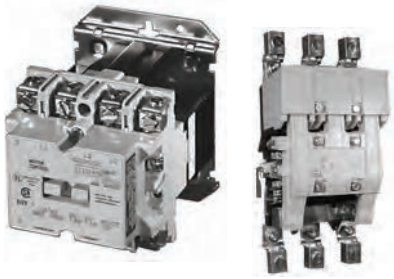


Contents

Contactors—Non-Reversing and Reversing

Product Description

Class A201 Contactors, Sizes 00–4; Three-Phase, 1-1/2–100 hp

A201 Magnetic Contactors from Eaton's Electrical Sector are 600V rated devices available in NEMA Sizes 00–4, 10A through 150A (open rating). Product features include:

- Straight-through wiring to line and load terminals located up front for ease of installation
- Moving and stationary contacts are front accessible, simplifying inspection and maintenance
- Reliable U-shaped magnet for reduced power consumption
- Coil design reduces inventory/maintenance expenses. For a given voltage, one size coil fits all contactors Sizes 00–2, and a second coil fits three-pole Model J Sizes 3 and 4. Model K coils are different design

A201 contactors have normally open holding circuit interlocks which are supplied as standard.

Panel layout and drilling are simplified through the use of common backplates, one for Sizes 00–2 and one for Sizes 3–4. In addition, panel space is reduced dramatically through the use of unique corner cavities for mounting the wide variety of modifications shown on **Page V5-T2-116.**

For reversing applications, two contactors are supplied on a common base with electrical and mechanical interlocks which prevent both contactors from being closed at the same time.

Class A201 Contactors, Sizes 5–9; Three-Phase, Over 100 hp

These AC magnetic contactors utilize clapper design and feature straight-through wiring.

Contacts are silver alloy for longer life. The contacts close with optimum wiping action which serves to keep the contacting surfaces clean. De-ion® arc quenchers draw the arc away from the contacts at opening, which reduces burning and pitting and increases contact life.

All of the contactors are complete with one unwired, normally-open (NO) auxiliary contact mounted and have accommodations for additional auxiliary contacts. No control circuit wiring or terminal markings are included.

Size 5, 300A, 600V, Open
Size 6, 600A, 600V, Open

Class A201 Size 5 and 6 contactors are front clapper design, AC operated with the armature pivoting on dual needle bearings which assure accurate contact alignment.

The contactor base is molded of a high impact, non-tracking, non-hygroscopic glass polyester material permitting front mounting and wiring on a steel panel.

Floating magnet assures quiet operation.

Size 5 and 6 contactors must be mounted with the line terminals directly above the load terminals.

Multi-voltage coil ratings allow selection of the voltage which closely matches the actual system voltage to assure optimum contactor operation.

Each contactor accommodates two Type J11 auxiliary contacts, providing up to four auxiliary circuits, normally-open or normally-closed (NO and NC).

A201 Size 5 and 6 contactors and starters are UL recognized when supplied without terminals. When supplied with terminals, the devices are UL listed.

Two special configurations of the Class A201 Size 5 and 6 contactors are available:

- **Latched Design**—This is a mechanically held, electrically released device. It is applied where the contactor must remain closed during extreme voltage fluctuations or power failure. It is also suitable for applications requiring quiet operation since the operating coil is de-energized when the contactor is closed. The latch assembly consists of a mechanical latch mechanism, electrically operated AC trip solenoid and a clearing contact
- **DC Operated**—This device is DC operated. It is used where low dropout voltage or exceptionally quiet operation is desired. The DC assembly consists of a DC operating coil, integrally mounted rectifier and shorting contact

Size 7, 900A, 600V, Open
Size 8, 1350A, 600V, Open
Size 9, 2500A, 600V, Open

Class A201 Size 7 and 8 contactors are DC operated side clapper design with the shaft mounted on dual needle bearings to ensure positive contact alignment and long contact life.

A steel panel base permits mounting on angle or channel without additional support, for versatile low cost installation.

Each stationary contact assembly is mounted on an individual molded insulator. Each pair of contacts is surrounded by a De-ion grid type arc quencher for rapid and confined arc interruption and long contact life.

The shunt for each pole is made of flexible, braided copper cable for freedom of movement and long life.

The rugged DC operating coils are designed to operate at high temperature and insulated to meet Class H service.

An integrally mounted avalanche type silicon rectifier supplies DC coil voltage from the AC control circuit.

Sizes 7 and 8 accommodate three Type L-63 auxiliary contacts which are easily converted from normally-open to normally-closed, providing auxiliary circuit flexibility. Size 9 uses L-64 auxiliary contacts with a total of four circuits.

A201 Size 7, 8 and 9 contactors and starters are UL recognized when supplied without terminals. When supplied with terminals, the devices are UL listed.

Application Description

Magnetic contactors are used to switch transformers and capacitors and to control electrical power circuits such as heating, lighting and motors that require no overload protection, or where overload protection is separately provided. They can be operated remotely by manual or automatic pilot devices.

Standards and Certifications

A201 contactors are UL listed components and also have CSA certification.

Listed

Instructional Leaflets

16960B Sizes 00–1 Magnetic Contactor, Non-reversing or Reversing

16961E Size 2 Magnetic Contactor, Non-reversing or Reversing

13238G Size 3 Magnetic Contactor, Non-reversing or Reversing

17001C Size 4 Magnetic Contactor, Non-reversing or Reversing

17049D Size 5 Magnetic Contactor, Non-reversing or Reversing

17053B Size 6 Magnetic Contactor, Non-reversing or Reversing

17048 Sizes 7–8 Magnetic Contactor, Non-reversing or Reversing

16978 Size 9 Magnetic Contactor, Non-reversing or Reversing

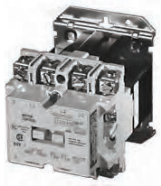
Product Selection

Non-Reversing, Sizes 00–9

When Ordering Specify

Order by catalog number from the table below, plus suffix for coil voltages, verifying usage of appropriate sizes.

A201 Size 1 Contactor



Front Connected Contactors

Size	Amps	Max. UL Horsepower Single-Phase 115V	230V	Three-Phase 208V	240V	480V	600V	Two Poles Open Catalog Number	Three Poles Open Catalog Number	Four Poles Open Catalog Number	Five Poles Open Catalog Number
Sizes 00–6											
00	9	1/3	1	1-1/2	1-1/2	2	2	**A201KAB_**	**A201KAC_**	**A201KAD_**	**A201KAE_**
0	18	1	2	3	3	5	5	**A201K0B_**	**A201K0C_**	**A201K0D_**	**A201K0E_**
1	27	2	3	7-1/2	7-1/2	10	10	**A201K1B_**	**A201K1C_**	**A201K1D_**	**A201K1E_**
2	45	3	7-1/2	10	15	25	25	**A201K2B_**	**A201K2C_**	**A201K2D_**	**A201K2E_**
3	90	—	—	25	30	50	50	**A201K3B_**	**A201K3C_**	**A201K3D_**	**A201K3E_**
4	135	—	—	40	50	100	100	**A201K4B_**	**A201K4C_**	**A201K4D_**	**A201K4E_**
5	270	—	—	75	100	200	200	**A201K5B_**	**A201K5C_**	—	—
6	540	—	—	150	200	400	400	**A201K6B_**	**A201K6C_**	—	—
Sizes 7–9											
7 ①	810	—	—	200	300	600	600	**A201K7B_**	**A201K7C_**	—	—
8 ①	1215	—	—	400	450	900	900	**A201K8B_**	**A201K8C_**	—	—
9 ①	2250	—	—	—	800	1600	—	**A201K9B_**	**A201K9C_Z1** ②③	—	—

Rear Connected Contactors

120V Rectified Coil/Open Only

Size	Catalog Number
7	**A201K7CJZ1Z4**
8	**A201K8CJZ1Z4**
9	**A201K9CJZ1Z4**

Coil Suffix

Coil Volts and Hz	Code Suffix
Sizes 00–6	
120/60 or 110/50	**A**
200–208/60	**B**
240/60	**W**
Sizes 7, 8 and 9 ②	
480/60	**X**
600/60	**E**
110–120/50 or 60	**J**
220–240/50 or 60	**K**
440–480/50 or 60	**U**
600/60	**E**

Notes

① Sizes 7–9 use rectifier with DC coil.
② For Size 9, only available coil voltage is 120V.
③ Supplied without terminal lugs.

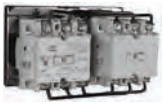
Reversing, Sizes 00–9

2

When Ordering Specify

Order by catalog number from the table below, plus suffix for coil voltages, verifying usage of appropriate sizes.

Size 1 Horizontal Reversing Contactor



Class A211—Horizontally Mounted and Class A251—Vertically Mounted Reversing Contactors

		Max. UL Horsepower						Horizontal Design	Vertical Design
		Single-Phase		Three-Phase				Catalog	Catalog
Size	Amps	115V	230V	208V	240V	480V	600V	Number	Number
Sizes 0–6									
0	18	1	2	3	3	5	5	**A211K0C_**	**A251K0C_**
1	27	2	3	7-1/2	7-1/2	10	10	**A211K1C_**	**A251K1C_**
2	45	3	7-1/2	10	15	25	25	**A211K2C_**	**A251K2C_**
3	90	—	—	25	30	50	50	**A211K3C_**	**A251K3C_**
4	135	—	—	40	50	100	100	**A211K4C_**	**A251K4C_**
5	270	—	—	75	100	200	200	**A211K5C_**	**A251K5C_**
6	540	—	—	150	200	400	400	**A211K6C_**	**A251K6C_**
Sizes 7–9									
7 ①	810	—	—	200	300	600	600	—	**A251K7C_**
8 ①	1215	—	—	400	450	900	900	—	**A251K8C_**
9 ①	2250	—	—	—	800	1600	—	—	**A251K9C_** ②

Coil Suffix

Coil Volts and Hz	Code Suffix
Sizes 00–6	
120/60 or 110/50	**A**
200–208/60	**B**
240/60	**W**
480/60	**X**
600/60	**E**
Sizes 7, 8 and 9 ②	
110–120/50 or 60	**J**
220 –240/50 or 60	**K**
440–480/50 or 60	**U**
600/60	**E**

Notes

① Sizes 7–9 use rectifier with DC coil.

② For Size 9, only available coil voltage is 120V.

Dimensions

Approximate Dimensions in Inches (mm)

Not to be used for construction purposes unless approved.

Non-Reversing Open Contactors

Figure A—Sizes 00–4 A210

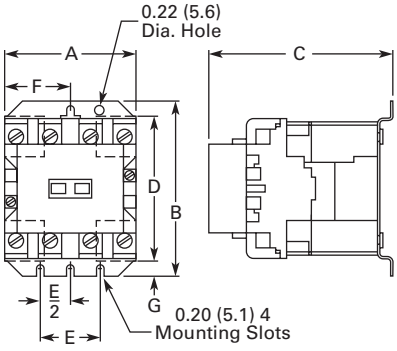


Figure B—Size 5

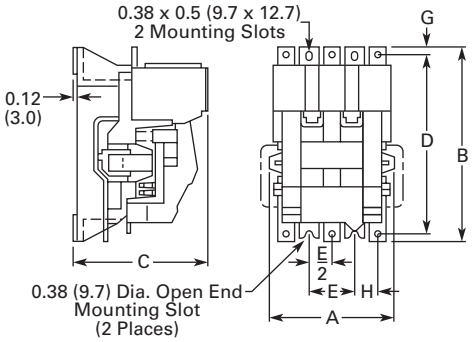


Figure C—Size 6

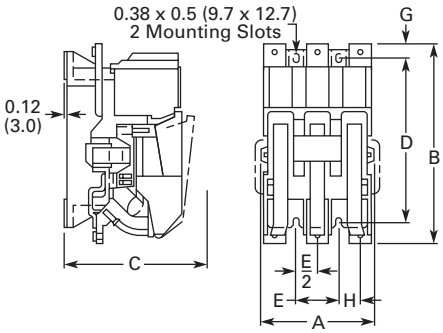
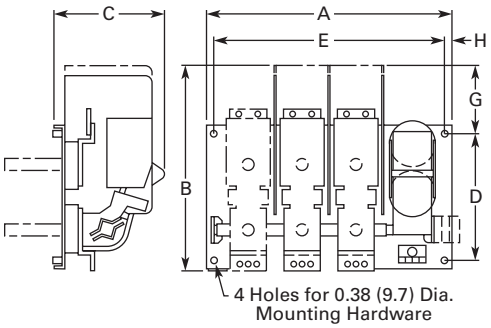


Figure D—Sizes 7–9



Dimensions and Shipping Weights

NEMA Size	No. of Poles	Fig.	Mounting Screws No.	Size	A	B	C	D	E	F	G	H	Weight, Lbs (kg)
00, 0, 1	2–4	A	3	#10	3.31 (84.1)	4.38 (111.3)	4.61 (117.1)	3.95 (100.3)	1.50 (38.1)	1.66 (42.2)	0.45 (11.5)	—	2.6 (1.2)
	5	A	3	#10	4.19 (106.4)	4.38 (111.3)	4.61 (117.1)	3.95 (100.3)	1.50 (38.1)	2.09 (53.1)	0.45 (11.5)	—	3.2 (1.5)
2	2, 3	A	3	#10	3.31 (84.1)	4.38 (111.3)	4.94 (125.5)	3.95 (100.3)	1.50 (38.1)	1.66 (42.2)	0.45 (11.5)	—	3.3 (1.5)
	4, 5	A	3	#10	5.06 (128.5)	4.38 (111.3)	4.94 (125.5)	3.95 (100.3)	1.50 (38.1)	2.53 (64.3)	0.45 (11.5)	—	4.5 (2.0)
3, 4	2, 3	A	3	1/4 in.	4.63 (117.6)	6.63 (168.4)	6.75 (171.5)	6.00 (152.4)	1.88 (47.8)	2.31 (58.7)	0.38 (9.7)	—	9.3 (4.2)
	4, 5	A	3	1/4 in.	7.25 (184.2)	6.63 (168.4)	6.75 (171.5)	6.00 (152.4)	1.88 (47.8)	3.63 (92.2)	0.38 (9.7)	—	13.0 (5.9)
5	2, 3	B	4	3/8 in.	7.22 (183.4)	12.00 (304.8)	7.75 (196.9)	11.00 (279.4)	2.75 (69.9)	—	0.59 (15.0)	2.22 (56.4)	25.0 (11.4)
6	2, 3	C	4	3/8 in.	7.22 (183.4)	13.50 (342.9)	9.50 (251.3)	11.00 (279.4)	2.75 (69.9)	—	0.59 (15.0)	2.22 (56.4)	42.0 (19.1)
7	3	D	4	3/8 in.	23.50 (596.9)	18.63 (473.2)	11.00 (279.4)	12.00 (304.8)	22.00 (558.8)	—	5.63 (143.0)	0.75 (19.1)	215.0 (97.6)
8	3	D	4	3/8 in.	23.50 (596.9)	19.25 (489.0)	11.00 (279.4)	12.00 (304.8)	22.00 (558.8)	—	5.63 (143.0)	0.75 (19.1)	265.0 (120.3)
9	3	D	4	1/2 in.	33.00 (838.2)	29.75 (755.7)	12.94 (328.7)	8.00 (203.2)	30.75 (781.1)	—	14.50 (368.3)	1.63 (41.4)	315.0 (143.0)

Approximate Dimensions in Inches (mm)

Not to be used for construction purposes unless approved.

