A — 2- and 3-Pole (Series D1)								
12	5.8	69	.272	3.27	**1R**	Class F, 155°C	**9-3254-2**	
24	2.9	69	.130	3.12	**1T**		**9-3254-3**	
48	1.5	72	.070	3.37	**1W**		**9-3254-4**	
120	.61	73	.030	3.68	**1A**		**9-3254-5**	
50A — 2- and 3-Pole (Series D1)								
12	5.8	69	.272	3.27	**1R**	Class F, 155°C	**9-3255-2**	
24	2.9	69	.130	3.12	**1T**		**9-3255-3**	
48	1.5	72	.070	3.37	**1W**		**9-3255-4**	
120	.61	73	.030	3.68	**1A**		**9-3255-5**	
15, 25, 30 and 40A — 2- and 3-Pole (Series C1)								
12	4.7	51	232 mA	1.80	**1R**	Class F, 155°C	**9-3126-1**	
24	2.7	64	110 mA	2.40	**1T**		**9-3126-2**	
48	1.4	65	55 mA	2.50	**1W**		**9-3126-3**	
60 and 75A — 2- and 3-Pole; 25, 30 and 40A — 4-Pole (Series C1)								
12	15.4	126	.434	5.26	**1R**	Class F, 155°C	**9-3257-1**	
24	6.2	88.4	.211	5.12	**1T**		**9-3257-2**	
48	2.9	76.2	.102	4.92	**1W**		**9-3257-3**	
120	1.1	67.3	.044	5.32	**1A**		**9-3257-4**	

① DC coils require an early break NC auxiliary contact C320KGD1 (1NCI) or C320KGD2 (1NO-1NCI). Order separately, not included with replacement coil.

DC Operation

These DC coils have separate pick-up and seal windings. The pick-up winding must be connected to an early break normally closed auxiliary contact block and provides the magnetic force required to close the magnet. As the magnet approaches the closed position, the early break normally closed contact is opened and the holding coil is inserted in series with the pick-up winding.

The early break contact block (C320KGD1) has to be attached to the side of the contactor, taking up one of the positions available for add-on auxiliary contact blocks.

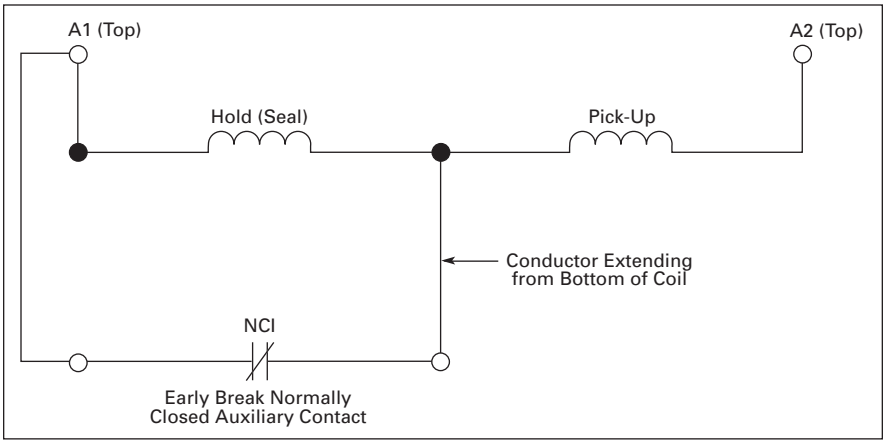


Figure 35-16. DC Coil Elementary Diagram — Contactors and Starters

Discount Symbol **1CD-1C**

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Ampere Rating of AC Motors

Ampere ratings of motors vary somewhat, depending upon the type of motor. The values given below are for drip-proof, Class B insulated (T Frame) where available, 1.15 service factor, NEMA Design B motors. These values represent an average full load motor current which was calculated from the motor performance data published by several motor manufacturers. In the case of high torque squirrel cage motors, the ampere ratings will be at least 10% greater than the values given below.

Caution — These average ratings could be high or low for a specific motor and therefore heater coil selection on this basis always involves risk. For fully reliable motor protection, select heater coils on the basis of full load current rating as shown on the motor nameplate.

Table 35-74. Ampere Ratings of Three-Phase, 60 Hz, AC Induction Motor

hp ①	Syn. Speed RPM	Current in Amperes					
		200V	230V	380V ②	460V	575V	2200V
1/4	1800	1.09	.95	.55	.48	.38	—
	1200	1.61	1.40	.81	.70	.56	—
	900	1.84	1.60	.93	.80	.64	—
1/3	1800	1.37	1.19	.69	.60	.48	—
	1200	1.83	1.59	.92	.80	.64	—
	900	2.07	1.80	1.04	.90	.72	—
1/2	1800	1.98	1.72	.99	.86	.69	—
	1200	2.47	2.15	1.24	1.08	.86	—
	900	2.74	2.38	1.38	1.19	.95	—
3/4	1800	2.83	2.46	1.42	1.23	.98	—
	1200	3.36	2.92	1.69	1.46	1.17	—
	900	3.75	3.26	1.88	1.63	1.30	—
1	3600	3.22	2.80	1.70	1.40	1.12	—
	1800	4.09	3.56	2.06	1.78	1.42	—
	1200	4.32	3.76	2.28	1.88	1.50	—
	900	4.95	4.30	2.60	2.15	1.72	—
1-1/2	3600	5.01	4.36	2.64	2.18	1.74	—
	1800	5.59	4.86	2.94	2.43	1.94	—
	1200	6.07	5.28	3.20	2.64	2.11	—
	900	6.44	5.60	3.39	2.80	2.24	—
2	3600	6.44	5.60	3.39	2.80	2.24	—
	1800	7.36	6.40	3.87	3.20	2.56	—
	1200	7.87	6.84	4.14	3.42	2.74	—
	900	9.09	7.90	4.77	3.95	3.16	—
3	3600	9.59	8.34	5.02	4.17	3.34	—
	1800	10.8	9.40	5.70	4.70	3.76	—
	1200	11.7	10.2	6.20	5.12	4.10	—
	900	13.1	11.4	6.90	5.70	4.55	—
5	3600	15.5	13.5	8.20	6.76	5.41	—
	1800	16.6	14.4	8.74	7.21	5.78	—
	1200	18.2	15.8	9.59	7.91	6.32	—
	900	18.3	15.9	9.60	7.92	6.33	—
7-1/2	3600	22.4	19.5	11.8	9.79	7.81	—
	1800	24.7	21.5	13.0	10.7	8.55	—
	1200	25.1	21.8	13.2	10.9	8.70	—
	900	26.5	23.0	13.9	11.5	9.19	—
10	3600	29.2	25.4	15.4	12.7	10.1	—
	1800	30.8	26.8	16.3	13.4	10.7	—
	1200	32.2	28.0	16.9	14.0	11.2	—
	900	35.1	30.5	18.5	15.2	12.2	—
15	3600	41.9	36.4	22.0	18.2	14.5	—
	1800	45.1	39.2	23.7	19.6	15.7	—
	1200	47.6	41.4	25.0	20.7	16.5	—
	900	51.2	44.5	26.9	22.2	17.8	—
20	3600	58.0	50.4	30.5	25.2	20.1	—
	1800	58.9	51.2	31.0	25.6	20.5	—
	1200	60.7	52.8	31.9	26.4	21.1	—
	900	63.1	54.9	33.2	27.4	21.9	—
25	3600	69.9	60.8	36.8	30.4	24.3	—
	1800	74.5	64.8	39.2	32.4	25.9	—
	1200	75.4	65.6	39.6	32.8	26.2	—
	900	77.4	67.3	40.7	33.7	27.0	—
30	3600	84.8	73.7	44.4	36.8	29.4	—
	1800	86.9	75.6	45.7	37.8	30.2	—
	1200	90.6	78.8	47.6	39.4	31.5	—
	900	94.1	81.8	49.5	40.9	32.7	—
40	3600	111	96.4	58.2	48.2	38.5	—
	1800	116	101	61.0	50.4	40.3	—
	1200	117	102	61.2	50.6	40.4	—
	900	121	105	63.2	52.2	41.7	—
50	3600	138	120	72.9	60.1	48.2	—
	1800	143	124	75.2	62.2	49.7	—
	1200	145	126	76.2	63.0	50.4	—
	900	150	130	78.5	65.0	52.0	—
60	3600	164	143	86.8	71.7	57.3	—
	1800	171	140	90.0	74.5	59.4	—
	1200	173	150	91.0	75.0	60.0	—
	900	177	154	93.1	77.0	61.5	—
75	3600	206	179	108	89.6	71.7	—
	1800	210	183	111	91.6	73.2	—
	1200	212	184	112	92.0	73.5	—
	900	222	193	117	96.5	77.5	—
100	3600	266	231	140	115	92.2	—
	1800	271	236	144	118	94.8	23.6
	1200	275	239	145	120	95.6	24.2
	900	290	252	153	126	101	24.8
125	3600	—	292	176	146	116	—
	1800	—	293	177	147	117	29.2
	1200	—	298	180	149	119	29.9
	900	—	305	186	153	122	30.9
150	3600	—	343	208	171	137	—
	1800	—	348	210	174	139	34.8
	1200	—	350	210	174	139	35.5
	900	—	365	211	183	146	37.0
200	3600	—	452	257	226	181	—
	1800	—	458	265	229	184	46.7
	1200	—	460	266	230	184	47.0
	900	—	482	279	241	193	49.4
250	3600	—	559	338	279	223	—
	1800	—	568	343	284	227	57.5
	1200	—	573	345	287	229	58.5
	900	—	600	347	300	240	60.5
300	1800	—	678	392	339	271	69.0
	1200	—	684	395	342	274	70.0
400	1800	—	896	518	448	358	91.8
500	1800	—	1110	642	555	444	116