2

Reversing Open Contactors

Figure A—Sizes 00–4 Horizontal

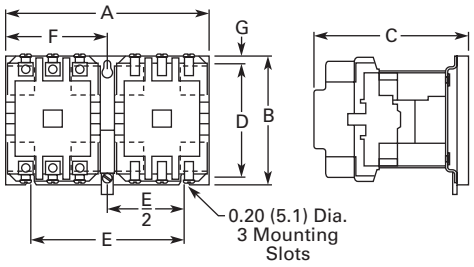


Figure C—Sizes 5, 6 Horizontal

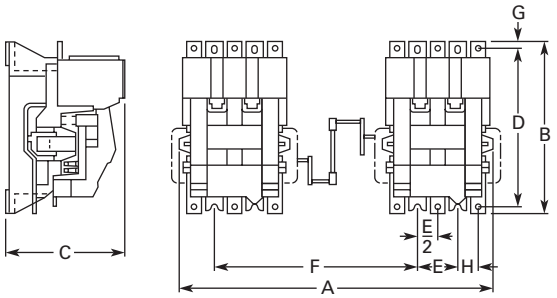


Figure B—Sizes 00–4 Vertical

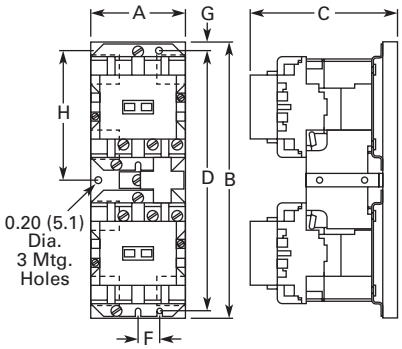


Figure D—Sizes 5, 6 Vertical

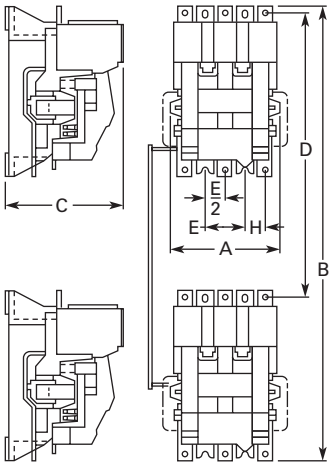
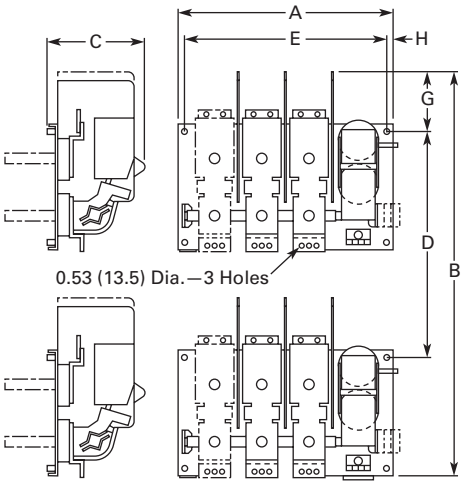
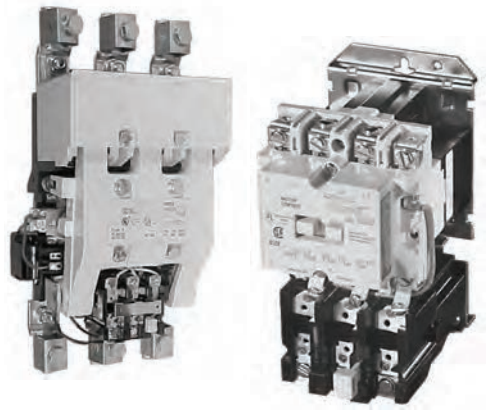


Figure E—Sizes 7–9 Vertical



Dimensions and Shipping Weights

NEMA Size	No. of Poles	Fig.	Mounting Screws No.	Mounting Screws Size	A	B	C	D	E	F	G	H	Weight, Lbs (kg)
00, 0, 1	3 x 3 H.	A	3	#10	7.13 (181.1)	4.45 (113.0)	5.05 (128.3)	3.95 (100.3)	5.31 (134.9)	3.56 (90.4)	0.25 (6.4)	—	7.8 (3.5)
	3 x 3 V.	B	3	#10	3.33 (84.6)	9.61 (244.1)	5.05 (128.3)	9.08 (230.6)	2.16 (54.9)	0.75 (19.1)	0.25 (6.4)	4.52 (114.8)	8.9 (4.0)
2	3 x 3 H.	A	3	#10	7.13 (181.1)	4.45 (113.0)	5.38 (136.7)	3.95 (100.3)	5.31 (134.9)	3.56 (90.4)	0.25 (6.4)	—	9.1 (4.1)
	3 x 3 V.	B	3	#10	3.33 (84.6)	9.61 (244.1)	5.38 (136.7)	9.08 (230.6)	2.16 (54.9)	0.75 (19.1)	0.25 (6.4)	4.52 (114.8)	10.0 (4.5)
3, 4	3 x 3 H.	A	3	1/4 in.	9.75 (247.7)	6.88 (174.8)	7.25 (184.2)	6.00 (152.4)	7.00 (177.8)	4.88 (124.0)	0.44 (11.2)	—	24.0 (10.9)
	3 x 3 V.	B	3	1/4 in.	4.63 (117.6)	16.56 (420.6)	7.25 (184.2)	15.69 (398.5)	2.75 (69.9)	0.94 (23.9)	0.44 (11.2)	7.78 (197.6)	25.0 (11.4)
5	3 x 3 H.	C	8	3/8 in.	17.22 (437.4)	12.00 (304.8)	7.75 (196.9)	11.00 (279.4)	2.75 (69.9)	10.00 (254.0	0.59 (15.0)	1.38 (35.1)	55.0 (25.0)
	3 x 3 V.	D	8	3/8 in.	8.25 (209.6)	30.00 (762.0)	7.75 (196.9)	18.00 (457.8)	2.75 (69.9)	—	—	1.38 (35.1)	55.0 (25.0)
6	3 x 3 H.	C	8	3/8 in.	17.22 (437.4)	13.50 (342.9)	8.75 (222.3)	11.00 (279.4)	2.75 (69.9)	10.00 (254.0)	0.59 (15.0)	1.38 (35.1)	90.0 (40.9)
	3 x 3 V.	D	8	3/8 in.	8.25 (209.6)	41.50 (1054.1)	8.75 (222.3)	28.00 (711.2)	2.75 (69.9)	—	—	1.38 (35.1)	90.0 (40.9)
7	3 x 3 V.	E	8	3/8 in.	23.50 (596.9)	38.63 (981.2)	11.00 (279.4)	20.00 (508.0)	22.00 (558.8)	—	5.63 (143.0)	0.75 (19.1)	450.0 (204.3)
8	3 x 3 V.	E	8	3/8 in.	23.50 (596.9)	39.25 (997.0)	11.00 (279.4)	20.00 (508.0)	22.00 (558.8)	—	5.63 (143.0)	0.75 (19.1)	550.0 (249.7)
9	3 x 3 V.	E	8	1/2 in.	33.00 (838.2)	62.75 (1593.9)	12.94 (328.7)	33.00 (838.2)	30.75 (781.1)	—	14.50 (368.3)	1.63 (41.4)	650.0 (295.1)



Contents

Starters—Non-Reversing and Reversing

Product Description

NEMA Sizes 00–4; Three-Phase, 1-1/2–100 hp

These Starters from Eaton's Electrical Sector use Class A201 contactors as described on **Page V5-T2-97**. Contactor features are enhanced through the ability to provide positive motor protection in the form of several types of overload relays. See **Pages V5-T2-124** to **V5-T2-136**.

Type B Overload Relay, Manual Reset Only

Supplied as standard on Class A200 and A900 starters (two-speed). The bi-metallic overload relay offers ambient compensation and trip-to-test feature (relay contact status check) as standard. In addition, an isolated normally-open contact is available in kit form for customer mounting. Type B overload relays are manual reset only.

Type A Overload Relay, Manual or Automatic Reset

This is an optional overload relay, offering the capability of field conversion to automatic reset. It is available as an ambient compensated or non-compensated type.

Non-Reversing Starters

Non-reversing starters are supplied as open devices. All starters are supplied with a normally-open holding circuit interlock.

Reversing Starters

For reversing applications (Class A210), a starter and a contactor electrically and mechanically interlocked are supplied on a common baseplate. Reversing starters are used to start, stop and reverse AC squirrel cage motors and for primary control of reversing wound-rotor motors.

For plugging or inching, when operations exceed five times per minute, decreased horsepower ratings in accordance with NEMA Standard ICS 2-321 are recommended.

Two-Speed Starters, A900s

For across-the-line starting of two-speed constant hp, constant torque and variable torque squirrel cage motors, two-speed starters (Class A900) are available. These starters consist of two starters, one for each motor speed, mechanically and electrically interlocked and wired for manual speed selection by means of pushbuttons. Auxiliary relays may be added to provide automatic acceleration or deceleration.

Starters for two-speed, two independent winding motors consist of two-, three- or four-pole starters electrically and mechanically interlocked.

Starters for two-speed, single reconnectable winding motors consist of one three-pole and one five-pole starter mechanically and electrically interlocked.

NEMA Sizes 5–9; Three-Phase 75 to 1600 hp

Non-reversing (Class A200), and reversing (Classes A210, A250) full voltage starters are used for across-the-line starting of squirrel cage induction motors. They are used with motors rated above 50 hp at 230V, and above 100 hp at 460 through 600V.

Sizes 5 and 6 starters use Class A201 contactors as described on **Page V5-T2-97**. In addition to standard motor starters, special application devices are available: Sizes 5 and 6 starters with integrally rectified AC to DC coils for applications where low voltage problems are prevalent are available.

Front Removable Parts—All operating parts can be removed quickly and easily from the front. Straight-through wiring and conveniently located connection points for external wires and cables minimize installation time.

Type B Block Type Thermal Overload Relay—Dependable overload protection is assured by these snap-action, manual reset relays. Automatic reset Type A relays are available as an option.

Types of Starters

Class A200, Sizes 5 and 6—Non-reversing starters contain an AC magnetically-operated Size 5 or Size 6 line contactor and block Type B three-pole overload relay, along with three current transformers. A control relay whose contacts handle the coil current of the starter is provided with Size 6 starters.

Class A200, Sizes 7, 8 and 9—Non-reversing starters contain a DC operated line contactor, DC power supply, block Type B three-pole overload relay with three current transformers and a control relay.

Class A960/A970/A980 Multi-Speed Starters: Refer to **Page V5-T2-107**.

Application Description

Magnetic starters are used for full-voltage, across-the-line starting and stopping of squirrel cage motors. They can be operated locally or remotely by manual or automatic pilot devices.

Features and Benefits

Sizes 00–4

- **Straight-Through Wiring, Up-Front, Out-Front Terminals** for ease in installation
- **Unique Accessory Mounting Cavities** reduce panel space requirements
- **Snap-in Accessories** for application flexibility
- **Vertical and Horizontal Interlocking** capability increases application flexibility
- **Ambient Compensated Overload Relays** available as standard, offering superior motor protection in variable motor/controller environments
- **Isolated Normally Open Relay Contact** available in kit mounting form on Type B Overload Relay

Sizes 5–9

- **Rectified AC/DC Coils** available to reduce premature drop-out or "kiss" problems due to inherent low voltage conditions
- **Clapper Design** armature assembly pivots on needle bearings resulting in quick, smooth opening and closing of the magnet
- **Stainless Steel Kick-Out Spring** assures quick, positive drop-out time
- **Front Removable Parts** all current carrying parts front removable for easy inspection and maintenance

Standards and Certifications

Class A200 starters are UL listed and recognized and also carry CSA certification.

Listed

Instructional Leaflets

16958	Sizes 00–1, 3-Pole Motor Controller
16956	Sizes 00–1, 2-Pole, Single-Phase Motor Controller
16959	Size 2, 3-Pole Motor Controller
16957	Size 2, 2-Pole, Single-Phase Motor Controller
15465C	Sizes 3 and 4J Motor Controller
17000C	Size 4, Model K Motor Controller
17054C	Size 5 Motor Controller
17055C	Size 6 Motor Controller

Product Selection

Non-Reversing, Sizes 00–9

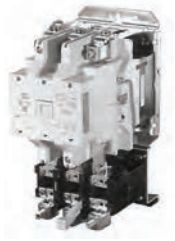
When Ordering Specify

Order by catalog number from the tables to the right, plus suffix for coil voltages, verifying usage of appropriate sizes.

Heaters

Enter heaters as separate item by listing catalog number from the tables on **Pages V5-T2-135** and **V5-T2-136**, as required per starter.

Size 3 Starter



Non-Reversing Starters

Size	Amperes	Max. UL Horsepower Single-Phase 115V	230V	Three-Phase 208V	240V	480V	600V	Open Catalog Number ①
Two-Poles ② —Sizes 00–2								
00	9	1/3	—	1-1/2	1-1/2	2	2	**A200MABR**
0	18	1	—	3	3	5	5	**A200M0BR**
1	27	2	—	7-1/2	7-1/2	10	10	**A200M1BR**
1-1/2	36	3	—	—	—	—	—	**A200MDBR**
2	45	7-12	—	10	15	25	25	**A200M2BR**
Three Poles—Sizes 00–6								
00	9	1/3	—	1-1/2	1-1/2	2	2	**A200MAC_**
0	18	1	—	3	3	5	5	**A200M0C_**
1	27	2	—	7-1/2	7-1/2	10	10	**A200M1C_**
2	45	7-12	—	10	15	25	25	**A200M2C_**
3	90	—	—	25	30	50	50	**A200M3C_**
4	135	—	—	40	50	100	100	**A200M4C_**
5	270	—	—	75	100	200	200	**A200M5C_**
6	540	—	—	150	200	400	400	**A200M6C_**
Three Poles—Sizes 7–9								
7 ③	810	—	—	200	300	600	600	**A200M7C_**
8 ③	1215	—	—	400	450	900	900	**A200M8C_**
9 ③	2250	—	—	—	800	1600	—	**A200M9C_** ④

Coil Suffix

Coil Volts and Hz	Code Suffix
Sizes 00–6	
120/60 or 110/50	**AC**
200–208/60	**B**
240/60	**W**
480/60	**X**
600/60	**E**
Sizes 7, 8 and 9 ④	
110–120/50 or 60	**J**
220–240/50 or 60	**W**
440–480/50 or 60	**X**
600/60	**E**

Notes

① For ambient compensated overload relay with auto-reset, add Suffix **D.**
② Single-phase with one single-pole overload relay.
③ Sizes 7–9 use rectifier with DC coil.
④ For Size 9, only available coil voltage is 120V.

Reversing, Sizes 00–9

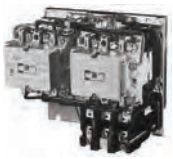
When Ordering Specify

Order by catalog number from table below, plus suffix for coil voltages, verifying usage of appropriate sizes.

Heaters

Enter heaters as separate item by listing catalog number from the tables on **Pages V5-T2-135** and **V5-T2-136**, as required per starter.

Size 1 Horizontal Reversing Starter



Reversing Starters

Size	Amps	Max. UL Horsepower Single-Phase 115V	230V	Three-Phase 208V	240V	480V	600V	Horizontal Design Catalog Number ①	Vertical Design Catalog Number ①
Sizes 00–6									
00	9	1/3	1	1-1/2	1-1/2	2	2	**A210MAC_**	**A250MAC_**
0	18	1	2	3	3	5	5	**A210M0C_**	**A250M0C_**
1	27	2	3	7-1/2	7-1/2	10	10	**A210M1C_**	**A250M1C_**
2	45	3	7-1/2	10	15	25	25	**A210M2C_**	**A250M2C_**
3	90	—	—	25	30	50	50	**A210M3C_**	**A250M3C_**
4	135	—	—	40	50	100	100	**A210M4C_**	**A250M4C_**
5	270	—	—	75	100	200	200	**A210M5C_**	**A250M5C_**
6	540	—	—	150	200	400	400	**A210M6C_**	**A250M6C_**
Sizes 7–9									
7 ②	810	—	—	200	300	600	600	—	**A250M7C_**
8 ②	1215	—	—	400	450	900	900	—	**A250M8C_**
9 ②	2250	—	—	—	800	1600	—	—	**A250M9C_** ③

Coil Suffix

Coil Volts and Hz	Code Suffix
Sizes 00–6	
120/60 or 110/50	**AC**
200–208/60	**B**
240/60	**W**
480/60	**X**
600/60	**E**
Sizes 7, 8 and 9 ③	
110–120/50 or 60	**J**
220–240/50 or 60	**W**
440–480/50 or 60	**X**
600/60	**E**

Notes

① For ambient compensated overload relay with auto-reset, add Suffix **D.**
② Sizes 7–9 use rectifier with DC coil.
③ For Size 9, only available coil voltage is 120V.

For Separate Two-Winding Motors

Heaters

Enter heaters as separate item by listing catalog number from the tables on **Pages V5-T2-135** and **V5-T2-136**, as required per starter.

Three-Phase, Non-Reversing, Reversing 60 Hz Starters—Heater Selection

		Constant or Variable Torque				Constant Horsepower				Three Poles Open
NEMA	Amperes	208V	240V	480V	600V	208V	240V	480V	600V	Catalog Number ①
Sizes 0–6										
0	18	3	3	5	5	2	2	3	3	**A960M0C_**
1	27	7-1/2	7-1/2	10	10	5	5	7-1/2	7-1/2	**A960M1C_**
2	45	10	15	25	25	7-1/2	10	20	20	**A960M2C_**
3	90	25	30	50	50	20	25	40	40	**A960M3C_**
4	135	40	50	100	100	30	40	75	75	**A960M4C_**
5	270	75	100	200	200	60	75	150	150	**A960M5C_**
6	540	150	200	400	400	100	150	300	300	**A960M6C_**

For Single-Winding Motors

Sizes 0–6

						Three Poles Open
NEMA	Amperes	208V	240V	480V	600V	Catalog Number ①
Constant Horsepower						
0	18	3	3	5	5	**A970M0C_**
1	27	7-1/2	7-1/2	10	10	**A970M1C_**
2	45	10	15	25	25	**A970M2C_**
3	90	25	30	50	50	**A970M3C_**
4	135	40	50	100	100	**A970M4C_**
5	270	75	100	200	200	**A970M5C_**
6	540	150	200	400	400	**A970M6C_**
Constant or Variable Torque						
0	18	2	2	3	3	**A980M0C_**
1	27	5	5	7-1/2	7-1/2	**A980M1C_**
2	45	7-1/2	10	20	20	**A980M2C_**
3	90	20	25	40	40	**A980M3C_**
4	135	30	40	75	75	**A980M4C_**
5	270	60	75	150	150	**A980M5C_**
6	540	100	150	300	300	**A980M6C_**

Coil Suffix

Coil Volts and Hz	Coil Suffix
Sizes 0–6	
120/60 or 110/50	**AC**
200–208/60	**B**
240/60	**W**
480/60	**X**
600/60	**E**

Note

① For ambient compensated overload relay with auto-reset, add Suffix **D**.

Accessories

SS-56 Surge Suppressor

- Designed to be used with magnetic motor controllers through Size 4 in 120V, 60 Hz control circuit applications where electronic equipment is used
- Steady state coil volts: 120, 60 Hz, rms
- Peak input volts: 169.6, 60 Hz, max. amplitude
- Max. ambient temperature: 65°C
- Nominal limiting volts: 270 peak
- Nominal rate of volt rise: 0.5 per ms

SS-56 Surge Suppressor

Surge Suppressor ①

Type Mounting	Kit Catalog Number
Starter	**SS-56**

Mechanical Interlock

- Prevents closing of one member of a reversing or multi-speed contactor until the opposite member is completely open
- Lever type mechanism assures positive action
- Can be factory assembled or field mounted on A200 and A900 starters and contactors

Mechanical Interlock

Contactor Arrangement (Number of Poles, Horizontal or Vertical)	Continuous Size	Interlock Catalog Number
3 x 3 horizontal	0, 1	**M-33-1B**
4 x 4 horizontal	0, 1	**M-33-1B**
5 x 3 horizontal	0, 1	**M-33-1B**
All pole combination, vertical	0, 1	**M-34-1A**
3 x 3 horizontal reversing	2	**M-33-2B**
3 x 3 vertical reversing	2	**M-34-2A**
5 x 3 horizontal	2	**M-35-2A**
4 x 4 horizontal	2	**M-36-2A**
All pole combination horizontal	3, 4	**M-33-3B**
All pole combination vertical	3, 4	**M-34-3**

B3NO Bell Alarm Contact

- Isolated normally open bell alarm contact
- Mounts in Type B block-type overload relay

Bell Alarm Contact

Kit Catalog Number
B3NO-2
B3NO-4 ②

Control Contact Ratings (B600)

	Maximum Amperes	
AC Volts	Make	Break
24–120	30	3.00
121–600	3600 VA	360 VA
Continuous current rating: 5A		

Overload Relay Reset Extension

- Used to adjust overload reset rod depth of Class A200 Model J starters and current design overload relays to same dimensions as obsolete B200 starters and overloads identified by suffix **B**, for example, BA13**B**

When replacing obsolete B200 device with Class A200 starter and Type B overload, order Style 6710C11H03. No charge.

When replacing obsolete B200 device with Class A200 starter and Type A overload, order Style 1490C15H10. No charge.

Notes

① Can be used on Sizes 5 and 6 with 120V coil. Mounting bracket required—order separately. Mounting bracket 177C043G04.

② For Size 3 and 4.

Power Pole Kit

- Adds 1NO or 1NC power pole to Size 00–1 A201 Class contactors
- Factory installed or field mountable in load side auxiliary cavities
- 600 Vac
- Continuous current rating of 18A for Size 0, 27A for Size 1

Power Pole Kit ①

Continuous Current Rating	Kit Size	Kit Catalog Number
Normally Open		
18	0	**PNO-0**
27	1	**PNO-1**
Normally Closed		
18	0	**PNC-0**
27	1	**PNC-1**

Replacement Auxiliary Contacts

Contactor Size	Contact Arrangement	Auxiliary Elect. Contact Catalog Number	Auxiliary Elect. Contact Style Number
5, 6	1NO + 1NC	**J11**	**9084A17G01**
	2NO	**J20**	**9084A17G02**
	2NC	**J02**	**9084A17G03**
7, 8	1NO	—	**578D461G01**
	1NC	—	**578D461G03**
9	1NO + 1NC	—	**843D943G04**
	2NO	—	**843D943G05**
	2NC	—	**843D943G06**

Extra Auxiliary Contact Kits

All starters include an auxiliary contact with 1NO and 1NC contact. These kits include an auxiliary contact with contacts as shown, plus operating arm and mounting bracket when required.

Extra Auxiliary Contact Kits

Contactor Size	Contact Arrangement	Style Number
5, 6	1NO + 1NC	**3463D94G18**
	2NO	**3463D94G04**
	2NC	**3463D94G19**
7, 8 ②	2NO	**818D498G06**
	1NO	**818D498G04**

DC Coil Conversion Kits

Kits listed below include all necessary parts to convert from AC to DC control including the DC coil with built-in diode, rectifier, auxiliary interlock and all mounting hardware.

DC Coil Conversion Kits

Size	Voltage	Kit Style Number
5	110-120	**7864A28G01**
	220-240	**7864A28G02**
	440-480	**7864A28G03**
6	110-120	**7864A29G01**
	220-240	**7864A29G02**
	440-480	**7864A29G03**

Mechanical Interlocks

Contactor Sizes	Style Numbers Horizontal	Vertical
3, 4 and 5	**2050A11G75**	**2050A11G65**
5 and 5	**2050A11G27**	**2050A11G17**
5 and 6	**2050A11G26**	**2050A11G16**
6 and 7, 8	—	**2050A11G55**
7, 8 and 7, 8	No (rear conn.)	**567D624G01**
7, 8 and 9	No (rear conn.)	**9944D56G06**
9 and 9	No (rear conn.)	**9944D56G01**

Notes

① Do not use with DC operated contactors.
② Size 7 and larger use DC coils as standard.

Overload Protection

Overload Protection Size 5 Starters

Type B overload relay is a three-pole, block type, thermal ambient compensated device with manual reset mounted integrally. Current transformers are enclosed in a protective case and integrally mounted to save panel space. Standard ratio is 300:5.

Overload Protection Size 6 Starters

Overload protection assembly consists of three current transformers, Type B three-pole block overload relay and an optional interposing relay. These parts are mounted on a panel which connects directly to the load terminal of the contactor. Current transformers are 600:5 ratio as standard.

If automatic reset is required, the Type A, three-pole block, ambient compensated relay is available upon request.

Overload Relay Kits

Each kit includes three current transformers (standard ratio) and one Type B, three-pole block overload relay, ambient compensated with manual reset.

Overload Relay Kits

Kit Size	Kit Part Number
5	**2057A34G01**
6	**6379D80G10**

Replacement Terminal Lugs ①

		Terminals		
Contactor Size	**Cable Size**	**Quantity in Kit**	**Quantity Required per Pole**	**Kit Style Number**
5	1-500 MCM	6	2	**2119A76G01**
6	2-500 MCM	6	2	**7858A96G01**
7	4-500 MCM	12	4	**7858A96G02**
8	4-500 MCM	12	4	**7858A96G03**

Note

① All mounting hardware is included in kit.

Renewal Parts

When Ordering Specify

Use this renewal parts data to identify device by style number, catalog number and/or description.

Select style number of replacement part from the following pages.

For clarification of ordering procedure, pricing and discounts, contact the Customer Support Center.

General Information

This renewal parts data will provide the proper identification of standard parts which may be required for maintenance of Eaton's components.

It is the intent of this catalog section to make it possible to quickly select the parts needed.

An investment in renewal parts and regular maintenance program will protect against downtime and ensure a proper duty cycle for your equipment.

To maintain maximum operating efficiency and dependability of your equipment, only genuine Eaton replacement parts should be used.

This section identifies the replacements parts which are available. Order by style number.

JF Autostarters

JF Autostarter Kits ①

Frame Size	Start Contacts Required	Start Contacts Style Number	Run Contacts Required	Run Contacts Style Number	Grid Stack Kit Required	Grid Stack Kit Style Number
2–3	1	**38A7018G12**	1	**38A7018G13**	1	**3354D90G10**
4–5 5L	1	**550D409G18**	1	**550D409G19**	1	**3354D90G10**
5M–5MM	1	**3354D90G08**	1	**3354D90G09**	2	**3354D90G10**

Solenoid Assembly with Coil (All Sizes) ②

Volt	Hz	Style Number ③
115	60	**5264C05H01**
230	60	**5264C05H02**
460	60	**5264C05H03**
575	60	**5264C05H04**

Notes

① Kits contain a complete set of moving contacts, stationary contacts and springs.

② When replacing solenoid assembly series 416C160 use adapter plate style 9917D02H01—one required.

③ These styles replace coil style 296B892G__. When ordering new style as replacement, customer must order adapter plate 9917D02H01, one required.

AC Starters, Contactors A200, A201

AC Contactors Model J Sizes 00, 0, 1, 2 Kits ①

Part	Poles	Size 00 Style Number	Size 0 Style Number	Size 1 Style Number	Size 2 Style Number
Contact kit	2	**373B331G17**	**373B331G02**	**373B331G07**	**373B331G11**
	3	**373B331G18**	**373B331G04**	**373B331G09**	**373B331G12**
	4	**373B331G18**	**373B331G04**	**373B331G09**	**373B331G13** ③
	5	**373B331G19**	**373B331G05**	**373B331G10**	—
Arc box ②	2, 3, 4	**6714C74G01**	**6714C74G02**	**6714C74G03**	**6714C74G07** ④
	5	**6714C74G04**	**6714C74G05**	**6714C74G06**	**6714C74G08** ⑤
Cross bar	2, 3	**N/A**	**N/A**	**N/A**	**672B788G32**
	4, 5	**N/A**	**N/A**	**N/A**	**672B788G34**
Upper base (for single rated coils only)	2, 3	**N/A**	**N/A**	**N/A**	**672B788G33**
	4, 5	**N/A**	**N/A**	**N/A**	**672B788G35**
Lower base	2, 3	**N/A**	**N/A**	**N/A**	**1250C33G09**
	4, 5	**N/A**	**N/A**	**N/A**	**1250C33G05**
KO spring (package of 10)	All	**N/A**	**N/A**	**N/A**	**503C796G01**
Terminal line/load (package of 3)	All	**N/A**	**N/A**	**N/A**	**371B870G03**

AC Coils

Voltage	Hz	Size 00, 0, 1 Two-, Three-, Four-Pole Style Number	Five-Pole Style Number	Size 2 Two-, Three-Pole Style Number	Four-, Five-Pole Style Number
120/110	60/50	**505C806G01**	**505C808G01**	**505C806G01**	**505C818G01**
208	60	**505C806G02**	**505C808G02**	**505C806G02**	**505C818G02**
600/550	60/50	**505C806G05**	**505C808G05**	**505C806G05**	**505C818G05**
380	50	**505C806G07**	**505C808G07**	**505C806G07**	**505C818G07**
240/220	60/50	**505C806G12**	**505C808G12**	**505C806G12**	**505C818G12**
480/440	60/50	**505C806G13**	**505C808G13**	**505C806G13**	**505C818G13**
24	60	**505C806G16**	**N/A**	**505C806G16**	**505C818G15**
277	60	**505C806G18**	**505C808G16**	**505C806G18**	**505C818G16**
240/480 ⑥	60/60	**505C806G03**	**505C808G03**	**505C806G03**	**505C818G03**
120/240 ⑦	60/60	**505C806G10**	**505C808G10**	**505C806G10**	**505C818G10**

DC Coil ⑦

Voltage	Size 0, 1 Single-, Two-, Three-, Four-Pole Style Number	Size 2 Single-, Two-, Three-Pole Style Number
12	**1268C86G07**	**1268C86G07**
24	**1268C86G04**	**1268C86G04**
48	**1268C86G05**	**1268C86G05**
125	**1268C86G02**	**1268C86G02**
250	**1268C86G01**	**1268C86G01**
125/250 ⑥	**1268C86G03**	**1268C86G03**

Notes

① Model C contact tips and coils 00-4, two-, three-, four- and five-pole contactors are same as Model J. All other parts are unavailable.
② Mounting hardware included.
③ Use one each of 373B331G11 and 373B331G12.
④ Two-, three-pole.
⑤ Four-, five-pole.
⑥ Dual voltage coils. Use only on contactors or starters originally supplied with a dual voltage coil.
⑦ Use only on contactors originally supplied with a DC coil.

Accessories for Size 5–9 AC Contactors

A rectifier circuit converts the AC supply to DC supply. This conversion provides pick up and drop out characteristics. All necessary parts are included in the kit.

AC-DC Coil Conversion Kits

Voltage	Size 5 Style Number	Size 6 Style Number
120 Vac	**7864A28G01**	**7864A29G01**
240 Vac	**7864A28G02**	**7864A29G02**
480 Vac	**7864A28G03**	**7864A29G03**

Replacement Coils for AC-DC Coil Conversion Kit

Voltage	Size 5 Style Number	Size 6 Style Number
120 Vac	**7856A15G05**	**7856A16G05**
240 Vac	**7856A15G10**	**7856A16G10**
480 Vac	**7856A15G15**	**7856A16G15**

Auxiliary Electrical Interlocks Size 7–9 AC and All DC Units

Type	Circuits	Application	Style Number
L63	NO	Size 7–8	**578D461G01**
L63	NC	Size 7–8	**578D461G03**
L64	NO-NC	Size 9	**843D943G04**
L64	2NO	Size 9	**843D943G05**
L64	2NC	Size 9	**843D943G06**

Accessories for Size 00–6 AC Contactors

Auxiliary Electrical Interlocks

Catalog Number (Obsolete)	Style Number (Obsolete)	Circuits	Catalog Number Current	Style Number Current
(L-56)	(2609D01G01)	1NO and 1NC	**J11**	**9084A17G01**
(L-56D)	(2609D01G02)	2NO	**J20**	**9084A17G02**
(L-56E)	(2609D01G03)	1NO and 1NC	**J11**	**9084A17G01**
(L-56B)	(2609D01G04)	2NO	**J20**	**9084A17G02**
(L-56H)	(2609D01G05)	2NO	**J20**	**9084A17G02**
(L-56J)	(2609D01G06)	1NO and1NC DB	**J1C**	**9084A17G04**
(L-56A)	(2609D01G07)	N/A	**N/A**	**N/A**
(L-56B)	(2609D01G08)	N/A	**N/A**	**N/A**
(L-56F)	(2609D01G09)	N/A	**N/A**	**N/A**
(L-56G)	(2609D01G10)	1NO and 1NC DB	**J1C**	**9084A17G04**
(L-56C)	(2609D01G11)	2NC	**J02**	**9084A17G03**
(L-56M)	(2609D01G12)	N/A	**N/A**	**N/A**
(L-56P)	(2609D01G17)	1NO and 1NC	**J11**	**9084A17G01**
(L-56R)	(2609D01G18)	2NC	**J02**	**9084A17G03**
(L-56S)	(2609D01G19)	1NO and 1NC	**J11**	**9084A17G01**

Model J–K, Sizes 3 and 4

Sizes 3 and 4 Kits ①

Part	Poles	Size 3–Model J Style Number	Size 4–Model J ② Style Number	Size 4–Model K ③ Style Number
Contact kit	2	**626B187G12**	**626B187G16**	**5250C81G16**
	3	**626B187G13**	**626B187G17**	**5250C81G17**
	4	④	⑥	**5250C81G18**
	5	⑤	⑦	**5250C81G19**
Arc box	2, 3	**6714C74G09**	**6714C74G11**	**6714C74G11**
	4, 5	**6714C74G10**	**6714C74G12**	**6714C74G12**
Cross bar	2, 3	**672B788G36**	**672B788G36**	**672B788G40**
	4, 5	**672B788G38**	**672B788G38**	—
Upper base	2, 3	**672B788G37**	**672B788G37**	**672B788G52**
	4, 5	**672B788G39**	**672B788G39**	—
Lower base	2, 3	**1250C33G03**	**1250C33G03**	**1250C33G10**
	4, 5	**1250C33G06**	**1250C33G06**	—
KO spring (package of 10)	All	**503C796G02**	**503C796G02**	**672B788G50**
Terminal line/load (package of 3)	All	**372B357G12**	**372B357G18**	**372B357G18**

Notes

① Model C contact tips and coils 00-4, two-, three-, four- and five-pole contactors are same as Model J. All other parts are unavailable.
② For 200A A202 magnetically latched lighting contactors order three-pole contact kit style 672B788G07.
③ Model K replaces Model J, offering superior design life characteristics. Renewal parts are different. Use parts for proper model only.
④ Use quantity two of 626B187G12.
⑤ Use quantity one each of 626B187G12 and 626B187G13.
⑥ Use quantity two of 626B187G16.
⑦ Use quantity one each of 626B187G16 and 626B187G17.