① To convert horsepower to kW, multiply horsepower by .7457.
② 380V 50 Hz.

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Contents

Description *Page*

Heavy-Duty Special Purpose Contactors

Product Description **35-36**
Application Description **35-36**
Features **35-36**
Benefits **35-36**
Technical Data and Specifications **35-36**
Accessories **35-36**
Renewal Parts **35-37**
Dimensions **35-37**
Product Selection **35-38**

35



35A 600/1000V Contactor

Product Description

The DPCK Contactors are designed to provide peak performance and reliability on special switching applications. These heavy-duty special purpose contactors are rated for applications up to 1500V AC.

Application Description

- Typical applications include mining equipment, welding equipment, heating and air conditioning applications and other loads that require a compact heavy-duty contactor rated up to 1500V AC.
- The DPCK Contactors are supplied with bolts and washers on each terminal for use with customer supplied lugs.

Features

- A double wound epoxy coil allows for lower temperature rise and longer life
- The U-shaped magnet provides fast, reliable action, long life and lower power requirements
- Stainless steel kick-out springs
- Rugged one-piece mounting plate
- Allows up to four double circuit auxiliary contacts per contactor

Benefits

- All contacts are silver alloy, providing long life and resistance to welding
- Straight-through wiring and up front terminals allow for fast, easy installation
- Loosening two captive screws allows for easy visual inspection of contacts

Technical Data and Specifications

Table 35-75. Magnet Coil VA — 60 Hz

Catalog Number	Open VA	Closed VA	Closed Watts
DPCK3035	625	50	18
DPCK3100, DPCK3250	1200	130	40
DPCK3250 — Model B Only	1000	40	5

Table 35-76. Contactor Ratings

Volts	Full Load Current (Amperes)	Locked Rotor Current (Amperes)	Resistive Load (Amperes)	Lighting Load (Amperes)
Catalog Number DPCK3035				
120	35	240	35	35
240	35	240	35	35
480	35	200	35	35
600	35	200	35	35
1000	35	200	—	—
1500	20	160	—	—
Catalog Number DPCK3100				
120	100	600	100	100
240	100	600	100	100
480	100	600	100	100
600	100	600	100	100
1000	100	450	—	—
1500	75	300	—	—
Catalog Number DPCK3250				
120	250	1500	250	250
240	250	1250	250	250
480	250	1000	250	250
600	250	1000	250	250
1000	220	1000	—	—
1500	150	900	—	—

Accessories

Table 35-77. Accessory Kits

Description	Catalog Number	Price U.S. $
Auxiliary Contacts, 1NO-1NC	**J11**	
Horizontal Mechanical Interlock:		
35A	**180C113G09**	
100A	**1264C37G01**	
250A	**179C984G01**	
Line, Load Terminal Kit	**TK250A** ①	
Surge Suppressor	**SS56**	

① Includes two terminals and hardware for #4 to 1 600 kcmil Cu conductors. Contactors supplied with terminals for ring type connectors only.

Discount Symbol **1CD-1**

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Renewal Parts

Table 35-78. DPCK Contactor Renewal Parts

Description	Hz	Coil Suffix Code	35A				100A		Model A ① — 250A		Model B ① — 250A	
			2-, 3-Pole Part Number	Price U.S. $	4-, 5-Pole Part Number	Price U.S. $	2-, 3-Pole Part Number	Price U.S. $	2-, 3-Pole Part Number	Price U.S. $	2-, 3-Pole Part Number	Price U.S. $
Contact Kit												
2-Pole	—	—	180C180G01		②		180C180G05		672B839G21		672B839G21	
3-Pole			180C180G02		③		180C180G06		672B839G22		672B839G22	
ARC Box			673B439G01		673B439G02		673B440G01		N/A		672B839G29	
Upper Base	—	—	673B439G03		673B439G04		673B440G02		N/A		672B839G32	
Lower Base			673B439G05		673B439G06		673B440G03		N/A		672B839G25	
Crossbar			673B439G07		673B439G08		673B440G04		N/A		672B839G24	
Magnet Coil												
120/110	60/50	A	1266C28G01		1266C29G01		1254C70G01		179C749G01		N/A	
110	60	V	1266C28G08		1266C29G06		1254C70G08		179C749G08		5249C90G01	
208/220	60	B	1266C28G02		1266C29G02		1254C70G02		179C749G02		N/A	
220/240	60	—	N/A		N/A		N/A		N/A		5249C90G02	
240/220	60/50	W	1266C28G09		1266C29G07		1254C70G03		179C749G03		N/A	
480/440	60/50	X	1266C28G10		1266C29G08		1254C70G05		179C749G05		N/A	
440/480	60	—	N/A		N/A		N/A		N/A		5249C90G03	
600/550	60/50	E	1266C28G05		1266C29G04		1254C70G07		179C749G07		N/A	
550	60	—	N/A		N/A		N/A		179C749G06		5249C90G05	
380	50	H	1266C28G06		1266C29G09		N/A		N/A		N/A	
380/110	60	—	N/A		N/A		1254C70G12		179C749G11		N/A	

① Model B replaces Model A — renewal parts are different. Only use parts for proper model.
② For a 4-pole device, use (2) of the 180C180G01 Contact Kits.
③ For a 5-pole device, use (1) of the 180C180G01 and (1) of the 180C180G02 Contact Kits.

Dimensions

Table 35-79. Approximate Dimensions and Shipping Weights

Poles	Dimensions in Inches (mm)			Ship. Wt. Lbs. (kg)
	Wide A	High B	Deep C	
35A Contactors				
2 and 3	4.06 (103.1)	5.44 (138.2)	5.63 (143.0)	16.0 (7.3)
4 and 5	6.06 (153.9)	5.44 (138.2)	5.63 (143.0)	19.0 (8.6)
100A Contactors				
2 and 3	5.38 (136.7)	7.81 (198.4)	6.75 (171.5)	28.0 (12.7)
250A Contactors				
2 and 3	8.25 (209.6)	10.81 (274.6)	7.69 (195.3)	50.0 (22.7)