Accessories for Model J–K, Series 3, 4

DC Coils ①

Voltage	Model J Size 3, 4 Two-, Three-Pole Style Number
24	**1255C68G04**
48	**1255C68G05**
125	**1255C68G01**
250	**1255C68G02**
125/250 ②	**1255C68G03**

AC Coils

Voltage	Hz	Model J Size 3, 4 Two-, Three-Pole Style Number	Four-, Five-Pole Style Number	Model K Size 4 ③ Two-, Three-Pole Style Number	Four-, Five-Pole Style Number
120/110	60/50	**505C633G01**	**505C635G01**	**5250C79G01**	**5250C80G01**
208	60	**505C633G02**	**505C635G02**	**5250C79G02**	**5250C80G02**
600/550	60/50	**505C633G05**	**505C635G05**	**5250C79G05**	**5250C80G05**
380	50	**505C633G07**	**505C635G07**	**5250C79G07**	**5250C80G07**
240/220	60/50	**505C633G12**	**505C635G12**	**5250C79G12**	**5250C80G12**
480/440	60/50	**505C633G13**	**505C635G13**	**5250C79G13**	**5250C80G13**
24	60	**505C633G34**	**N/A**	**5250C79G34**	**N/A**
277	60	**505C633G14**	**N/A**	**5250C79G14**	**N/A**
240/480 ②	60/60	**505C633G03**	**505C635G03**	**5250C79G03**	**5250C80G03**
120/244 ②	60/60	**505C633G10**	**505C635G10**	**5250C79G10**	**5250C80G10**

A201 Contactors—Size 5–9

GCA 530/630—GPD 7, 8, 9 Kits ④

Part	Size 5 Style Number	Size 6 Style Number	Size 7 Style Number	Size 8 Style Number	Size 9 Style Number
Contact kit (one per pole)	**477B477G05** ⑤	**2066A10G11**	**461A757G17**	**646C829G05**	**5264C42G01** ⑥
					5264C42G02 ⑦
Arc box	**2050A15G45**	**2066A10G45**	**831D580G01**	**831D580G01**	**9917D69G02**
Magnet assembly	**2050A15G46**	**2050A15G46**	**N/A**	**N/A**	**N/A**
Mag. spg. kit	**2050A15G47**	**2050A15G47**	**N/A**	**N/A**	**N/A**
Acr cup kit	**2050A15G48**	**N/A**	**N/A**	**N/A**	**N/A**
Load conversion kit	**2050A15G49**	**2066A10G49**	**N/A**	**N/A**	**N/A**
Line conversion kit	**2050A15G50**	**2066A10G50**	**N/A**	**N/A**	**N/A**
K.O. spring–6	**2050A15G51**	**2066A10G46**	**N/A**	**N/A**	**N/A**
C.T. 300/5	**655C285H03**	**N/A**	**N/A**	**N/A**	**N/A**
C.T. 400/5	**655C285H04**	**N/A**	**N/A**	**N/A**	**N/A**
C.T. 600/5 ⑧	**N/A**	**2066A10G18**	**N/A**	**N/A**	**N/A**
C.T. 800/5 ⑧	**N/A**	**2066A10G19**	**N/A**	**N/A**	**N/A**
Phase barrier	**N/A**	**N/A**	**640C441G01**	**640C441G01**	**5264C35G03** ⑥
Cross bar	**2050A15G12**	**2066A10G15**	**N/A**	**N/A**	**N/A**
Shunt	**N/A**	**2066A10G48**	**650C129G01**	**646C831G02** ⑨	**5264C39G02** ⑩

Notes

① Use only on units originally supplied with DC coil.
② Dual voltage coils. Use only on contactors or starters originally supplied with dual voltage coil.
③ Model K replaces Model J, offering superior design life characteristics. Renewal parts are different. Use parts for proper model only.
④ Catalog Number A201/A200 Series replaces GCA/GPD series. Renewal parts are the same.
⑤ Use 477B477G06 for silver tungsten applications.
⑥ R.C.
⑦ F.C.
⑧ C.T. kit which replaces the single molded 1 C.T. assembly used on the old size 6 airbreak. The kit includes a single molded 3 C.T. assembly, 2 bus bar and hardware. This C.T. kit also replaces the single molded 3 C.T. assembly used on the present size 6 airbreak and size vacuum.
⑨ Set of three.
⑩ Set of four.

Accessories for A201 Contactors—Size 5–9

Coils (Sizes 5 and 6)

Voltage	Hz	Size 5 Style Number	Size 6 Style Number
Sizes 5 and 6			
110/120	60	**2050A14G05**	**2050A12G05**
110/120	50	**2050A14G06**	**2050A12G06**
200/208	50	**2050A14G07**	**2050A12G07**
220/240	50	**2050A14G08**	**2050A12G08**
200/208	60	**2050A14G09**	**2050A12G09**
220/240	60	**2050A14G10**	**2050A12G10**
277/303	60	**2050A14G12**	**2050A12G12**
380/415	50	**2050A14G14**	**2050A12G14**
440/480	60	**2050A14G15**	**2050A12G15**
440/480	50	**2050A14G16**	**2050A12G16**
550/600	60	**2050A14G17**	**2050A12G17**
550/600	50	**2050A14G18**	**2050A12G18**
380/415	60	**2050A14G19**	**2050A12G19**
120/240	60	**2050A14G20**	**2050A12G20**
24 DC	—	**2050A14G21**	**2050A12G21**
48 DC	—	**2050A14G22**	**2050A12G22**
125 DC	—	**2050A14G25**	**2050A12G25**
250 DC	—	**2050A14G27**	**2050A12G27**

Coils (Sizes 7–9)

Line Voltage	Style Number	Required
Sizes 7 and 8		
125 Vdc	**438C805G04**	2
230 Vdc	**438C805G02**	2
250 Vdc	**438C805G03**	2
110/120 Vac ①④	**438C805G12**	2
220/240 Vac ②④	**438C805G11**	2
380 Vac ③④	**438C805G15**	2
440/480 Vac ③④	**438C805G10**	2
550/575 Vac ③④	**438C805G13**	2
Size 9		
110 Vdc	**5264C34G01** ⑤	—

Notes

① Rectifier 125V 2018A40G01 (one required).
② Rectifier 250V 2018A40G02 (one required).
③ Rectifier 600V 2018A40G03 (one required).
④ These coils require an external rectifier. If the rectifier needs replacement, order by the appropriate style number.
⑤ Contains coil and resistor.

Modifications

Factory Modifications

Modification	Description	Catalog Number Suffix	NEMA Size 00–1	2	3	4	5	6	7	8	9
Control circuit	1 Extra auxiliary contact (1NO-1NC) non-reversing, reversing, 2-speed unwired	**J1**	Consult sales office for pricing adders.								
	2 Extra auxiliary contact non-reversing, reversing, 2-speed unwired	**J2**	Consult sales office for pricing adders.								
	3 Extra auxiliary contact non-reversing, unwired	**J3**	Consult sales office for pricing adders.								
	4 Extra auxiliary contact non-reversing, unwired	**J4**	Consult sales office for pricing adders.								
	Wired for separate control (NC)	**C**	Consult sales office for pricing adders.								
	Omit control wiring (NC)	**X**	Consult sales office for pricing adders.								
Overload relays (substitutions)	Ambient compensated with auto reset (NC)	**D**	Consult sales office for pricing adders.								
	Fast trip—ambient compensated (specify motor FLA)	**D7**	Consult sales office for pricing adders.								
	Overload relay alarm contact (NO) per overload	**E**	Consult sales office for pricing adders.								

Accessories and Field Modification Kits

Type J Auxiliary Contact

- Capable of being field mounted in a contactor or starter (Classes A200, A900 Sizes 00–6, V200, V201 vacuum and definite purpose controllers)
- Provides two separate electrical contact sets which wire vertically and are color coded; black designates NC and silver designates NO. Please note that the vertical wiring is contrary to the horizontal wiring of the L-56 auxiliary contacts
- Designed to fit within dimensions of starter; no additional panel space is required
- Provides circuit isolation (no polarity restrictions) and single break bifurcated contacts

Auxiliary Contact Ratings

Voltage	Make	Break
NEMA A600		
120–600 Vac	7200 VA	720 VA
72–120 Vac	60A	720 VA
28–72 Vac	60A	10A
NEMA R300		
28–300 Vdc	28 VA	28 VA

Auxiliary Contact Types

Contact Type	Max.	Catalog Number
1NO and 1NC	4	**J11**
2NC	4	**J02**
2NO	4	**J20**
1 coil clearing NC and 1NO	4	**J1C**

Technical Data and Specifications

Electrical Characteristics

Sizes 00–4

	Size 00	Size 0	Size 1	Size 2	Size 3	Size 4
Max. voltage rating	600V	600V	600V	600V	600V	600V
Ampere rating						
(Open)	10A	20A	30A	50A	100A	150A
(Enclosed)	9A	18A	27A	45A	90A	135A
Squirrel Cage Motor						
Maximum horsepower at:						
200V/60 Hz	1-1/2 hp	3 hp	7-1/2 hp	10 hp	25 hp	40 hp
230V/ 60 Hz	1-1/2 hp	3 hp	7-1/2 hp	15 hp	30 hp	50 hp
380V/50 Hz	1-1/2 hp	5 hp	10 hp	25 hp	50 hp	75 hp
460V–575V/60 Hz	2 hp	5 hp	10 hp	25 hp	50 hp	100 hp
Resistive Heating kW ①						
Single-phase, two-pole						
120V	—	—	3 kW	5 kW	10 kW	15 kW
240V	—	—	6 kW	10 kW	20 kW	30 kW
480V	—	—	12 kW	20 kW	40 kW	60 kW
600V	—	—	15 kW	25 kW	50 kW	75 kW
Three-phase, three-pole						
120V	—	—	5 kW	8.5 kW	17 kW	26 kW
240V	—	—	10 kW	17 kW	34 kW	68 kW
480V	—	—	20 kW	34 kW	68 kW	105 kW
600V	—	—	25 kW	43 kW	86 kW	130 kW
Capacitor Switching kVAR, Three-Phase						
240V	—	—	—	12 kVAR	27 kVAR	40 kVAR
480V	—	—	—	25 kVAR	53 kVAR	80 kVAR
600V	—	—	—	31 kVAR	67 kVAR	100 kVAR
Transformer Switching kVA ②						
Single-phase, two-pole						
120V	—	0.6 kVA	1.2 kVA	2.1 kVA	4.1 kVA	6.8 kVA
240V	—	1.2 kVA	2.4 kVA	4.1 kVA	8.1 kVA	14 kVA
480V	—	2.4 kVA	4.9 kVA	8.3 kVA	16 kVA	27 kVA
600V	—	3 kVA	6.2 kVA	10 kVA	20 kVA	34 kVA
Three-phase, three-pole						
120V	—	1.8 kVA	3.6 kVA	6.3 kVA	12 kVA	20 kVA
240V	—	2.1 kVA	4.3 kVA	7.2 kVA	14 kVA	23 kVA
480V	—	4.2 kVA	8.5 kVA	14 kVA	28 kVA	47 kVA
600V	—	5.2 kVA	11 kVA	18 kVA	35 kVA	59 kVA

Sizes 5–9

	Size 5	Size 6	Size 7	Size 8	Size 9
Max. voltage rating	600V	600V	600V	600V	600V
Ampere rating					
(Open)	300A	600A	900A	1350A	2500A
(Enclosed)	270A	540A	810A	1215A	2250A
Squirrel Cage Motor					
Maximum horsepower at:					
200V/60 Hz	75 hp	150 hp	—	—	—
230V/60 Hz	100 hp	200 hp	300 hp	450 hp	800 hp
380V/50 Hz	150 hp	300 hp	—	—	—
460V–575V/60 Hz	200 hp	400 hp	600 hp	900 hp	1600 hp
Resistive Heating kW ①					
Single-phase, two-pole					
120V	30 kW	60 kW	90 kW	③	③
240V	60 kW	120 kW	180 kW	③	③
480V	120 kW	240 kW	360 kW	③	③
600V	150 kW	300 kW	450 kW	③	③
Three-phase, three-pole					
120V	52 kW	105 kW	155 kW	③	③
240V	105 kW	210 kW	315 kW	③	③
480V	210 kW	415 kW	625 kW	③	③
600V	260 kW	515 kW	775 kW	③	③
Capacitor Switching kVAR, Three-Phase					
240V	80 kVAR	160 kVAR	240 kVAR	360 kVAR	665 kVAR
480V	160 kVAR	320 kVAR	480 kVAR	720 kVAR	1325 kVAR
600V	200 kVAR	400 kVAR	600 kVAR	900 kVAR	1670 kVAR
Transformer Switching kVA ②					
Single-phase, two-pole					
120V	14 kVA	27 kVA	41 kVA	61 kVA	112 kVA
240V	27 kVA	54 kVA	81 kVA	122 kVA	225 kVA
480V	54 kVA	108 kVA	162 kVA	244 kVA	450 kVA
600V	68 kVA	135 kVA	203 kVA	304 kVA	562 kVA
Three-phase, three-pole					
120V	41 kVA	81 kVA	122 kVA	182 kVA	337 kVA
240V	47 kVA	94 kVA	140 kVA	210 kVA	342 kVA
480V	94 kVA	188 kVA	280 kVA	420 kVA	783 kVA
600V	117 kVA	234 kVA	351 kVA	526 kVA	975 kVA

Notes

① Resistive loads having inrush currents not exceeding 1.5 times continuous rating.

② These ratings are for transformers having inrush currents not more than 20 times peak of continuous current ratings. For inrush currents greater than 20 times, refer to factory.

③ For ratings refer to factory.

DC Power Pole Ratings

The following represent typical production test values and should not be interpreted as a guarantee of actual performance.

DC Operated 120 and 240V Coils

Contactor Size	DC Contact Ampere Rating Two Poles in Series ① 120V	240V
0	—	—
1	20	10
2	45	30
3	75	40
4	90	70

380V, 50 Hz Starter Maximum Horsepower Ratings

Horsepower Ratings

NEMA Size	00	0	1	2	3	4	5	6	7	8
Maximum horsepower	1-1/2	5	10	25	50	75	150	300	450	700

Operating Coil Characteristics at Rated Coil Volts, Sizes 00–9

The following represent typical production test values and should not be interpreted as a guarantee of actual performance.

Operating Coil Characteristics

	Sizes 00, 0, 1	Size 2	Size 3	Size 4 ②	Size 5	Size 6	Size 7	Size 8	Size 9
AC Coil									
Burden									
(Open VA)	160 VA	160 VA	625 VA	700 VA	1700 VA	2900 VA	③	③	③
(Closed VA)	25 VA	25 VA	50 VA	64 VA	180 VA	220 VA	③	③	③
(Closed Watts)	7.8 W	7.8 W	18 W	21 W	32 W	42 W	—	—	—
Pick-up volts ④	85%	85%	85%	85%	78%	70%	—	—	—
Drop-out volts ④	40–60%	40–60%	40–60%	40–60%	65 to 75%	60 to 70%	—	—	—
Pick-up time Hz ⑤⑥	1–1-1/2	1-1/2–2	2–2-1/2	1–1-1/2	1.5	4.0	—	—	—
Drop-out time Hz ⑤	3/4–1	3/4–1	3/4–1	3/4–1	0.75	0.75	—	—	—
DC Coil									
Burden									
(Open VA)	17 VA	17 VA	35 VA	35 VA	600 VA	2120 VA	400 VA	400 VA	2100 VA
(Closed VA)	17 VA	17 VA	35 VA	35 VA	22 VA	21 VA	400 VA	400 VA	350 VA
(Closed Watts)	18 W	18 W	35 W	35 W	20 W	20 W	400 W	400 W	350 W
Pick-Up Volts ④	80%	80%	80%	80%	64%	73%	45%–65% ⑦	45%–65% ⑦	50%–65% ⑦
Drop-Out Volts ④	5–10%	5–10%	5–10%	5–10%	18%	13%	30%–45% ⑦	30%–45% ⑦	40%–50% ⑦
Pick-Up Time Hz ⑥	—	25–75 ms	25–75 ms	25–75 ms	2.7 Hz ⑤	3 Hz ⑤	21–41 Hz ⑦⑤	17–29 Hz ⑦⑤	16–18 ⑦⑤
Drop-Out Time Hz ⑤	—	16–25 ms	16–25 ms	16–25 ms	9.3 Hz ⑤	17.5 Hz ⑤	7–12 Hz ⑧⑤	7–12 Hz ⑧⑤	18–20 Hz ⑦⑤

Notes

① Non-inductive load.
② AC coil data pertains to Model K, DC coil data pertains to Model J.
③ DC operated only.
④ Percent of rated coil voltage.
⑤ At 60 Hz base.
⑥ To contact touch.
⑦ Lower figure when coil is cold. Higher figure when coil is hot.
⑧ Drop-out time to clear arc. Time varies with type of load and contact wear.

Mechanical Characteristics

NEMA Standard ICS 2-110

Direct-current operated contactors shall withstand 110% of their rated voltage continuously without injury to the operating coils and shall close successfully at 80% of their rated voltage.

Alternating-current operated contactors shall withstand 110% of their rated voltage continuously without injury to the operating coils and shall close successfully at 85% of their rated voltage.

Mechanical Characteristics, Sizes 00–9

	Sizes 00, 0, 1	Size 2	Size 3	Size 4	Size 5	Size 6	Size 7	Size 8	Size 9
Dimensions in inches (mm)									
Height	6.45 (163.8)	7.16 (181.9)	9.93 (252.2)	9.93 (252.2)	12.00 (304.8) ①	13.50 (342.9) ①	18.62 (472.9) ①	19.25 (489) ①	25.00 (635) ①
Width	3.31 (84.1)	3.31 (84.1)	4.62 (117.3)	4.62 (117.3)	7.00 (177.8) ①	7.00 (177.8) ①	23.50 (596.9) ①	23.50 (596.9) ①	32.00 (812.8) ①
Depth	4.61 (117.1)	4.96 (126)	6.75 (171.5)	6.75 (171.5)	7.75 (196.9) ①	8.75 (222.3) ①	11.00 (279.4) ①	11.00 (279.4) ①	13.00 (330.2) ①
Panel area—square inches	21.35	23.7	46.0	46.0	84.0	94.5	437.5	452.4	800
Weight—pounds	3.5	3.5	11.5	11.5	25	42	215	265	315
Cable connection	—	—	—	—	Front	Front	Front/rear	Front/rear	Front/rear
Maximum cable size/phase copper (AWG/MCM)	6 AWG	3 AWG	1/0	4/0	1–500 MCM	2–500 MCM	3–500 MCM	4–500 MCM	8–500 MCM
Auxiliary electrical circuits available	8	6	6	6	4	4	3	3	4
Latched version available	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Mechanical interlock combinations available									
Sizes									
00, 0, 1, 2, 3, 4	Vert., Horiz.	Vert., Horiz.	Vert., Horiz.	Vert., Horiz.	Vert., Horiz.	—	—	—	—
5	—	—	—	—	Vert., Horiz.	Vert., Horiz.	—	—	—
6	—	—	—	—	Vert., Horiz.	Vert., Horiz.	Vertical	Vertical	—
7, 8	—	—	—	—	—	Vertical	Vertical	Vertical	Vertical
9	—	—	—	—	—	—	Vertical	Vertical	Vertical

Data from Tables 430—147 Through 150 of 1996 NEC: Motor Amperes at Full Load ②, Three-Phase AC

	Single-Phase AC		Induction Type Squirrel Cage and Wound-Rotor Amperes				DC			Single-Phase AC		Induction Type Squirrel Cage and Wound-Rotor Amperes				DC	
hp	115V	230V	200V	230V	460V	575V	120V	240V	hp	115V	230V	200V	230V	460V	575V	120V	240V
1/6	4.4	2.2	—	—	—	—	—	—	30	—	—	92	80	40	32	—	106
1/4	5.8	2.9	—	—	—	—	3.1	1.6	40	—	—	120	104	52	41	—	140
1/3	7.2	3.6	—	—	—	—	4.1	2.0	50	—	—	150	130	65	52	—	173
1/2	9.8	4.9	2.5	2.2	1.1	0.9	5.4	2.7	60	—	—	177	154	77	62	—	206
3/4	13.8	6.9	3.7	3.2	1.6	1.3	7.6	3.8	75	—	—	221	192	96	77	—	255
1	16	8	4.8	4.2	2.1	1.7	9.5	4.7	100	—	—	285	248	124	99	—	341
1-1/2	20	10	6.9	6.0	3.0	2.4	13.2	6.6	125	—	—	359	312	156	125	—	425
2	24	12	7.8	6.8	3.4	2.7	17	8.5	150	—	—	414	360	180	144	—	506
3	34	17	11.0	9.6	4.8	3.9	25	12.2	200	—	—	552	480	240	192	—	675
5	56	28	17.5	15.2	7.6	6.1	40	20	250	—	—	—	—	302	242	—	—
7-1/2	80	40	25.3	22	11	9	58	29	300	—	—	—	—	361	289	—	—
10	100	50	32.2	28	14	11	76	38	350	—	—	—	—	414	336	—	—
15	—	—	48.3	42	21	17	—	55	400	—	—	—	—	477	382	—	—
20	—	—	62.1	54	27	22	—	72	450	—	—	—	—	515	412	—	—
25	—	—	78.2	68	34	27	—	89	500	—	—	—	—	590	472	—	—

Notes

① For Sizes 5–9 contactors only; for starter Sizes 5–9, refer to factory.

② These current values are for motors running at usual speeds and with normal torque characteristics. Motors for special low speed or high torque may require higher current. In all cases, heaters should be selected on basis of information on motor nameplate or motor card data.

Combination Ratings

2

Sizes 00–2

Short-Circuit Protective Device (SCPD)	Max. Rating SCPD	Circuit Breaker Interrupting Rating	Short-Circuit Withstand Capability Current	Voltage
Sizes 00, 0, 1				
Class H fuse	60A	—	5000A	600V
Class J fuse	60A	—	100,000A	600V
Class R fuse	60A	—	100,000A	600V
Class T fuse	60A	—	100,000A	600V
Magnetic only ① Type CB ②	30A	Marked HMCP	100,000A	480V
			50,000A	600V
Thermal/magnetic Type CB ③	50A	65,000A	65,000A	480V
		25,000A	25,000A	600V
		100,000A	100,000A	480V
		35,000A	35,000A	600V
Magnetic only Type CB + CL ④	30A	HMCP + current limiter	100,000A	600V
Thermal/magnetic Type CLB ⑤	50A	150,000A	100,000A	480V
Size 2				
Class H fuse	100A	—	5000A	600V
Class J fuse	100A	—	100,000A	600V
Class R fuse	100A	—	100,000A	600V
Class T fuse	100A	—	100,000A	600V
Magnetic only ① Type CB ②	50A	Marked HMCP	100,000A	480V
			50,000A	600V
Thermal/magnetic Type CB ③	90A	65,000A	65,000A	480V
		25,000A	25,000A	600V
		100,000A	100,000A	480V
		35,000A	35,000A	600V
Magnetic only Type CB + CL ④	50A	HMCP + current limiter	100,000A	600V
Thermal/magnetic Type CLB ⑤	50A	150,000A	100,000A	480V

Sizes 3 and 4

Short-Circuit Protective Device (SCPD)	Max. Rating SCPD	Circuit Breaker Interrupting Rating	Short-Circuit Withstand Capability Current	Voltage
Size 3				
Class H fuse	60A	—	5000A	600V
Class J fuse	60A	—	100,000A	600V
Class R fuse	60A	—	100,000A	600V
Class T fuse	60A	—	100,000A	600V
Magnetic only ① Type CB ②	100A	Marked HMCP	100,000A	480V
			50,000A	600V
Thermal/magnetic Type CB ③	150A	65,000A	65,000A	480V
		25,000A	25,000A	600V
		100,000A	100,000A	480V
		35,000A	35,000A	600V
Magnetic only Type CB + CL ④	100A	HMCP + current limiter	100,000A	600V
Thermal/magnetic Type CLB ⑤	150A	50,000A	100,000A	480V
Size 4				
Class H fuse	400A	—	10,000A	600V
Class J fuse	400A	—	100,000A	600V
Class R fuse	400A	—	100,000A	600V
Class T fuse	400A	—	100,000A	600V
Magnetic only ① Type CB ②	150A	Marked HMCP	100,000A	480V
			50,000A	600V
Thermal/magnetic Type CB ③	250A	65,000A	65,000A	480V
		25,000A	25,000A	600V
		100,000A	100,000A	480V
		35,000A	35,000A	600V
Magnetic only Type CB + CL ④	150A	HMCP + current limiter	100,000A	600V
Thermal/magnetic Type CB + CL ⑤	250A	200,000A	100,000A	600V
Thermal/magnetic Type CLB ⑥	250A	150,000A	100,000A	480V

Coil Suffix

Other Available Coil Voltages—AC and DC Coils ⑦

Coils	Catalog Number Suffix	Coil Rating (Volts/Hertz)	Catalog Number Suffix	Coil Rating (Volts/Hertz)
AC	**A**	120/60, 110/50	**N**	110/50
	B	200-208/60	**P**	48/60
	C	240/60 and 480/60	**R**	120/60 and 240/60
	D	440/50	**U**	440-480/50 or 60 Rect. to DC
	E	600/60 Hz	**V**	110/60
	G	220/50	**W**	240/60
	H	380/50	**X**	480/60
	I	24/60	**Y**	415/50
	J	110-120/50 or 60 Rect. to DC	**Z**	277/60
	K	220-240/50 or 60 Rect. to DC	—	—
DC ⑧⑨	**L**	24 Vdc	**S**	125 Vdc
	M	48 Vdc	**T**	250 Vdc

Notes

① Instantaneous adjustable trip.
② Circuit breaker.
③ Inverse time circuit breaker.
④ Instantaneous adjustable trip with current limiting attachment.
⑤ Inverse time with built-in current limiting attachment.
⑥ Inverse time current limiting breaker.
⑦ Availability may be limited.
⑧ DC coils for Size 5 and 6 contactors and starters are intermittent duty rated only. A mechanical latch is required.
⑨ DC coils. Use only on contactors originally supplied with a DC coil.

Dimensions

Approximate Dimensions in Inches (mm)

Not to be used for construction purposes unless approved.

Open Non-Reversing Starters

Figure A—Sizes 00–4

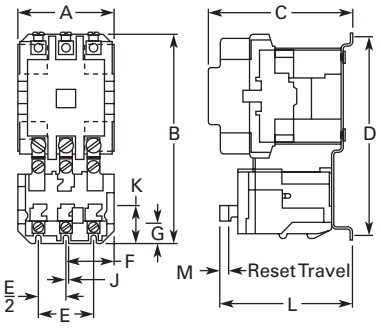


Figure B—Size 5

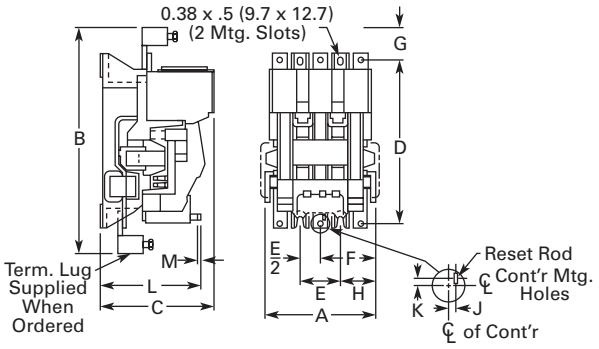
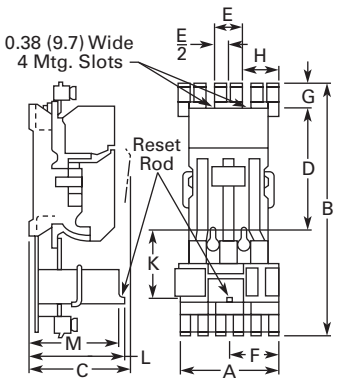


Figure C—Size 6



Dimensions and Shipping Weights

NEMA Size	No. of Poles	Fig.	Mounting Screws No.	Mounting Screws Size	A	B	C	D	E	F	G	H	J	K	L	M	Weight, Lbs (kg)
00, 0, 1	2, 3	A	3	#10	3.31 (84.1)	6.42 (163.1)	4.61 (117.1)	6.00 (152.4)	1.88 (47.8)	1.66 (42.2)	0.23 (5.8)	—	0.39 (9.9)	0.59 (15.0)	4.48 (113.8)	0.27 (6.9)	3.5 (1.6)
2	2, 3	A	3	#10	3.31 (84.1)	7.17 (182.1)	4.94 (125.5)	6.75 (171.5)	1.88 (47.8)	1.66 (42.2)	0.23 (5.8)	—	0.41 (10.4)	0.77 (19.6)	4.53 (115.1)	0.27 (6.9)	4.3 (2.0)
3, 4	2, 3	A	3	1/4 in.	4.63 (117.6)	9.94 (252.5)	6.75 (171.5)	9.25 (235.0)	2.88 (73.2)	.94 (23.9)	0.38 (9.7)	—	0.55 (14.0)	0.80 (20.3)	6.36 (161.5)	0.27 (6.9)	11.5 (5.2)
5	3	B	4	3/8 in.	7.59 (192.8)	16.22 (412.0)	7.75 (196.9)	11.00 (279.4)	2.75 (69.9)	3.81 (96.8)	2.69 (68.3)	2.42 (61.5)	0.33 (8.4)	0.33 (8.4)	7.00 (177.8)	0.27 (6.9)	29.0 (13.2)
6	3	C	4	3/8 in.	9.25 (235.0)	23.50 (596.9)	9.50 (241.3)	11.00 (279.4)	2.75 (69.9)	4.81 (122.2)	2.75 (69.9)	3.06 (77.7)	—	6.50 (165.1)	8.44 (214.4)	0.27 (6.9)	55.0 (25.0)
7	3	①	①	①	37.88 (962.2)	21.50 (546.1)	11.75 (298.5)	—	—	—	—	—	—	—	—	—	—
8	3	①	①	①	37.88 (962.2)	21.50 (546.1)	11.75 (298.5)	—	—	—	—	—	—	—	—	—	—
9	3	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①

Note

① Refer to factory.

Approximate Dimensions in Inches (mm)

Not to be used for construction purposes unless approved.

2

Open Reversing Starters

Figure A—Sizes 00–4 Horizontal

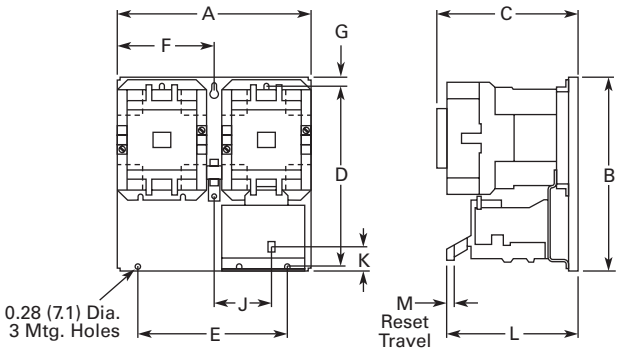
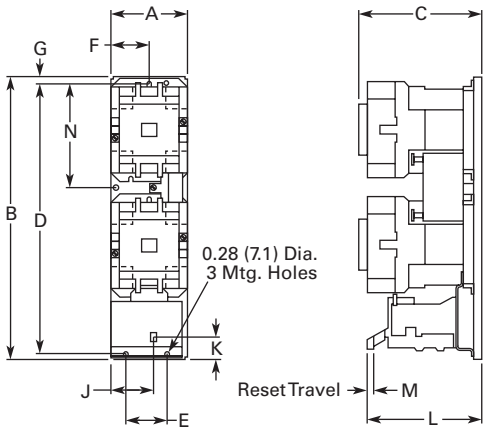


Figure B—Sizes 00–4 Vertical



Dimensions and Shipping Weights

NEMA Size	Number of Poles	Fig.	Mounting Screws No.	Mounting Screws Size	A	B	C	D	E	F	G	J	K	L	M	N	Weight, Lbs (kg)
00, 0, 1	3 x 3 Horiz.	A	3	#10	7.13 (181.1)	6.50 (165.1)	5.05 (128.3)	6.00 (152.4)	5.69 (144.5)	3.56 (90.4)	0.25 (6.4)	2.3 (58.4)	0.59 (15.0)	4.92 (125.0	0.27 (6.9)	—	9.0 (4.0)
	3 x 3 Vert.	B	3	#10	3.33 (84.6)	11.63 (295.4)	5.05 (128.3)	11.13 (282.7)	1.88 (47.8)	1.66 (42.2)	0.25 (6.4)	0.39 (9.9)	0.59 (15.0)	4.92 (125.0)	0.27 (6.9)	4.52 (114.8)	9.8 (4.4)
2	3 x 3 Horiz.	A	3	#10	7.13 (181.1)	7.25 (184.2)	5.38 (136.7)	6.75 (171.5)	5.69 (144.5)	3.56 (90.4)	0.25 (6.4)	2.31 (58.7)	0.77 (19.6)	4.97 (126.2)	0.27 (6.9)	—	10.8 (4.9)
	3 x 3 Vert.	B	3	#10	3.33 (84.6)	12.38 (314.5)	5.38 (136.7)	11.88 (301.8)	1.88 (47.8)	1.66 (42.2)	0.25 (6.4)	0.39 (9.9)	0.77 (19.6)	4.97 (126.2)	0.27 (6.9)	4.52 (114.8)	12.2 (5.5)
3, 4	3 x 3 Horiz.	A	3	1/4 in.	9.75 (247.7)	10.13 (257.3)	7.25 (184.2)	9.25 (235.0)	8.00 (203.2)	4.88 (124.0)	0.44 (11.2)	3.11 (79.0)	0.80 (20.3)	6.86 (174.2)	0.27 (6.9)	—	26.0 (11.8)
	3 x 3 Vert.	B	3	1/4 in.	4.63 (117.6)	19.81 (503.2)	7.25 (184.2)	18.94 (481.1)	2.88 (73.2)	2.94 (74.7)	0.44 (11.2)	0.55 (14.0)	0.80 (20.3)	6.86 (174.2)	0.27 (6.9)	7.91 (200.9)	28.0 (12.7)
5	3 x 3 Horiz.	—	4	3/8 in.	35.25 (895.4)	25.50 (647.7)	8.75 (222.3)	—	—	—	—	—	—	—	—	—	73.0 (33.1)
6	3 x 3 Horiz.	—	4	3/8 in.	35.25 (895.4)	25.50 (647.7)	10.50 (266.7)	—	—	—	—	—	—	—	—	—	127.0 (57.7)
7	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①
8	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①
9	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①

Note

① Refer to factory.