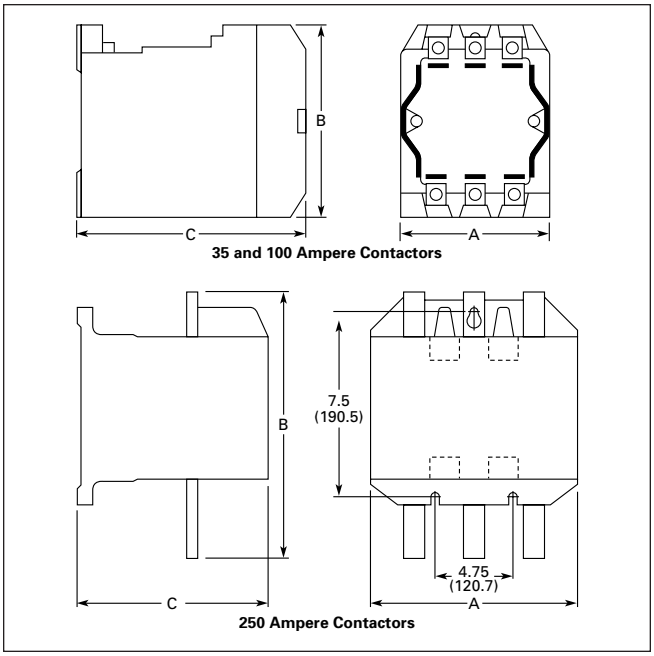


Figure 35-17. Contactor Dimensions

Discount Symbol **1CD-1C**

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Product Selection

When Ordering Specify

- Catalog Number with any required Accessories from **Page 35-36**



35A 600/1000V Contactor



250A 600V Contactor

35

Table 35-80. Catalog Number DPCK Air Break Contactors — 2- and 3-Pole ①

Open Ampere Rating			Coil Voltage 60 Hz ②	Open Type — Number of Poles			
600V	1000V	1500V		2-Pole Catalog Number ③	Price U.S. $	3-Pole Catalog Number ③	Price U.S. $
35	35	20	240 480 600	**DPCK2035WW** **DPCK2035XW** **DPCK2035EW**		**DPCK3035WW** **DPCK3035XW** **DPCK3035EW**	
100	100	75	240 480 600	**DPCK2100WW** **DPCK2100XW** **DPCK2100EW**		**DPCK3100WW** **DPCK3100XW** **DPCK3100EW**	
250	220	150	110 220/240 440/480 550/600	**DPCK2250V** **DPCK2250W** **DPCK2250X** **DPCK2250E**		**DPCK3250V** **DPCK3250W** **DPCK3250X** **DPCK3250E**	

① Holding circuit auxiliary contact not included. If required, order from Accessories on **Page 35-36**.
② For other coil voltages, refer to replacement coils on **Page 35-37** and insert proper letter in place of 9th digit of listed Catalog Number. Example: DPCK3035WW with 380/50 coil DPCK3035**H**W.
③ If short load terminals are desired, add the letter **S** in the 10th position of the listed Catalog Number. Example: DPCK3250W**S**.

Table 35-81. Catalog Number DPCK Air Break Contactors — 4- and 5-Pole ④

Open Ampere Rating			Coil Voltage 60 Hz ⑤	Open Type — Number of Poles			
600V	1000V	1500V		4-Pole Catalog Number ⑥	Price U.S. $	5-Pole Catalog Number ⑥	Price U.S. $
35	35	20	240 480 600	**DPCK4035WW** **DPCK4035XW** **DPCK4035EW**		**DPCK5035WW** **DPCK5035XW** **DPCK5035EW**	

④ Holding circuit auxiliary contact not included. If required, order from Accessories on **Page 35-36**.
⑤ For other coil voltages, refer to replacement coils on **Page 35-37** and insert proper letter in place of 9th digit of listed Catalog Number. Example: DPCK3035WW with 380/50 coil DPCK3035**H**W.
⑥ If short load terminals are desired, add the letter **S** in the 10th position of the listed Catalog Number. Example: DPCK3250W**S**.

Accessory Kits . . . . . **Page 35-36**
Dimensions . . . . . **Page 35-37**
Discount Symbol **1CD-1**

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Contents

Description *Page*

DC Definite Purpose Contactors

Mill Type Contactors **35-39**
600V Contactors **35-41**
DPM 1000V Contactor **35-46**
AVD-Contactor **35-48**
D-Contactor **35-50**
Reversing/Assignment Contactor **35-52**

Mill Type Contactors



Cat. No. C80DG12
Size 2 — 2-Pole Contactor

Product Description

These DC mill type contactors are designed for heavy industry service and are suitable for use on moving machinery. The contactors listed here are for surface mounting on steel panels and front-of-panel wiring. The power stud assembly is mounted on the side of the contactor, rather than as part of a separate mounting kit.

Application Description

- Applications include Mining, Milling, Cranes and Transportation
- These contactors utilize DC coils

  Note: Be sure to utilize a rectifier module if the only control voltage source available is 120V AC.

Features

- Forged steel armature levers and magnet frames for superior physical strength
- Self-lubricating bearings
- Long contact life

Standards and Certifications

- CMAA 5.6.6-2
- NEMA ICS3-441, 442, 443
- NEMA ICS2-331.23
- NEMA ICS2-110.05.02
- NEMA ICS2-125.21.02

Technical Data and Specifications

- Current Range: 5 – 1800 Amperes
- Voltage: 115, 230 and 550V DC
- Mechanical Life: 20M Operations
- Electrical Life: 500K Operations

Accessories

Table 35-82. Auxiliary Contacts with Mounting Kit

Mounting Location	Contact Arrangement	Contactor Size	Catalog Number	Price U.S. $
Side	1NO, 1NC	2	**C81BAC1**	
Bottom	1NO, 1NC	2 3, 4, 5, 6, 6A	**C81BBC1** **C81BBC2**	

Table 35-83. Rectifier Module

Description	Contactor Size	Catalog Number	Price U.S. $
120V AC Input, 100V DC Output	All	**C81EB**	

Options

Table 35-84. Auxiliary Contact Mounting Material Options

Contactor Size	Location	Suffix	Adder U.S. $
2 2 2	Side Bottom, with left hand and right hand option Bottom, with left hand or right hand option	**A** **B** **C**	
3 – 8 2 – 8	Bottom, with left hand and right hand option None	**B** **N**	

Table 35-85. Auxiliary Contact Options per Side

Configuration	Suffix	Adder U.S. $
1NO 2NO 1NO-1NC	**1** **2** **3**	
1NC 2NC None	**4** **5** **0**	

Discount Symbol **18CD-4**

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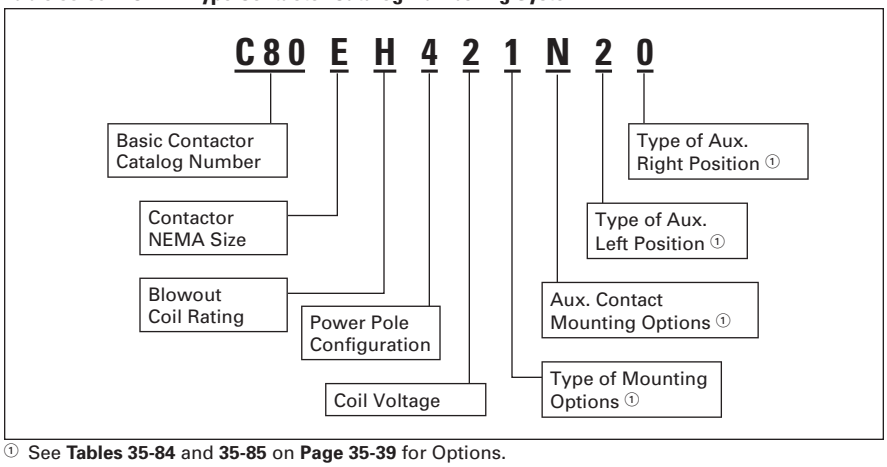
Cat. No. C80EH121
Size 3 — 1-Pole NO



Cat. No. C80EH121
Size 3 — 1-Pole NO

Catalog Number Selection

Table 35-86. DC Mill Type Contactor Catalog Numbering System



① See **Tables 35-84** and **35-85** on **Page 35-39** for Options.

Product Selection

When Ordering Specify

■ The Catalog Number with any required Accessories

Table 35-87. DC Mill Type Contactors Product Selection

NEMA Size	Open Type Contactors					Mechanical Interlock	
	Number of Poles	Blowout Coil Ampere Rating	230V Coil Catalog Number	100V Coil Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
2	1NO	None 5 25 50	**C80DX12** **C80DC12** **C80DF12** **C80DG12**	**C80DX14** **C80DC14** **C80DF14** **C80DG14**		**C81DDA11**	
	2NO	None 5 25 50	**C80DX22** **C80DC22** **C80DF22** **C80DG22**	**C80DX24** **C80DC24** **C80DF24** **C80DG24**		**C81DDA12**	
3	1NO 1NC	100 100	**C80EH121** **C80EH421**	**C80EH141** **C80EH441**		**C81DEA11** —	
4	1NO 1NC	150 150	**C80FJ121** **C80FJ421**	**C80FJ141** **C80FJ441**		**C81DEA11** —	
5	1NO 1NC	300 300	**C80GK121** **C80GK421**	**C80GK141** **C80GK441**		**C81DGA11** —	
6	1NO 1NC	600 600	**C80JL121** **C80JL421**	**C80JL141** **C80JL441**		**C81DJA11** —	
6A ②	1NO	810	**C80KM121**	**C80KM141**		**C81DJA11**	
8	1NO	1350	**C80WN121**	**C80WN141**		**C81DLA11**	

② Not a NEMA size.

Table 35-88. Magnet Coil Selection

DC Coil Voltage	Coil Suffix
115V 230V 100V	**1** **2** **4**
No Coil Special ③	**5** **9**

③ Consult factory.

Table 35-89. Mounting Kit Options ④

Description	Suffix
Surface — Front of Panel Wiring	**1**
Elevated — Front of Panel Wiring	**3** ⑤

④ Solderless lugs available, consult factory.
⑤ Not available with Size 2.

Discount Symbol **18CD-4**

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600V Contactors



Single Pole, Cat. No. MD510 with L-64 Auxiliary Contact

Product Description

These DC Contactors are designed to handle rugged DC applications. They provide durable service and easy installation and maintenance.

Application Description

- Applications including Mining, Milling, Cranes and Transportation.
- These contactors utilize DC coils.

  Note: Be sure to utilize a rectifier module if the only control voltage source available is 120V AC.

Features

- Sturdy glass polyester base on MD and ME
- Knife edge bearings that guarantee precise operation and minimal wear
- High contact pressure
- Vacuum impregnated magnetic coil

Benefits

- Able to mount on steel or panels of any material for maximum flexibility
- Front or rear mounting available for convenient installation and maintenance
- Rapid arc quenching to ensure long life
- Easily accessible contact tips to remove and replace

35

Accessories

Table 35-90. Auxiliary Contacts (Electrical Interlocks) — For Field Installation Only ①

Auxiliary Contact Type	Application	Contact Arrangement ②	Number of Auxiliary Contacts	Auxiliary Contacts Factory Installed ①		Auxiliary Contacts Unmounted Replacement Only		Mounting and Operating Hardware for New Applications	
				Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
L46	ME01 Only	NO – FC NC – FC	1	**11A8713G10** **11A8713G09**		**11A8713G10** **11A8713G09**		None Required	
	ME10 Only	NC – FC – OB	1	**487B878G01**		**487B878G01**		None Required	
	ME10, ME11, ME20, ME30, ME31, ME40 and ME41	NO – FC NC – FC	1	**11A8713G09** **11A8713G10**		**11A8713G09** **11A8713G10**		None Required	
L66	ME10, ME11, ME20, ME30, ME31, ME40 and ME41	DB – FC – L DB – FC – R	1	**659C301G04** **659C301G05**		**659C301G04** **659C301G05**		None Required	
	ME10 Only	DB – FC – L – OB DB – FC – R – OB	1	**487B878G06** **487B878G07**		**487B878G06** **487B878G07**		None Required	
L64	MD/MR501, MD/MR601 and MD/MR701	NO-NC 2NO 2NC	1	**843D943G04** **843D943G05** **843D943G06**		**843D943G04** **843D943G05** **843D943G06**		**2087A63G02** **2087A63G03** **2087A63G03**	
	MD/MR510, MD/MR610 – 710 MD/MR810 MD/MR910	NO-NC 2NO 2NC		**843D943G04** **843D943G05** **843D943G06**		**843D943G04** **843D943G05** **843D943G06**		**2087A63G04** **2087A63G17** **2087A63G05** **2087A63G06**	
Added to Existing L64 Interlocks	MD810	4NO to 4NC 6NO to 6NC	2 3	Order (2) L64 Order (3) L64		Order (2) L64 Order (3) L64		**2087A63G07** **2087A63G07**	
	MD910	4NO to 4NC 6NO to 6NC	2 3	Order (2) L64 Order (3) L64		Order (2) L64 Order (3) L64		**2087A63G08** **2087A63G08**	
	MD810 – 910	2NO to 2NC 4NO to 4NC 2NO to 2NC	1 ③ 2 ③ 1 ④	Order (1) L64 Order (2) L64 Order (1) L64		Order (1) L64 Order (2) L64 Order (1) L64		**2087A63G08** **2087A63G09** **2087A63G10**	

① For factory installed electrical interlocks, consult factory.
② NO = Normally Open, NC = Normally Closed, DB = Delayed Break, FC = Front Connected, L = Left Hand, R = Right Hand, OB = Outboard (for 1-pole, Size 2 frame).
③ With one interlock mounted.
④ With two interlocks mounted.

Table 35-91. Standard Magnet Coil Selection

Voltage	Suffix Code
65V DC (ME Size 0 – 4 only)	**A**
115V DC	**B**
125V DC	**C**
230V DC	**D**
250V DC	**E**
550V DC	**F**
Other	**G**

Discount Symbol **1CD-1**

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Table 35-92. Rear Connector Kit for ME Contactors ①

Catalog Number	Price U.S. $
2184A10G08	

① Field installation only.

Table 35-93. Options

Description	Adder U.S. $
Rectifier for AC Operation Order by description	

Table 35-94. Mechanical Interlocks, Unmounted

Type	Contactor			Catalog Number	Price U.S. $
	Type	Size	Contacts		
M-25	ME	All	1NO, 1NO + 1NC	**878D400G01**	
M-25	ME	All	2NO, 2NO + 1NC	**878D401G01**	
M-27	MD	5	1NO	**25A1669G01**	
M-27	MD	6 – 7	1NO	**25A1670G01**	
M-27	MD	8 – 9	1NO	**25A1671G01**	

Dimensions

Table 35-95. Approximate Dimensions and Shipping Weights

Contactor Size	Contact Arrangement	Width in Inches (mm)	Height in Inches (mm)	Depth in Inches (mm)	Ship. Wt. Lbs. (kg)
Front Connected					
0 – 2	1NO 2NO 1NO, 1NC 1NC	3.18 (80.8) 5.53 (140.5) 3.67 (93.2) 3.67 (93.2)	7.56 (192.0) 6.75 (171.5) 12.44 (316.0) 9.57 (243.1)	6.81 (173.0)	8.0 (3.6) 10.0 (4.5) 12.0 (5.4) 10.0 (4.5)
3 – 4	1NO 2NO 1NO, 1NC 1NC	3.18 (80.8) 5.53 (140.5) 3.67 (93.2) 3.67 (93.2)	7.78 (197.6) 7.44 (189.0) 12.88 (327.2) 9.69 (246.1)	6.81 (173.0)	8.0 (3.6) 10.0 (4.5) 12.0 (5.4) 10.0 (4.5)
5	1NO 1NC	5.50 (139.7) 5.88 (149.4)	13.00 (330.2) 16.19 (411.2)	12.00 (304.8) 12.00 (304.8)	34.0 (15.4) 45.0 (20.4)
6	1NO 1NC	6.63 (168.4) 9.95 (252.7)	16.81 (427.0) 20.38 (517.7)	14.38 (365.3) 14.75 (374.7)	71.0 (32.2 103.0 (46.8)
7	1NO 1NC	6.63 (168.4) 9.95 (252.7)	16.81 (427.0) 20.38 (517.7)	14.38 (365.3) 14.75 (374.7)	76.0 (34.5) 110.0 (49.9)
8	1NO	11.00 (279.4)	21.00 (533.4)	17.00 (431.8)	151.0 (68.6)
9	1NO	11.00 (279.4)	21.00 (533.4)	19.00 (482.6)	188.0 (85.4)
Rear Connected					
5	1NO 1NC	7.00 (177.8) 7.00 (177.8)	17.00 (431.8) 20.00 (508.0)	12.50 (317.5) 10.50 (266.7)	34.0 (15.4) 45.0 (20.4)
6	1NO 1NC	6.75 (171.5) 9.50 (241.3)	21.00 (533.4) 24.00 (609.6)	13.00 (330.2) 13.00 (330.2)	71.0 (32.2) 103.0 (46.8)
7	1NO 1NC	6.75 (171.5) 9.50 (241.3)	21.00 (533.4) 24.00 (609.6)	13.00 (330.2) 13.00 (330.2)	76.0 (34.5) 110.0 (49.9)
8	1NO	9.50 (241.3)	24.00 (609.6)	15.00 (381.0)	151.0 (68.6)
9	1NO	9.50 (241.3)	24.00 (609.6)	17.00 (431.8)	220.0 (99.9)