Approximate Dimensions in Inches (mm)

Not to be used for construction purposes unless approved.

Open Multi-Speed Starters

Figure A—Sizes 00–4

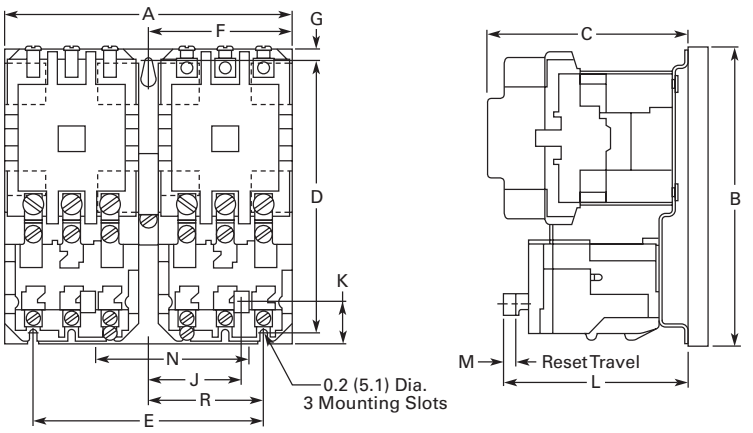
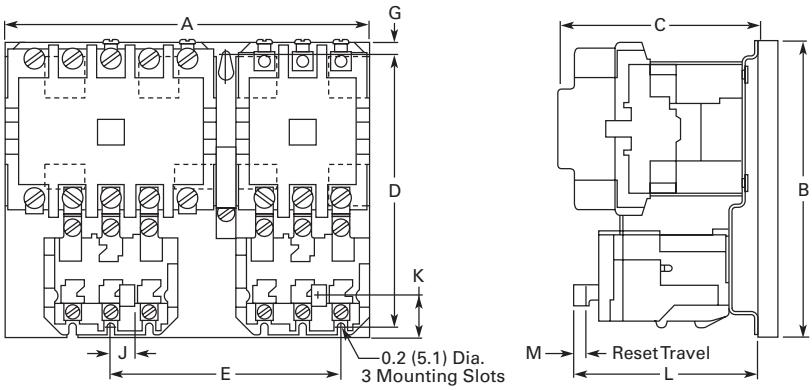


Figure B—Sizes 2



Dimensions and Shipping Weights

NEMA Size	Number of Poles	Fig.	Mounting Screws No.	Mounting Screws Size	A	B	C	D	E	F	G	J	K	L	M	N	P	R	Weight, Lbs (kg)
00, 0, 1	3 x 3 Horiz.	A	3	#10	7.13 (181.1)	6.50 (165.1)	5.05 (128.3)	6.00 (152.4)	5.69 (144.5)	3.56 (90.4)	0.25 (6.4)	2.30 (58.4)	0.33 (8.4)	4.92 (125.0)	0.27 (6.9)	3.81 (96.8)	—	2.91 (73.9)	10.0 (4.5)
	5 x 3 Horiz.	B	3	#10	8.00 (203.2)	6.50 (165.1)	5.05 (128.3)	6.00 (152.4)	6.53 (165.9)	3.56 (90.4)	0.25 (6.4)	2.30 (58.4)	0.48 (12.2)	4.92 (125.0)	0.27 (6.9)	4.66 (118.4)	—	2.91 (73.9)	11.0 (5.0)
2	3 x 3 Horiz.	A	3	#10	7.13 (181.1)	7.25 (184.2)	5.38 (136.7)	6.75 (171.5)	5.69 (144.5)	3.56 (90.4)	0.25 (6.4)	2.69 (68.3)	0.69 (17.5)	4.97 (126.2)	0.27 (6.9)	3.81 (96.8)	—	2.91 (73.9)	11.0 (5.0)
	5 x 3 Horiz.	B	3	#10	8.88 (225.6)	7.25 (184.2)	5.38 (136.7)	6.75 (171.5)	6.56 (166.6)	3.56 (90.4)	0.25 (6.4)	2.69 (68.3)	0.69 (17.5)	4.97 (126.2)	0.27 (6.9)	4.66 (118.4)	—	2.84 (72.1)	13.0 (5.9)
3, 4	3 x 3 Horiz.	A	3	1/4 in.	9.75 (247.7)	10.13 (257.3)	7.25 (184.2)	9.25 (235.0)	8.00 (203.2)	4.88 (124.0)	0.44 (11.2)	3.11 (79.0)	0.80 (20.3)	6.86 (174.2)	0.27 (6.9)	5.13 (130.3)	—	4.00 (101.6)	28.0 (12.7)
	5 x 3 Horiz.	B	3	1/4 in.	12.38 (314.5)	10.13 (257.3)	7.25 (184.2)	9.25 (235.0)	9.31 (236.5)	4.88 (124.0)	0.44 (11.2)	3.11 (79.0)	0.80 (20.3)	6.86 (174.2)	0.27 (6.9)	6.44 (163.6)	—	4.00 (101.6)	33.5 (15.2)
5	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①
6	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①	①

Notes

Three-pole x three-pole devices are for Wye-Wye two-winding motors only.

① Refer to factory.

Contents

Relays—Thermal and Fast Trip

Product Overview

Type B and Type A, Class 20 Thermal Overload Relays from Eaton's Electrical Sector will protect the motor against abnormal overload conditions. Bimetallic actuated, they are available as either ambient compensated or non-compensated in either single-pole or block type three-pole design. Type B use one pole of the three-pole block for single-phase.

Single-pole relays are also available as Fast Trip Class 10 ambient compensated type, which provides approximately 125% motor protection with a tripping time of less than 10 seconds, at 600% of heater current rating.

Fast trip relays can be identified by the green reset rods. They are available for panel or starter mounting. The three-pole fast trip design is composed of three single-pole relays on a common baseplate, with a common reset bar.

The bimetal element is actuated by precisely calibrated heater elements which are connected directly in the circuit to be protected. Thermal actuation of this device opens the contacts in the coil circuit of a contactor or relay which results in the disconnection of power to the overloaded circuit.

Interchangeable thermal heater elements for single-pole standard trip and block type overload relays are available to cover motor full load currents from 0.29 to 133A in approximately 10% steps (see Heater Application Table). Fast trip overload relays do not have interchangeable heater elements but are available in a series of ratings to cover motor full load currents from 1.6 to 150A in approximately 50% steps.

Features

Manual or Automatic Reset

Type B is furnished with a manual reset. Type A is normally furnished set for manual reset operation and may be quickly adjusted for automatic reset when required. Automatic reset should not be used with two-wire control or where automatic restarting would endanger either personnel or equipment.

Trip Indication

An immediate visible indication of trip is provided on the overload relay. When an overload occurs, which causes the relay to operate, a trip indicator projects out and thus shows positive visual indication of trip. Type B has a mechanical trip bar to manually check the NC contact operation on the overload relay.

Adjustable Trip

On Type A, the trip rating of a specific heater element can be adjusted over a range of approximately 85% to 115% of its respective rating to permit the desired close protection.

This is accomplished by turning the adjusting knob on the relay to the respective stop position.

Positive Contact Break

A follow-through contact, provided on the stationary terminal of the snap action control switch, provides reliable electrical continuity during toggling, thus eliminating false trip sometimes prevalent with thermally operated switches. This contact also allows contact wipe for further reliability.

Ambient Compensation

Motor overload protection can be provided with the same trip characteristics in ambient temperature from –40° to 77°C (–40° to 167°F). A compensating bimetal maintains a constant "travel to trip" distance independent of ambient conditions. The compensating feature is fully automatic and no adjustments are required over wide fluctuations in ambient temperatures. Compensated relays are identified by black reset rods on Type A and light gray reset rods on Type B, while non-compensated relays use red reset rods. AA three-pole units have gray reset rods. AA one-pole units have black reset rods.

Control Contact

Single-pole and block type relays are supplied as standard with a SPST NC control contact. A SPDT NO-NC with common is available as a factory modification on Type A. An isolated NO contact can be supplied on Type B as either a factory modification or as a field kit.

Standards and Certifications

- UL 508
- CSA
- ANSI/NEMA ICS 2-222

Instruction Leaflets

14885B	Fast Trip A Sizes 0–4, 3-Pole OL Relay
14567E	Type A Sizes 1–2, 1-Pole OL Relay Mod A
14568	Type A Sizes 1–2, 3-Pole OL Relay Mod J
14570D	Type A Sizes 3–4, 3-Pole OL Relay Mod J
14569C	Type A Sizes 3–4, 1-Pole OL Relay Mod A
17093A	Type B OLR for Sizes 7, 8 and 9 Contactors
16955A	Type B Sizes 1–2, 1-Pole OL Relay
16954A	Type B Sizes 1–2, 3-Pole OL Relay
15392B	Type B Sizes 3–4, 3-Pole OL Relay
13676F	Fast Trip Sizes 0–4, 1-Pole OL Relay

2

Thermal Type B, Class 20, Manual Reset

Contents

Thermal Type B, Class 20, Manual Reset

Application Description

The Type B overload relay is designed to protect industrial motors against overload conditions. Using modern block type, bimetallic design, this relay will provide Class 20 operation in either single-phase or three-phase applications.

Operation

The Type B overload relay is a bimetallic actuated device. The bimetal elements are operated by precisely calibrated heaters. The heater elements are connected either directly in the circuit to be measured, or through current transformers on applications NEMA Size 5 and larger.

As the bimetals are heated by motor current flow, a deflection force is produced. Upon a sustained level of abnormal current flow, the deflection becomes great enough to open the snap-action output contact.

Ambient Compensation

The Type B ambient compensated design is supplied as standard on all A200 starters. This design uses a second compensating bimetal responsive to ambient air temperature in the surrounding enclosure. This feature reduces nuisance tripping in applications using compact control panels and motor control centers where internal temperature rise is significant compared to motor ambient temperature. The compensating characteristic is maintained in ambient temperatures from 40° to 77°C.

Features

- Ambient compensation standard
- Alarm contact field mountable
- Class 20—600V design
- Inverse time delay trip
- Test trip device for weld check
- Hi-visibility up-front trip indication
- Trip-free reset mechanism

Product Selection

Heaters

Enter heaters as separate item by listing catalog number from tables, **Pages V5-T2-135** and **V5-T2-136**, as required per starter.

Relays

Type B Overload Relay Panel Mounting

Thermal Type B Overload Relay

Motor Full Load Amps	Panel Mounted Ambient Comp. Catalog Number	Panel Mounted Non-Comp. Catalog Number	Starter Mounted Replacement for Type B Overload Relays Ambient Comp. Catalog Number	Starter Mounted Replacement for Type B Overload Relays Non-Comp. Catalog Number	Replacement for Type A Overload Relays in Manual Reset Mode (Three-Pole Only) ① Ambient Comp. Catalog Number	Replacement for Type A Overload Relays in Manual Reset Mode (Three-Pole Only) ① Non-Comp. Catalog Number
Single-Pole (One NC Contact)						
0.25–26.2	**BA11JP**	**BN11JP**	**BA11A**	**BN11A**	—	—
26.3–45	**BA21JP**	**BN21JP**	**BA21A**	**BN21A**	—	—
19–90	Use three-pole design, wire three poles in series	Use three-pole design, wire three poles in series	Use three-pole design, wire three poles in series	Use three-pole design, wire three poles in series	Use three-pole design, wire three poles in series	Use three-pole design, wire three poles in series
19–135	Use three-pole design, wire three poles in series	Use three-pole design, wire three poles in series	Use three-pole design, wire three poles in series	Use three-pole design, wire three poles in series	Use three-pole design, wire three poles in series	Use three-pole design, wire three poles in series
Three-Pole (One NC Contact)						
0.25–26.2	**BA13JP**	**BN13JP**	**BA13A** ②	**BN13A** ②	**BA13J**	**BN13J**
26.3–45	**BA23JP**	**BN23JP**	**BA23A**	**BN23A**	**BA23J**	**BN23J**
19–90	**BA33P**	**BN33P**	**BA33A**	**BN33A**	**BA33A**	**BN33A**
19–135	**BA43P**	**BN43P**	**BA43A**	**BN43A**	**BA43A**	**BN43A**

Accessories

Alarm Contact Kit Selection ①

Type B Overload Relay Size	Catalog Number
1, 2	**B3NO-2**
3, 4	**B3NO-4**

Notes

① Includes contactor mounting bracket, overload relay and connection straps to contactor.

② For replacement on B200 size 00, 0, 1 use BA23A instead of BA13A and use BN23A instead of BN13A.

Technical Data

2

Control Contact Ratings—NEMA B600 NO and NC Control Contact Rating

AC Volts	Make	Break
24–120	30A	3A
120–600	3600 VA	360 VA

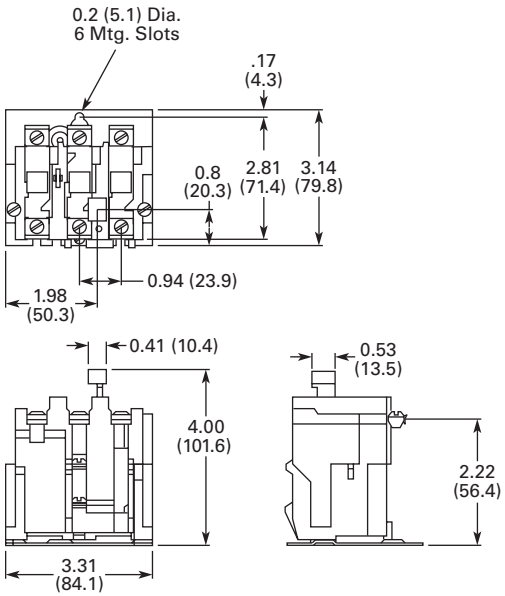
Dimensions

Approximate Dimensions in Inches (mm)

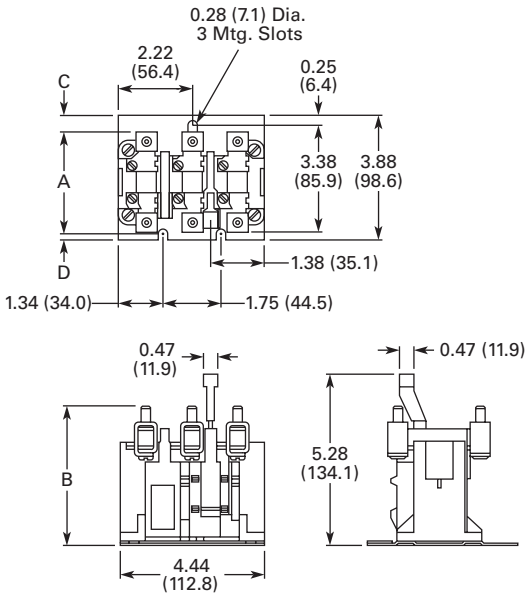
Not to be used for construction purposes unless approved.