Discount Symbol **1CD-1**

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Renewal Parts

Sizes 5 – 9 M & MD Series



MD 510 Coil
Part No. 45A5515G11

Table 35-96. Coils

Voltage	M & MD 501			M & MD 510			M & MD 610/710		
	Part Number	Price U.S. $	Sym Wiring	Part Number	Price U.S. $	Sym Wiring	Part Number	Price U.S. $	Sym Wiring
65V	N/A		—	45A5515G11		—	—		—
90/92V	N/A		—	45A5515G23		—	30B4377G17		—
115V	30B4375G04		—	45A5515G01		—	30B4377G04		—
125V	30B4375G24		—	45A5515G07		—	30B4377G10		—
230V	30B4375G05		—	45A5515G04		—	30B4377G05		—
250V	30B4375G12		—	45A5515G12		—	30B4377G07		—
550V	30B4375G06		—	45A5515G05		—	30B4377G08		—

Voltage	M & MD 601/701			M & MD 810			M & MD 910		
	Part Number	Price U.S. $	Sym Wiring	Part Number	Price U.S. $	Sym Wiring	Part Number	Price U.S. $	Sym Wiring
92V	—		—	435A928G01		①	435A930G01		—
115V	30B4377G23		①	435A929G01		①	L483507G01		①
115V	30B4377G01		②	L482211G01		②	L483507G01		②
125V	30B4377G24		①	435A966G01		①	435A967G01		①
125V	30B4377G13		②	—		—	—		—
230V	30B4377G01		①	L482211G01		①	L483507G01		②
230V	30B4377G02		②	—		—	—		—
250V	30B4377G13		①	334P064G01		①	L549720G01		②
250V	30B4377G08		②	—		—	—		—
550V	30B4377G25		①	L482213G01		②	L483508G01		—
550V	30B4377G03		②	—		—	—		—
600V	—		—	N/A		—	L548879G01		—

Voltage	M & MD 810R								
	Coil	Price U.S. $	Sym Wiring	Resistor	Price U.S. $	Sym Wiring	Resistor Mounting	Price U.S. $	Sym Wiring
115V	N/A		—	N/A		—	N/A		—
230V	L482211G01		①	57D1336G10		③	57D1340G02		—
550V	N/A		①	57D1336G12		④	57D1340G02		—

① 2 coils connected in series.
② 2 coils connected in parallel.
③ 2 resistors connected in parallel.
④ Resistors connected in series.

Discount Symbol **1CD1**

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35

ME Series

Table 35-97. Kits

Description	1 NO Pole			2 NO Poles			1 NC Pole			1 NO/NC Pole		
	Qty.	Part Number	Price U.S. $	Qty.	Part Number	Price U.S. $	Qty.	Part Number	Price U.S. $	Qty.	Part Number	Price U.S. $
Contact Kit	1	**2184A10G14**		2	**2184A10G14**		1	**2184A10G14**		2	**2184A10G14**	
Arc Box 10/25/50A	1	**2184A10G09**		2	**2184A10G09**		1	**2184A10G09**		2	**2184A10G09**	
Arc Box 100/150A	1	**2184A10G10**		2	**2184A10G10**		1	**2184A10G10**		2	**2184A10G10**	
Shunt Kit	1	**2184A10G21**		1	**2184A20G16**		1	**2084A01G07**		1	**2184A11G07**	
Armature Kit	1	**2184A10G19**		1	**2184A20G15**		1	**2084A01G06**		1	**2184A11G06**	
Blowout Assembly												
10A	1	**2184A10G15**		1	**2184A20G11**		1	**2184A10G15**		2	**2184A10G15**	
25A	1	**2184A10G16**		1	**2184A20G12**		1	**2184A10G16**		2	**2184A10G16**	
50A	1	**2184A10G17**		1	**2184A20G13**		1	**2184A10G17**		2	**2184A10G17**	
110/150A	1	**2184A10G18**		1	**2184A20G14**		1	**2184A10G18**		2	**2184A10G18**	
Rear Conn. Kit	1	**2184A10G08**		1	**2184A10G08**		1	**2184A10G08**		1	**2184A10G08**	

Table 35-98. Coils

Voltage	Operating Coils		Holding Coils (Lower) ① — 1NO-1NC Contactors Only			
	10/25/50/100/150 Ampere Sizes		10/25/50 Ampere Sizes		100/150 Ampere Sizes	
	Part Number	Price U.S. $	Part Number	Price U.S. $	Part Number	Price U.S. $
65V	**30B4376G06**		**44A6366G10**		**30B4376G27**	
90/92V	**30B4376G25**		**44A6366G12**		**427C048G16**	
115V	**30B4376G07**		**44A6366G13**		**30B4376G01**	
125V	**30B4376G08**		**44A6366G19**		**30B4376G26**	
230/240V	**30B4376G09**		**44A6366G15**		**30B4376G02**	
250V	**30B4376G10**		**44A6366G23**		**30B4376G17**	
500V	**30B4376G14**		**N/A**		**N/A**	
550V	**30B4376G11**		**44A6366G18**		**30B4376G03**	

① If lower coils are required, order separately.



Contact Kit
Part No. 26D2610G15



Shunt
Part No. 25A1650G02



Arc Box
Part No. 25A1646G01



Armature Kit
Part No. 25A1640G05



Blowout Coil Kit
Part No. 25A1644G05

Sizes 5 – 9 MR & MD Series ②

Table 35-99. Kits — Contact, Shunt and Arc Box

Type MR & MD	Current Part Number	Price U.S. $	Obsolete Part Number
Contact Kit			
501/501R	**26D2610G22**		(1745058)
510	**26D2610G15**		(1745051)
601/701	**26D2610G24**		(1745060)
610/710	**26D2610G16**		(1745052)
810	**26D2610G18**		(1745054)
910	**26D2610G20**		(1745056)
Shunt			
501/501R	**25A1650G02**		(1486952)
510	**25A1641G02**		N/A
601	**25A1666G03**		(1486925)
610	**25A1654G03**		(1486811)
701	**25A1666G04**		(1486920)
710	**25A1654G04**		(1486872)
810/810R	**25A1693G02**		(1490271)
910	**45A1425G02**		(1747587)
Arc Box			
501/510	**25A1646G01**		(1486651)
601/610, 701/710	**25A1662G01**		(1486654)
810/910	**25A1677G05**		N/A

② MR = rear connected; MD = front connected.

Table 35-100. Armature Kit

Type MR & MD	Current Part Number	Price U.S. $
Armature Kit		
501/501R	**25A1649G05**	
510	**25A1640G05**	
601/701	**25A1667G03**	
610/710	**25A1655G04**	
810/810R	**25A1694G05**	
910	**38A2269G02**	

Table 35-101. Blowout Coil Assembly Kit

Type MR	Current Part Number	Price U.S. $	Type MD	Current Part Number	Price U.S. $
M501/501R	**25A1644G05**		MD501/501R	**857D505G05**	
M601/610	**25A1659G05**		MD601/610	**857D506G08**	
M701/710	**25A1660G03**		MD701/710	**857D516G05**	
M810/810R	**25A1698G03**		MD810/810R	**857D508G07**	
M910	**38A2273G02**		MD910	**857D509G04**	

Discount Symbol **1CD1**

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Product Selection

When Ordering Specify

- Catalog Number with appropriate Coils Suffix
- Any Required Accessories

Table 35-102. 600V DC Contactors

Size	Open 8 Hour Ampere Rating	Contact Arrangement	Provisions for Interlocks		Magnet Coil Voltage	Catalog Number	Price U.S. $
			Mechanical	Electrical			
Front Connected							
0	10	1NO 2NO 1NO, 1NC 1NC	Yes	4 2 4 2	125V DC ①	**ME010C** **ME020C** **ME011C** **ME001C**	
1	25	1NO 2NO 1NO, 1NC 1NC	Yes	4 2 4 2	125V DC ①	**ME110C** **ME120C** **ME111C** **ME101C**	
2	50	1NO 2NO 1NO, 1NC 1NC	Yes	4 2 4 2	125V DC ①	**ME210C** **ME220C** **ME211C** **ME201C**	
3	100	1NO 2NO 1NO, 1NC 1NC	Yes	4 2 4 2	125V DC ①	**ME310C** **ME320C** **ME311C** **ME301C**	
4	150	1NO 2NO 1NO, 1NC 1NC	Yes	4 2 4 2	125V DC ①	**ME410C** **ME420C** **ME411C** **ME401C**	
5	300	1NO 1NC	Yes No	2 2	125V DC ①	**MD510C** **MD501C**	
6	600	1NO 1NC	Yes No	2 2	125V DC ①	**MD610C** **MD601C**	
7	900	1NO 1NC	Yes No	2 2	125V DC ①	**MD710C** **MD701C**	
8	1350	1NO	Yes	3	125V DC ①	**MD810C**	
9	2500	1NO	Yes	3	125V DC ①	**MD910C**	
Rear Connected							
0 – 4	10 – 150	—	—	—	—	**ME** ②	
5	300	1NO 1NC	Yes No	2 2	125V DC ④	**MR510C** **MR501C**	
6	600	1NO 1NC	Yes No	2 2	125V DC ④	**MR610C** **MR601C**	
7	900	1NO 1NC	Yes No	2 2	125V DC ④	**MR710C** **MR701C**	
8	1350	1NO	Yes	2 ③	125V DC ④	**MR810C**	
9	2500	1NO	Yes	2 ③	125V DC ④	**MR910C**	

① Other coil voltages available, see **Table 35-91** on **Page 35-41**. Substitute Suffix Code of desired voltage for last digit in listed Catalog Number. Example: ME010**B**.

② For 10 – 150A rear connected contactors, order front connected ME contactor above and rear connection kit, Catalog Number 2184A10G08, (field installed only). See **Table 35-92** on **Page 35-42**.

③ Requires panel drilling.

④ Other coil voltages available, see **Table 35-91** on **Page 35-41**. Substitute Suffix Code of desired voltage for last digit in listed Catalog Number. Example: MR510**B**.

Discount Symbol **1CD-1**

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35

DPM 1000V Contactor



Cat. No. 2120A07G02 DC Contactor

Product Description

The DPM 1000V DC Definite Purpose Contactor has been designed to meet severe environmental and vibration conditions found in your worst applications. The contactor is of unit construction, assembled on a molded insulated base, providing maximum performance in minimum space.

Application Description

This rugged device was designed for applications such as railway equipment, offshore drilling, mining, off-road vehicles, marine, etc.

Features

- Power circuit insulating barriers are molded from glass-polyester materials having high arc and track resisting qualities.
- The DPM is designed to mount directly on a channel or angle frame, but may be adapted for mounting on a flat metal or insulated panel.
- Available with or without an overcurrent latching mechanism to prevent opening under heavy overload currents. When the line current returns to normal, the overcurrent latch disengages.

Benefits

- Saves panel space by locating the arc chute vents on the front of the unit. This eliminates the need for arcing clearance above the contactor.
- All vital parts are removable from the front without having to disconnect line or load connections, allowing for easy maintenance.
- Safety is a must. The mechanical interlock prevents the contactor from closing when the arc box has been removed or when it is not installed properly.

Technical Data and Specifications

- Line Voltage: 1000V DC
- Continuous Current Rating:
  - Carrying and Interrupting Capacity: 1250A
- Operating Coil:
  - Duty Rating: Continuous
  - Operation: Will operate at 80 – 110% of rated voltage
  - Insulation between power circuit and operating coil: Rated 1000V DC
- Arcing and Creepage Distances: Meet or exceed NEMA standards for 1000V equipment
- Blowout Coil: Rated for continuous duty

Accessories

Table 35-103. Extra L-67 Auxiliary Contacts — Order Separately

Contact Combination Provided by One Auxiliary Contact Assembly		Factory Installed		Field Installed Kit	
Normally Open	Normally Closed	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
0	4	**2087A40G01**		**2087A40G11**	
1	3	**2087A40G02**		**2087A40G12**	
2	2	**2087A40G03**		**2087A40G13**	
3	1	**2087A40G04**		**2087A40G14**	
4	0	**2087A40G05**		**2087A40G15**	
Interlock Mounting		—		**6479D96G01**	

Table 35-104. Mechanical Interlock Kit

Description	Catalog Number	Price U.S. $
Mechanical Horizontal Interlock Kit Includes mounting instructions and mounting hardware ①	**1954D13G01**	

① When interlock kit is installed, only one L-67 auxiliary contact can be mounted on each DPM contactor.

Renewal Parts

Table 35-105. DPM Contactor

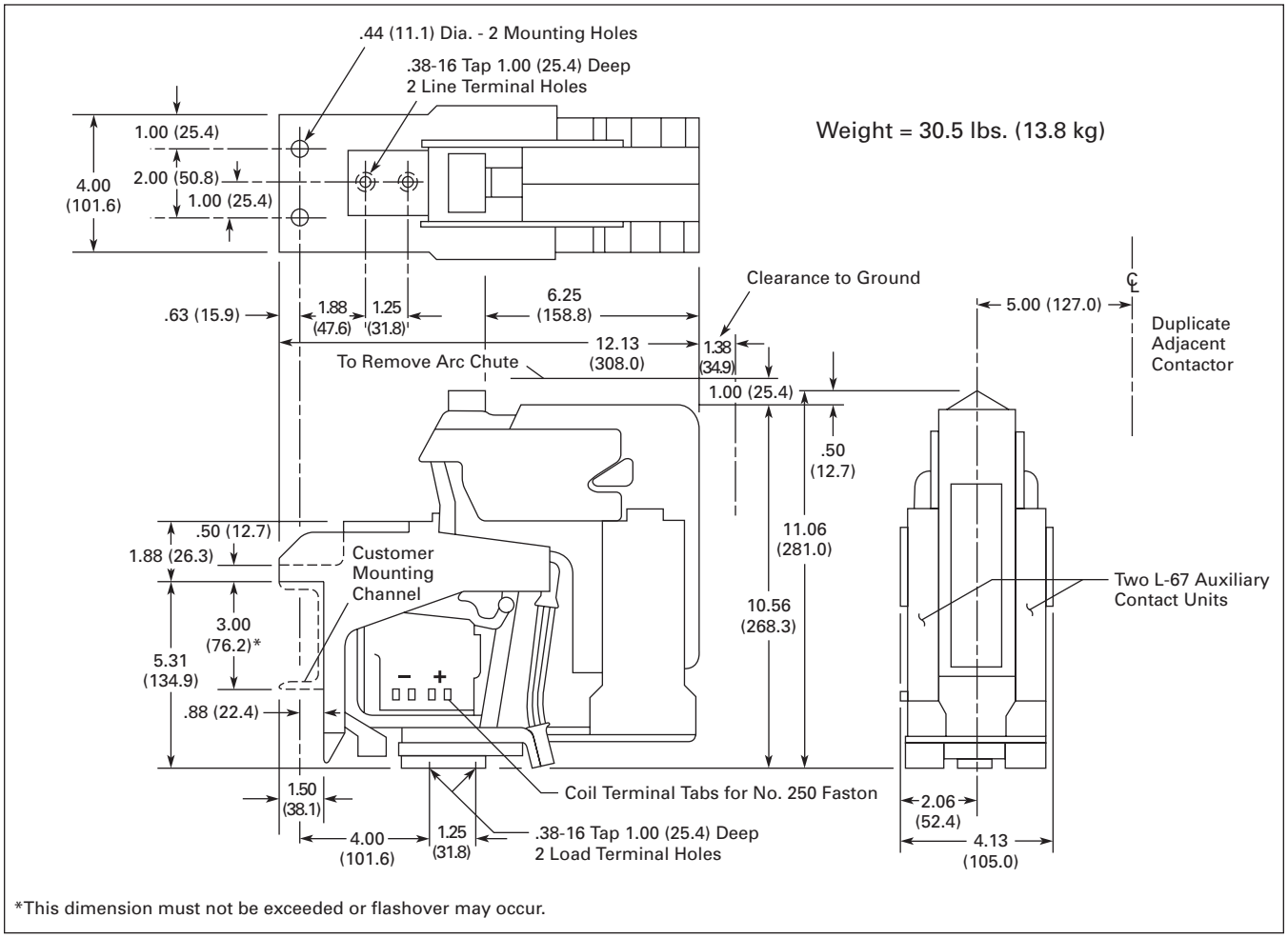
Description	Catalog Number ②	Price U.S. $
Contact Kit	**2131A94G10**	
Arc Box	**2131A94G03**	
Shunt	**3534C86G01**	
Coils		
28V DC	**2114A92G04**	
36V DC	**2114A92G05**	
55V DC	**2114A92G06**	
74V DC	**2114A92G09**	
110/115V DC	**2114A92G14**	
125V DC	**2114A92G15**	
275V DC	**2114A92G16**	
600V DC	**2114A92G20**	

② Discount symbol **1CD-1C**.