Thermal Type B Overload Relays

Sizes 1 and 2—Three-Pole, Panel Mounted



Sizes 3 and 4—Three-Pole, Panel Mounted



Dimensions

Relay Size	A	B	C	D
3	3.13 (79.5)	4.06 (103.1)	044 (11.2)	0.31 (7.9)
4	3.38 (85.9)	4.38 (111.3)	0.31 (7.9)	0.19 (4.8)

Note

① Alarm contact available as factory modification of field mountable. For factory modification, add suffix B.

Thermal Type A, Class 20, Auto/Manual Reset

Contents

Thermal Type A, Class 20, Auto/Manual Reset

Application Description

The Type A overload relay is designed to protect industrial motors against overload conditions. Using modern block type, bimetallic design, this relay will provide Class 20 operation in either single- or three-phase applications.

Features

- Field selectable manual/auto reset
- Alarm contact factory available
- Class 20—600V design
- Inverse time delay trip
- Adjustable trip rating ±15%
- Color coded reset rod:
  - Compensated (gray)
  - Non-compensated (red)

Operation

The Type A overload relay is a bimetallic actuated device. The bimetal elements are operated by precisely calibrated heaters. The heater elements are connected either directly in the circuit to be measured, or through current transformers on applications NEMA Size 5 and larger.

As the bimetals are heated by motor current flow, a deflection force is produced. Upon a sustained level of abnormal current flow, the deflection becomes great enough to open the snap-action output contact.

Automatic Reset

The Type A overload relay can be supplied as an option on all A200 starters to provide automatic reset operation. The overload relay is always shipped in the non-automatic mode. To set up auto operation, reposition the reset rod by loosening and re-tightening a hold-down clamp at the base of overload relay.

Product Selection

Heaters

Enter heaters as separate item by listing catalog number from tables, **Pages V5-T2-135** and **V5-T2-136**, as required per starter.

Relays

Type A Overload Relay Single-Pole Panel Mounting

Thermal Type A Overload Relay ①

Motor Full Load Amps	Panel Mounted Ambient Comp. Catalog Number	Panel Mounted Non-Comp. Catalog Number	Starter Replacement Ambient Comp. Catalog Number	Starter Replacement Non-Comp. Catalog Number
Single-Pole (One NC Contact)				
0.25–26.2	**AA11P**	**AN11P**	**AA11A**	**AN11A**
26.3–45	**AA21P**	**AN21P**	**AA21A**	**AN21A**
19–90	**AA31P**	**AN31P**	**AA31A**	**AN31A**
19–135	**AA41P**	**AN41P**	**AA41A**	**AN41A**
Three-Pole (One NC Contact)				
0.25–26.2	**AA13P** ②	**AN13P** ②	**AA13A** ②	**AN13A** ②
26.3–45	**AA23P** ②	**AN23P** ②	**AA23A** ②	**AN23A** ②
19–90	**AA33P** ②	**AN33P** ②	**AA33A** ②	**AN33A** ②
19–135	**AA43P** ②	**AN43P** ②	**AA43A** ②	**AN43A** ②

Technical Data and Specifications

Control Contact Ratings

AC Volts	Normally Closed Make	Normally Closed Break	Normally Open Make	Normally Open Break
Three-Pole Control Contact Ratings				
24–120	20A	2A	0.5A	0.5A
120–600	2400 VA	240 VA	600 VA	60 VA
Single-Pole Control Contact Ratings				
24–120	30A	3A	10A	1A
120–600	3600 VA	360 VA	1200 VA	120 VA

Notes

① For alarm contact (Form C), add Suffix **B**. Available only as factory modification on Type A relay.

② Three-pole Type B overload relay is a suitable alternative to a three-pole Type A overload relay in manual reset mode. For example, BA13JP for AA13P, BN23J for AN23A, and so on. (See **Page V5-T2-127**.)

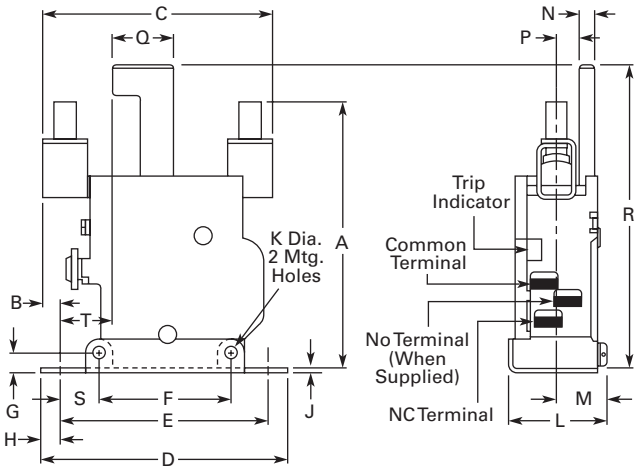
Dimensions

Approximate Dimensions in Inches (mm)

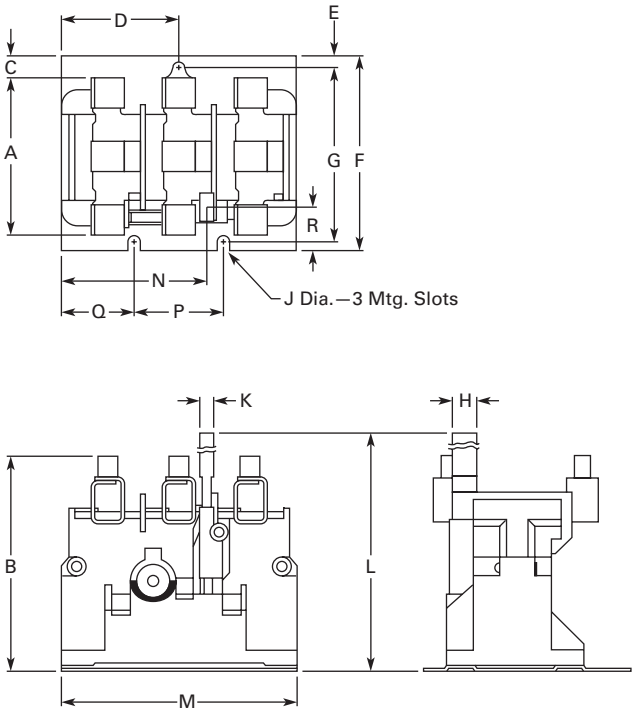
Not to be used for construction purposes unless approved.

Type A

Single-Pole (Sizes 4 Shown)



Three-Pole (Size 4 Shown)



Dimensions

Dimension	Relay Size 1	2	3	4
A	2.72 (69.1)	3.48 (88.4)	4.19 (106.4)	4.5 (114.3)
B	0.94 (23.9)	0.67 (17.0)	0.25 (6.4)	0.38 (9.7)
C	2.75 (69.9)	3.5 (88.9)	3.53 (89.7)	3.78 (96.0)
D	3.25 (82.6)	3.25 (82.6)	4.13 (104.9)	4.13 (104.9)
E	2.63 (66.8)	2.63 (66.8)	3.38 (85.9)	3.38 (85.9)
F	1.34 (34.0)	1.34 (34.0)	2.19 (55.6)	2.19 (55.6)
G	0.25 (6.4)	0.25 (6.4)	0.28 (7.1)	0.28 (7.1)
H	0.31 (7.9)	0.31 (7.9)	0.38 (9.7)	0.38 (9.7)
J	0.06 (1.5)	0.06 (1.5)	0.06 (1.5)	0.06 (1.5)
K	0.22 (5.6)	0.22 (5.6)	0.27 (6.8)	0.27 (6.8)
L	1.34 (34.0)	1.34 (34.0)	1.69 (42.9)	1.69 (42.9)
M	0.66 (16.8)	0.66 (16.8)	0.88 (22.4)	0.88 (22.4)
N	0.16 (4.1)	0.16 (4.1)	0.27 (6.8)	0.27 (6.8)
P	0.22 (5.6)	0.22 (5.6)	0.34 (8.6)	0.34 (8.6)
Q	0.06 (1.5)	0.06 (1.5)	0.69 (17.5)	0.69 (17.5)
R	4.00 (101.6)	4.00 (101.6)	5.19 (131.8)	5.19 (131.8)
S	0.47 (11.9)	0.47 (11.9)	0.59 (15.0)	0.59 (15.0)
T	1.11 (28.2)	1.11 (28.2)	0.69 (17.5)	0.69 (17.5)

Dimensions

Dimension	Relay Size 1	2	3	4
A	2.38 (60.5)	2.44 (62.0)	3.13 (79.5)	3.38 (85.9)
B	3.13 (79.5)	3.17 (80.5)	4.06 (103.1)	4.38 (111.3)
C	0.36 (9.1)	0.33 (8.4)	0.44 (11.2)	0.31 (7.9)
D	1.66 (42.2)	1.66 (42.2)	2.22 (56.4)	2.22 (56.4)
E	0.17 (4.3)	0.17 (4.3)	0.25 (6.4)	0.25 (6.4)
F	2.81 (71.4)	2.81 (71.4)	3.38 (85.9)	3.38 (85.9)
G	3.08 (78.2)	3.08 (78.2)	3.88 (98.6)	3.88 (98.6)
H	0.47 (11.9)	0.47 (11.9)	0.47 (11.9)	0.47 (11.9)
J	0.20 (5.1)	0.20 (5.1)	0.28 (7.1)	0.28 (7.1)
K	0.28 (7.1)	0.28 (7.1)	0.47 (11.9)	0.47 (11.9)
L	4.00 (101.6)	4.00 (101.6)	5.28 (134.1)	5.28 (134.1)
M	3.31 (84.1)	3.31 (84.1)	4.44 (112.8)	4.44 (112.8)
N	1.80 (45.7)	1.80 (45.7)	2.77 (70.4)	2.77 (70.4)
P	1.89 (48.0)	1.89 (48.0)	1.75 (44.5)	1.75 (44.5)
Q	1.00 (25.4)	1.00 (25.4)	1.34 (34.0)	1.34 (34.0)
R	—	—	1.03 (26.2)	1.03 (26.2)

Type FT Fast Trip, Class 10

Contents

Type FT Fast Trip, Class 10

Application Description

The Type FT overload relay is designed to protect special purpose motors having restricted thermal and locked rotor capabilities. Using modern block type, bimetallic design, this relay will provide Class 10 operation in single- or three-phase applications.

Operation

The Type FT overload relay is a bimetallic actuated device. The bimetal elements are operated directly from line current, thus separate calibrating heater elements are not utilized. The overload relay may be wired directly in the motor circuit, or through-current transformers on applications larger than 150A.

As the bimetals are heated by motor current flow, a deflection force is produced. Upon a sustained level of abnormal current flow, the deflection becomes great enough to open the snap action output contact.

Features

- Class 10—600V design
- Inverse time delay trip
- Color coded reset rod—green
- Alarm contact factory available
- Field selectable manual/auto reset
- Adjustable trip rating ±20%
- Ambient compensation included

Product Selection

Type FT Single-Pole

Type FT Single-Pole (One NC Contact); Three-Phase (Three NC Contacts in Series) ①

Motor Full Load Amperes	Panel Mounted Single-Pole Catalog Number	Three-Pole Catalog Number	Starter Replacement NEMA Size	Single-Pole Catalog Number
0.76–1.1	**FT11P-1.1**	**FT13P-1.1**	—	**FT11A-1.1**
1.1–1.6	**FT11P-1.6**	**FT13P-1.6**	—	**FT11A-1.6**
1.6–2.4	**FT11P-2.4**	**FT13P-2.4**	0, 1	**FT11A-2.4**
2.4–3.6	**FT11P-3.6**	**FT13P-3.6**	0, 1	**FT11A-3.6**
3.6–5.4	**FT11P-5.4**	**FT13P-5.4**	0, 1	**FT11A-5.4**
5.4–8.0	**FT11P-8.0**	**FT13P-8**	0, 1	**FT11A-8**
8.0–12	**FT11P-12**	**FT13P-12**	0, 1	**FT11A-12**
12–18	**FT11P-18**	**FT13P-18**	1	**FT11A-18**
16–24	—	**FT13P-24**		—
22–32	**FT11P-32**	**FT13P-32**	0, 1	**FT11A-32**
24–36	**FT21P-36**	**FT23P-36**	2	**FT21A-36**
36–54	**FT21P-54**	**FT23P-54**	12	**FT21A-54**
22–32	**FT31P-32**	**FT33P-32**	3	**FT31A-32**
32–48	**FT31P-48**	**FT33P-48**	3	**FT31A-48**
48–72	**FT31P-72**	**FT33P-72**	3	**FT31A-72**
72–110	**FT41P-110**	**FT43P-110**	4	**FT41A-110**
100–150	**FT41P-150**	**FT43P-150**	4	**FT41A-150**

Technical Data and Specifications

Control Contact Ratings

AC Volts	Normally Closed Make	Normally Closed Break	Normally Open Make	Normally Open Break
24–120	30A	3A	10A	1A
120–600	3600 VA	360 VA	1200 VA	120 VA

Note

① Single-pole (1NO-NC contact): add suffix **B**. Three-pole (3NO-NC contacts): add suffix **B**. Example: FT13P**B**-12.

Dimensions

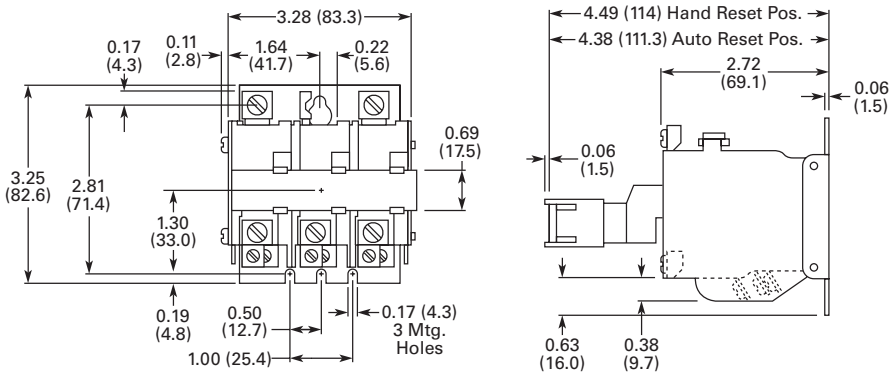
Approximate Dimensions in Inches (mm)

2

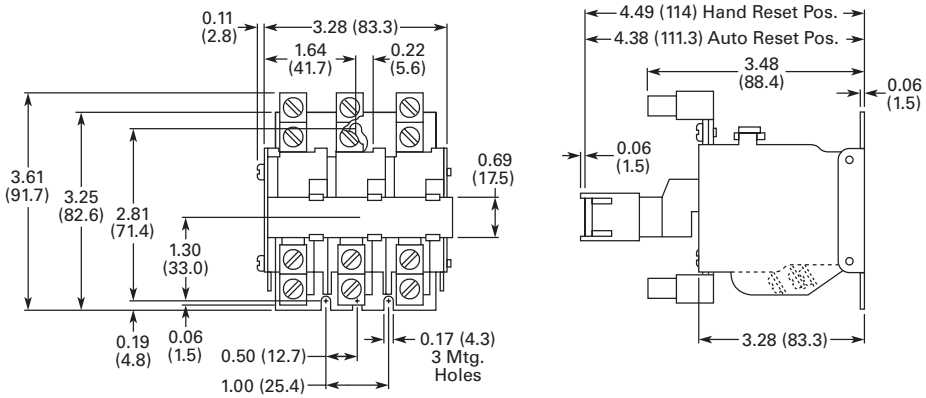
Not to be used for construction purposes unless approved.