Discount Symbol **1CD-1**

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Dimensions



*This dimension must not be exceeded or flashover may occur.

Figure 35-18. Dimension Drawing — Approximate Dimensions in Inches (mm)

Table 35-106. Approximate Dimensions and Shipping Weights

Dimensions in Inches (mm)			Ship. Wt. Lbs. (kg)
Width	Height	Depth	
4.13 (105)	11.06 (280.9)	12.12 (307.8)	30.5 (13.8)

Product Selection

When Ordering Specify

- Catalog Number of contactor and any required Accessories

Table 35-107. 1000V DC Contactors

Coil Operating Voltage	Over-current Latch	Catalog Number	Price U.S. $
28V DC	Without With	**2120A07G01** **2120A07G02**	
36V DC	Without With	**2120A07G03** **2120A07G04**	
55V DC	Without With	**2120A07G05** **2120A07G06**	
74V DC	Without With	**2120A07G09** **2120A07G10**	
110V DC	Without With	**2120A07G13** **2120A07G14**	
600V DC	Without With	**2120A07G31** **2120A07G32**	

Discount Symbol **1CD-1**

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35

AVD-Contactor



2000V Contactor

Product Description

The AVD-Contactor is a single-pole normally open, load break, bi-directional definite purpose DC contactor. The device is rated at 1400 amps continuous and is capable of switching up to 2000V DC loads.

Application Description

The AVD-Contactor was designed for the demanding environmental requirements of Locomotive, Rapid Transit and Off Highway Vehicle applications. This device is also applied in high horsepower DC drive applications including Process Lines and Off Shore Oil Drilling Rigs.

Features

- Bi-directional interrupting capability
- 2000V DC switching in a compact design due to patented arc chute
- Any combination of up to four isolated NO or NC auxiliary contacts
- Panel mount design
- Continuous duty operating coil
- Continuous duty blow out coil

Technical Data

- 1400A continuous current carrying capability at 55°C
- Electrical creepage and clearance distances up to 2000V DC applications
- Mechanical life of 2 million operations
- Operating Coil Voltages (DC): 28, 37, 74, 100, 230 (others available)

Table 35-108. Operating Coil Characteristics

Coil Voltage	Current Draw at Nominal Voltage (± 5% @ 20°C)	Catalog Number
28	1.87	**9-3004-2**
37	1.58	**9-3004-3**
74	.79	**9-3004-1**
100	.62	**9-3004-5**
230	.25	**9-3004-4**

Accessories

Table 35-109. Auxiliary Contacts

Contact Configuration	Terminal Configuration	Catalog Number	Price U.S. $
1NO/1NC	Fast-On	**10-3519-5**	
2NO	Fast-On	**10-3519-6**	
2NC	Fast-On	**10-3519-7**	
1NO/1NC	Screw Type	**10-6817**	
2NO	Screw Type	**10-6817-2**	
2NC	Screw Type	**10-6817-3**	

Renewal Parts

Table 35-110. Contacts

Description	Quantity Required per Contactor	Catalog Number	Price U.S. $
Stationary Contact	1	**23-7253**	
Movable Contact	2	**23-7255**	

Product Specification

The AVD-Contactor is a definite purpose DC contactor. Please contact our Technical Resource Center for assistance in applying this device.

Discount Symbol **15CD3**

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Dimensions

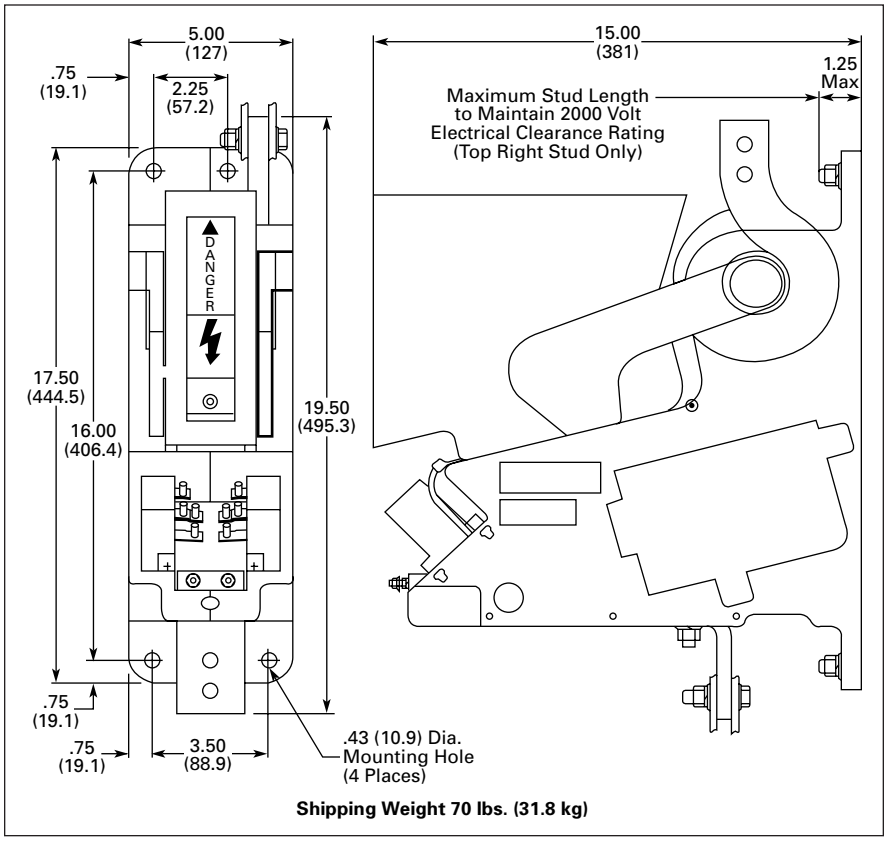


Figure 35-19. AVD Approximate Dimensions in Inches (mm) and Shipping Weights

Table 35-111. Arc Clearances in Inches (mm)

2000V DC		
Front	**Top**	**Sides**
2 (51)	2 (51)	1 (25)

Table 35-112. Approximate Dimensions and Shipping Weights

Dimensions in Inches (mm)			Ship. Wt. Lbs. (kg)
Width	**Height**	**Depth**	
15 (381)	19.5 (495.3)	5 (127)	70 (31.8)

Product Selection

Table 35-113. AVD-Contactor

Device Type	Auxiliary Contact Configuration	Coil Voltage	Catalog Number	Price U.S. $
1400A Contactor	3NO/1NC	28	**6702ED667-4**	
		37	**6702ED667-5**	
		74	**6702ED667-6**	
		100	**6702ED667-3**	
		230	**6702ED667-7**	

Note: Please consult our Technical Resource Center for Catalog Numbers of other device configurations and application assistance.

Discount Symbol **18CD5**

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35

D-Contactor



750V Contactor

Product Description

The D-Contactor is a single-pole normally open, load break, bi-directional definite purpose DC contactor. Two devices are available rated at 1800A and 3000A at 750V DC.

Application Description

The D-Contactor was designed for the demanding environmental requirements of Locomotive, Rapid Transit and Off Highway Vehicle applications. This device is also widely applied in high horsepower DC drive applications including Process Lines and Off Shore Oil Drilling Rigs.