Type FT Overload Relays

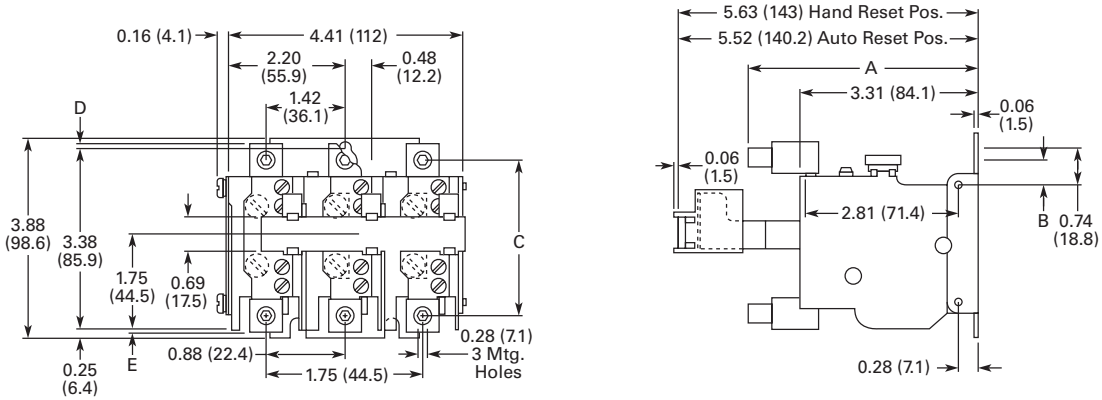
Three-Pole, Size 1



Three-Pole, Size 2



Three-Pole, Sizes 3, 4



Dimensions

Relay Size	A	B	C	D	E
3	4.25 (108.0)	0.53 (13.5)	2.91 (73.9)	0.09 (2.3)	0.06 (1.5)
4	4.50 (114.3)	0.59 (15.0)	3.03 (77.0)	0.22 (5.6)	0.19 (4.8)

Heater Selection

General Information on Heater Coil Selection

For maximum motor protection and compliance with Article 430-32 of the National Electrical Code, select heater coils from the tables in this section on the basis of motor nameplate full load current.

When the full load current is unknown, selection may be made on the basis of average full load currents as shown on **Pages V5-T2-151** and **V5-T2-152**. **Caution—The average ratings could be high or low for a specific motor and therefore 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.**

Heater coils are rated to protect 40°C rise motors, and open and drip-proof motors having a **service factor of 1.15** where the motor and the controller are at the same ambient temperature.

For other conditions:

1. For 50°C, 55°C, 75°C rise motors and **enclosed motors having a service factor of 1.0, select one size smaller coil.**
2. Ambient temperature of controller lower than motor by 26°C (47°F), use one size smaller coil.
3. Ambient temperature of controller higher than motor by 26°C (47°F), use one size larger coil.

Ultimate tripping current of heater coils is approximately 1.25 times the minimum current rating listed in the tables.

Type A and B Overload Relays, Sizes 3 and 4

Size Starter	Ambient Compensated Enclosed Starters All Applications Full Load Current of Motor Amps	Non-Compensating Enclosed Starters	Heater (One Heater per Catalog Number) Catalog Number
For Size 4 Starters	12.8–14.1	11.9–13.0	**FH68**
	14.2–15.5	13.1–14.3	**FH69**
	15.6–17.1	14.4–15.9	**FH70**
	17.2–18.9	16.0–17.4	**FH71**
	19.0–20.8	17.5–19.1	**FH72**
For Size 3 Starters	20.9–22.9	19.2–21.1	**FH73**
	23.0–25.2	21.2–23.2	**FH74**
	25.3–27.8	23.3–25.6	**FH75**
	27.9–30.6	25.7–28.1	**FH76**
	30.7–33.5	28.2–30.8	**FH77**
	33.6–37.5	30.9–34.5	**FH78**
	37.6–41.5	34.6–38.2	**FH79**
	41.6–56.3	38.3–42.6	**FH80**
	46.4–50	42.7–46	**FH81**
	51–55	47–51	**FH82**
	56–61	52–56	**FH83**
	62–66	57–61	**FH84**
	67–73	62–67	**FH85**
	74–78	68–72	**FH86**
	79–84	73–77	**FH87**
	85–92	78–84	**FH88**
	93–101	85–91	**FH89**
	102–110	92–99	**FH90**
	111–122	100–110	**FH91**
	123–129	111–122	**FH92**
	130–133	123–128	**FH93**
	—	129–133	**FH94**

Type A and B Overload Relays, Sizes 5 and 6 ①

Compensated Overload Relay Open Starter Full Load Current of Motor (Amps)	Enclosed Starter	Heater (One Heater per Catalog Number) Catalog Number
Size 5 (with 300/5 Current Transformers)		
—	—	**FH23**
118–129	118–129	**FH24**
130–141	130–141	**FH25**
142–155	142–155	**FH26**
156–170	156–170	**FH27**
171–187	171–187	**FH28**
188–205	188–205	**FH29**
206–224	206–224	**FH30**
225–244	225–244	**FH31**
245–263	245–263	**FH32**
264–292	264–292	**FH33**
293–300	—	**FH34**
Size 6 (with 600/5 Current Transformers)		
—	—	**FH23**
236–259	236–259	**FH24**
260–283	260–283	**FH25**
284–310	284–310	**FH26**
311–340	311–340	**FH27**
341–374	341–374	**FH28**
375–411	375–411	**FH29**
412–448	412–448	**FH30**
449–489	449–489	**FH31**
490–527	490–527	**FH32**
528–585	528–540	**FH33**
586–600	—	**FH34**

Note

① Size 7 and larger—advise full load current.

Type A and B Overload Relays, Sizes 0, 1 and 2

Size Starter	Non-Compensated Open Starters and Ambient Comp. Open and Enclosed Starters: Block Type Overload sing Three Heaters	Non-Compensated Open Starters and Ambient Comp. Open and Enclosed Starters: Single-Pole Type Overload	Heater (One Heater per Catalog Number) Catalog Number	Non-Compensating Enclosed Starters: Block Type Overload Using Three Heaters	Non-Compensating Enclosed Starters: Single-Pole Type Overload	Heater Catalog Number
Full Load Current of Motor (Amps)						
For Size 0 Starters	0.25–0.27	0.29–0.31	**FH03**	0.24–0.25	0.28–0.30	**FH03**
	0.28–0.31	0.32–0.35	**FH04**	0.26–0.28	0.31–0.34	**FH04**
	0.32–0.34	0.36–0.39	**FH05**	0.29–0.31	0.35–0.37	**FH05**
	0.35–0.38	0.40–0.43	**FH06**	0.32–0.35	0.38–0.42	**FH06**
	0.39–0.42	0.44–0.48	**FH07**	0.36–0.39	0.43–0.47	**FH07**
	0.43–0.46	0.49–.053	**FH08**	0.40–0.43	0.48–0.52	**FH08**
	0.47–0.50	0.54–0.58	**FH09**	0.44–0.47	0.53–0.56	**FH09**
	0.51–0.55	0.59–0.64	**FH10**	0.48–0.51	0.57–0.63	**FH10**
	0.56–0.62	0.65–0.71	**FH11**	0.52–0.57	0.64–0.70	**FH11**
	0.63–0.68	0.72–0.79	**FH12**	0.58–0.63	0.71–0.77	**FH12**
	0.69–0.75	0.80–0.87	**FH13**	0.64–0.70	0.78–0.85	**FH13**
	0.76–0.83	0.88–0.96	**FH14**	0.71–0.77	0.86–0.94	**FH14**
	0.84–0.91	0.97–1.06	**FH15**	0.78–0.85	0.95–1.03	**FH15**
	0.92–1.00	1.07–1.16	**FH16**	0.86–0.93	1.04–1.13	**FH16**
	1.01–1.11	1.17–1.28	**FH17**	0.94–1.03	1.14–1.25	**FH17**
	1.12–1.22	1.29–1.41	**FH18**	1.04–1.13	1.26–1.38	**FH18**
	1.23–1.34	1.42–1.55	**FH19**	1.14–1.25	1.39–1.52	**FH19**
	1.35–1.47	1.56–1.71	**FH20**	1.26–1.37	1.53–1.67	**FH20**
	1.48–1.62	1.72–1.87	**FH21**	1.38–1.51	1.68–1.83	**FH21**
	1.63–1.78	1.88–2.06	**FH22**	1.52–1.65	1.84–2.01	**FH22**
	1.79–1.95	2.07–2.26	**FH23**	1.66–1.81	2.02–2.21	**FH23**
	1.96–2.15	2.27–2.48	**FH24**	1.82–1.99	2.22–2.43	**FH24**
	2.16–2.35	2.49–2.72	**FH25**	2.00–2.19	2.44–2.66	**FH25**
	2.36–2.58	2.73–2.99	**FH26**	2.20–2.39	2.67–2.92	**FH26**
	2.59–2.83	3.00–3.28	**FH27**	2.40–2.63	2.93–3.21	**FH27**
	2.84–3.11	3.29–3.60	**FH28**	2.64–2.89	3.22–3.53	**FH28**
	3.12–3.42	3.61–3.95	**FH29**	2.90–3.17	3.54–3.87	**FH29**
	3.43–3.73	3.96–4.31	**FH30**	3.18–3.47	3.88–4.22	**FH30**
	3.74–4.07	4.32–4.71	**FH31**	3.48–3.79	4.23–4.61	**FH31**
	4.08–4.39	4.72–5.14	**FH32**	3.80–4.11	4.62–4.9	**FH32**
	4.40–4.87	5.15–5.6	**FH33**	4.12–4.55	5.0–5.5	**FH33**
	4.88–5.3	5.7–6.2	**FH34**	4.56–5.0	5.6–6.0	**FH34**
	5.4–5.9	6.3–6.8	**FH35**	5.1–5.5	6.1–6.6	**FH35**
	6.0–6.4	6.9–7.5	**FH36**	5.6–5.9	6.7–7.3	**FH36**
	6.5–7.1	7.6–8.2	**FH37**	6.0–6.6	7.4–8.0	**FH37**
	7.2–.78	8.3–9.0	**FH38**	6.7–7.2	8.1–8.7	**FH38**
	7.9–8.5	9.1–9.9	**FH39**	7.3–7.9	8.8–9.7	**FH39**
	8.6–9.4	10.0–10.8	**FH40**	8.0–8.7	9.8–10.5	**FH40**
	9.5–10.3	10.9–11.9	**FH41**	8.8–9.5	10.6–11.7	**FH41**
	10.4–11.3	12.0–13.1	**FH42**	9.6–10.5	11.8–12.7	**FH42**
	11.4–12.4	13.2–14.3	**FH43**	10.6–11.5	12.8–14.0	**FH43**
	12.5–13.5	14.4–15.7	**FH44**	11.6–12.6	14.1–15.3	**FH44**
	13.6–14.9	15.8–17.2	**FH45**	12.7–13.8	15.4–16.6	**FH45**
	15.0–16.3	17.3–18.9	**FH46**	13.9–15.1	16.7–18.3	**FH46**
	16.4–18.0	19.0–20.8	**FH47**	15.2–16.7	18.4–20.0	**FH47**
For Size 1 Starters	18.1–19.8	20.9–22.9	**FH48**	16.8–18.3	20.1–21.9	**FH48**
	19.9–21.7	23.0–25.2	**FH49**	18.4–20.2	22.0–23.9	**FH49**
	21.8–23.9	25.3–27.6	**FH50**	20.3–22.2	24.0–26.2	**FH50**
	24.0–26.2	27.7–30.3	**FH51**	22.3–24.3	26.3–28.8	**FH51**
	26.3–28.7	30.4–33.3	**FH52**	24.4–26.6	28.9–31.4	**FH52**
For Size 2 Starters	28.8–31.4	33.4–36.4	**FH53**	26.7–29.1	31.5–34.5	**FH53**
	31.5–34.5	36.5–39.9	**FH54**	29.2–32.0	34.6–37.9	**FH54**
	34.6–37.9	40.0–43.9	**FH55**	32.1–35.2	3.80–41.9	**FH55**
	38.0–41.5		**FH56**	35.3–38.5	42.0–45.0	**FH56**
	41.6–45.0		**FH57**	38.6–42.3		**FH57**

Contents

Relays—Current Sensing Protective

Product Description

The IQ500 is a heaterless, current-sensing, solid-state motor protective relay with optional communications capabilities. Several functions are incorporated into the base relay (IQ502/IQ504) as standard:

- Overload (overcurrent) protection
- Phase unbalance and phase loss protection
- Ground current protection (Class II)

The base relay can serve as the initial building block for a motor protection system by adding the IQ500M Special Function Module. The module can address application related motor load functions with the additional features:

- Underload protection
- Long acceleration
- Jam protection
- Load control

The IQ500 can provide a cost-effective alternative to conventional protective relays such as current relays, ground fault relays and phase loss or phase unbalance relays. Used with the PowerNet system, a low-cost, local area communication network, information such as current values, status, setpoint values and cause of trip can be displayed remotely. The IQ500 relay is ideal for a variety of industrial applications such as mining, timber, material handling, air conditioning compressors, wastewater treatment plants and petrochemical industries.

Features

- Overload class is adjustable using DIP switches for 5, 10, 20 or 30 seconds, maximum trip times at six times rated current
- Designed for 1000V and less distribution systems
- Form C (NO/NC) contact on output relay
- Isolated alarm relay output contact
- Communications capability using IMPACC network
- Manual or automatic reset (either a true manual or remote electrical reset)—selectable
- Overload, Class II ground current, phase unbalance and single-phase protection are standard
- LED indication (bi-colored—red/green) for device status, including overload, phase unbalance or ground current trip
- Special Function Module adds protection for underload and jam conditions, also provides for long acceleration
- Optional load control feature available with special function module
- Feed-through current transformer windows for contactors, NEMA Sizes 1–4 (for Size 5 and larger, external current transformers can be used)
- Fits mounting footprint of Eaton's MORA relay
- Panel or starter mountable
- Cause of trip is held in memory through a power loss
- Bell alarm contact available for remote status indication
- DIP switch provided for setting operating frequency—50 or 60 Hz
- Plug-in terminal block for control power, trip relay and bell alarm relay connections
- Operating temperature: –20° to 60°C (–4° to 140°F)

Benefits

- No external current transformers are required since they are internal to the IQ500
- DIP switches used to select functions and settings on base relay are clearly marked and covered with screw-on plastic covers
- On the automatic reset, the reset times can be selected for long (90 second) or short (10 second) delay
- Device can be set for different motor full load currents without additional parts or modules

Optional Benefits

- With the addition of the IQ500M Special Function Module, the enhanced protection includes jam (overtorque) and underload and provides long acceleration time (high inertia load)
- The underload and jam protection functions each have independent Form C output relays as part of the module. In addition, the underload and jam functions each have their own LEDs for status indication
- The underload and jam functions also have separate selectable trip levels and adjustable trip-delay and start-delay settings
- The IQ500M can be used as a load control module that allows "shedding and restoring" a particular load that contributes to the load being monitored
- The PONI (Product Operated Network Interface) card attaches directly to the base relay or special function module for interfacing with the Eaton's PowerNet communications system
- Localized display can be achieved with the Central Monitoring Unit

Standards and Certifications

- UL File No. E19223

Product Selection

IQ502A

Current Sensing Protective Relay

Maximum Horsepower				Control Voltage	
200V	230V	460–475V	Ampere Rating	110/120V 50/60 Hz Catalog Number	220/240V 50/60 Hz Catalog Number
20	25	50	3.4–66A	**IQ502A**	**IQ502B**
60	75	150	10.8–207A	**IQ504A**	**IQ504B**
—	—	—	0.32–5.4A	**IQ500LA** ①	**IQ500LB** ①
Special function module				**IQ500M**	**IQ500M**

Note

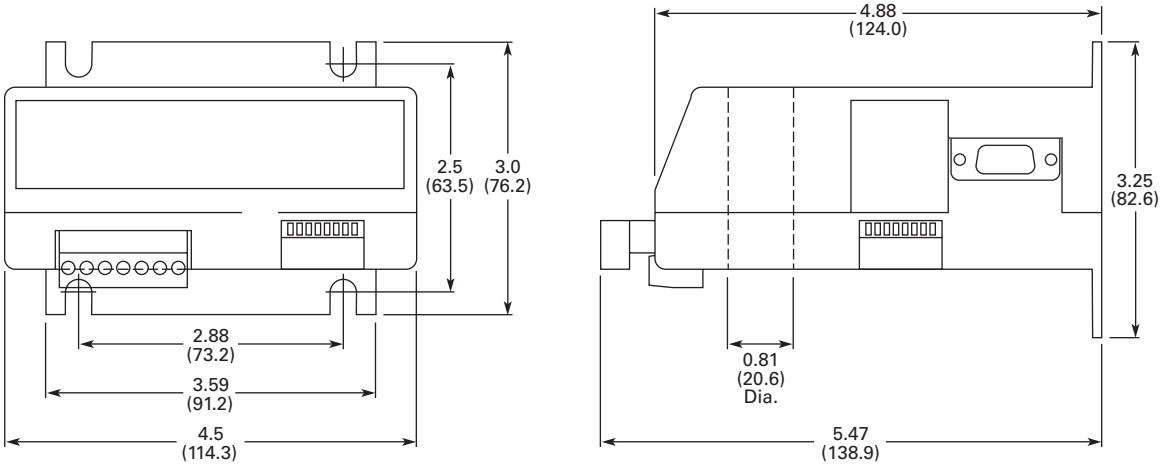
① Can be used with external CTs having 5A secondary.

Dimensions

Approximate Dimensions in Inches (mm)

Current Sensing Protective Relays

IQ504



IQ500L and IQ502