Features

- Bi-directional interrupting capability
- Compact design due to intermittent duty blowout coil and arc interruption circuit (not suitable for extremely high duty cycle or jogging applications)
- Any combination of up to eight isolated NO or NC auxiliary contacts
- Channel/angle frame mounting standard, optional panel mount kit available
- Continuous duty operating coil
- Screw type or fast-on control terminals

Technical Data

- 1800A and 3000A continuous current carrying capability at 55°C
- 5000A 750V DC resistive interrupt rating
- Electrical creepage and clearance distances up to 1500V DC applications
- Mechanical life of 2 million operations
- Operating Coil Voltages (DC): 12, 24, 32, 48, 74, 100, 115, 230 (others available)

Table 35-114. Operating Coil Characteristics

Coil Voltage	Current Draw at Nominal Voltage (± 7.5% @ 20°C)	Catalog Number
12	3.96	**9-1688-15**
24	2.00	**9-1688-7**
32	1.44	**9-1688-9**
48	1.00	**9-1688-12**
74	.97	**9-2064-3**
100	.45	**9-1688-8**
115	.37	**9-1688-2**
230	.20	**9-1688-1**

Accessories

Table 35-115. Auxiliary Contacts

Contact Configuration	Terminal Configuration	Catalog Number	Price U.S. $
1NO/1NC	Fast-On	**10-3519-5**	
2NO	Fast-On	**10-3519-6**	
2NC	Fast-On	**10-3519-7**	
1NO/1NC	Screw Type	**10-6817**	
2NO	Screw Type	**10-6817-2**	
2NC	Screw Type	**10-6817-3**	

Table 35-116. Panel Mounting Kit

Description	Catalog Number	Price U.S. $
Panel Mounting Kit	**99-3842**	

Renewal Parts

Table 35-117. Contact Kits

Device Rating	Main Contact Configuration	Contacts	Catalog Number	Price U.S. $
1800A	2-Main	Main Contacts	**6-497**	
1800A	2-Main	Arcing Contacts	**23-5449**	
3000A	4-Main	Main Contacts	**6-496**	
3000A	4-Main	Arcing Contacts	**23-5448**	

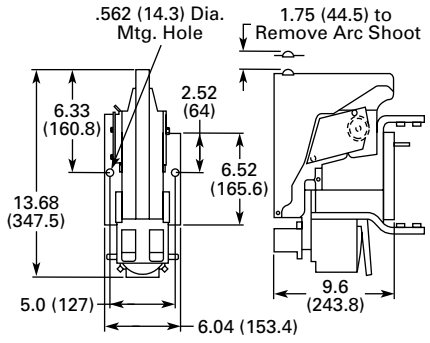
Discount Symbol **15CD3**

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Product Specification

The D-Contactor is a definite purpose DC contactor. Please contact our Technical Response Center for assistance in applying this device.

Dimensions



Shipping Weight 43 Lbs. (19.5 kg)

Figure 35-20. D-Contactor Approximate Dimensions in Inches (mm) and Shipping Weights

Table 35-118. Arc Clearances in Inches (mm)

Type of Load	750V DC		
	Front	Top	Sides
Resistive	4 (102)	2 (51)	3 (76)
Inductive	7 (178)	4 (102)	3 (76)

Table 35-119. Approximate Dimensions and Shipping Weights

Dimensions in Inches (mm)			Shipping Weight Lbs. (kg)
Width	Height	Depth	
9.6 (243.8)	13.68 (347.5)	6.04 (153.4)	43 (19.5)

Product Selection

Table 35-120. D-Contactor

Device Type	Auxiliary Contact Configuration	Coil Voltage	Catalog Number	Price U.S. $
1800A Contactor	3NO/1NC	74V DC	**6702ED584**	
	3NO/1NC	100 V DC	**6702ED663**	
	2NO/2NC	115V DC	**6702ED584-2**	
	3NO/1NC	74V DC	**6702ED587-2**	
	2NO/2NC	100V DC	**6702ED668**	
	3NO/1NC	115V DC	**6702ED587-4**	

Note: Please consult our Technical Resource Center for Catalog Numbers of other device configurations and application assistance.

Discount Symbol **18CD5**

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35

Reversing/Assignment Contactor



1000V Contactor

Product Description

The Reversing/Assignment Contactor is a double-pole, double-throw non-load break definite purpose DC contactor. A three-position center-off and a two-position magnetically-latched configuration is available. The device is rated for 1100A, 1000V DC. The Reversing Contactor includes cross over bus bars for DC motor reversing applications; the Assignment Contactor omits the cross over bus bars for motor assignment applications. (See **Figure 35-21**).

Application Description

The Reversing/Assignment Contactor was designed for the demanding environmental requirements of Off Highway Vehicle applications. This device is also widely utilized with high horsepower DC drives for DC motor reversing and drive assignment applications.

Features

- Bi-directional current carrying capability (non-load break)
- Can replace four single-pole contactors in DC motor reversing applications
- Can replace two or four single-pole contactors in DC motor assignment applications
- Any combination of up to eight isolated NO or NC auxiliary contacts
- Panel mount design
- Continuous duty operating coil
- Screw type or fast-on control terminals

Technical Data

- 1100A continuous current carrying capability at 55°C
- Electrical creepage and clearance distances for 1000V DC applications
- Mechanical life of 1 million operations
- Operating Coil Voltages (DC): 24, 28, 36, 74, 110, 125, 250 (others available)

Table 35-121. Operating Coil Characteristics

Coil Voltage	Current Draw at Nominal Voltage (± 7.5% @ 20°C)	Catalog Number
24	1.60	**9-1903-9**
28	1.30	**9-1903-1**
36	1.06	**9-1903-3**
74	.49	**9-1903-7**
110	.33	**9-1903-6**
125	.33	**9-1903-4**
250	.17	**9-1903-8**

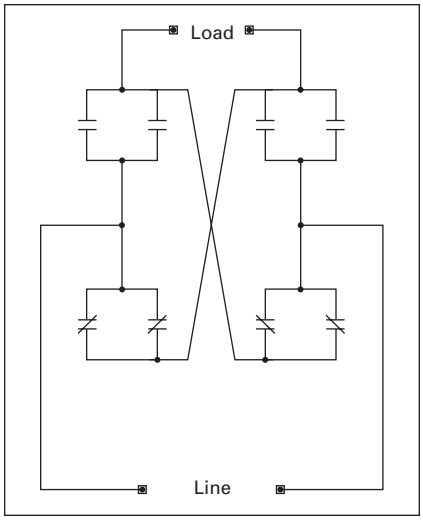


Figure 35-21. Reversing Contactor Schematic Diagram

The Reversing Contactor includes the cross over bus bars for DC motor reversing applications. The Assignment Contactor omits the cross over bus bars for motor assignment applications.

Accessories

Table 35-122. Auxiliary Contacts

Contact Configuration	Terminal Configuration	Catalog Number	Price U.S. $
1NO/1NC	Fast-On	**10-3519-5**	
2NO	Fast-On	**10-3519-6**	
2NC	Fast-On	**10-3519-7**	
1NO/1NC	Screw Type	**10-6817**	
2NO	Screw Type	**10-6817-2**	
2NC	Screw Type	**10-6817-3**	

Discount Symbol **15CD3**

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Renewal Parts

Table 35-123. Contact Kits

Device	Configuration	Catalog Number	Price ② U.S. $
Reversing/Assignment	3-Position	**6-602**	
Reversing/Assignment Upgrade Kit ①	3-Position	**6-602-3**	
Magnetic Latched Reversing/Assignment	2-Position	**6-602-5**	

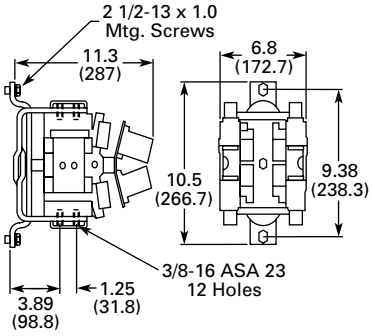
① The 6-602-3 contact kit will upgrade the 3-position, reversing/assignment device from the original design that incorporated a leaf spring contact structure to the present design that incorporates a coil spring contact structure. The 6-602 contact kit can then be used after the device has been upgraded for subsequent contact replacement.

② Discount Symbol **15CD3**.

Product Specification

The Reversing/Assignment Contactor is a definite purpose DC contactor. Please contact our Technical Response Center for assistance in applying this device.

Dimensions



Shipping Weight 45 Lbs. (20.4 kg)

Figure 35-22. Reversing Contactor Approximate Dimensions in Inches (mm) and Shipping Weight

Table 35-124. Approximate Dimensions and Shipping Weights

Dimensions in Inches (mm)			Ship. Wt. Lbs. (kg)
Width	Height	Depth	
11.3 (287)	10.5 (266.7)	6.8 (172.7)	45 (20.4)

Product Selection

Table 35-125. Reversing/Assignment Contactors (3-Position, Center OFF)

Device Type	Auxiliary Contact Configuration	Coil Voltage	Catalog Number	Price U.S. $
Reverser	8NO	74	**6702ED615**	
	4NO/4NC	125	**6702ED621-2**	
		250	**6702ED622**	
Assignment	4NO/4NC	74	**6702ED664-2**	
		125	**6702ED621**	
		250	**6702ED664-6**	

Note: Please consult our Technical Resource Center for Catalog Numbers of other device configurations and application assistance.

Discount Symbol **18CD5**

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