Electrical Sector Solutions

Volume 10: Enclosed Control

EATON
Powering Business Worldwide

Volume 10—Enclosed Control

10

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WARNING

The installation and use of Eaton products should be in accordance with the provisions of the U.S. National Electrical Code® and/or other local codes or industry standards that are pertinent to the particular end use. Installation or use not in accordance with these codes and standards could be hazardous to personnel and/or equipment.

These catalog pages do not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the local Eaton Products Distributor or Sales Office. The contents of this catalog shall not become part of or modify any prior or existing agreement, commitment or relationship. The sales contract contains the entire obligation of Eaton's Electrical Sector. The warranty contained in the contract between the parties is the sole warranty of Eaton. Any statements contained herein do not create new warranties or modify the existing warranty.

Powering Business Worldwide

Eaton is a global leader in power distribution, power quality, control and automation, and monitoring products.

At Eaton, we believe a reliable, efficient and safe power system is the foundation of every successful enterprise. Through innovative technologies, cutting-edge products and our highly skilled services team, we empower businesses around the world to achieve a powerful advantage.

In addition, Eaton is committed to creating and maintaining powerful customer relationships built on a foundation of excellence. From the products we manufacture to our dedicated customer service and support, we know what's important to you.

Solutions

Eaton takes the complexity out of power systems management with a holistic and strategic approach, leveraging our industry-leading technology, solutions and services. We focus on the following three areas in all we do:

- Reliability—maintain the appropriate level of power continuity without disruption or unexpected downtime
- Efficiency—minimize energy usage, operating costs, equipment footprint and environmental impact
- Safety—identify and mitigate electrical hazards to protect what you value most

Using the Eaton Catalog Library

As we grow, it becomes increasingly difficult to include all products in one or two comprehensive catalogs. Knowing that each user has their specific needs, we have created a library of catalogs for our products that when complete, will contain 15 volumes. Since the volumes will continuously be a work in progress and updated, each volume will stand alone. Refer to our volume directory, MZ08100001E, for a quick glance of where to look for the products you need. The 15 volumes include:

- Volume 1—Residential and Light Commercial (CA08100002E)
- Volume 2—Commercial Distribution (CA08100003E)
- Volume 3—Power Distribution and Control Assemblies (CA08100004E)
- Volume 4—Circuit Protection (CA08100005E)
- Volume 5—Motor Control and Protection (CA08100006E)
- Volume 6—Solid-State Motor Control (CA08100007E)
- Volume 7—Logic Control, Operator Interface and Connectivity Solutions (CA08100008E)
- Volume 8—Sensing Solutions (CA08100010E)
- Volume 9—Original Equipment Manufacturer (CA08100011E)
- Volume 10—Enclosed Control (CA08100012E)
- Volume 11—Vehicle and Commercial Controls (CA08100013E)
- Volume 12—Aftermarket, Renewal Parts and Life Extension Solutions (CA08100014E)
- Volume 13—Counters, Timers and Tachometers (CA08100015E)—Available in electronic format only
- Volume 14—Fuses (CA08100016E)—Available in electronic format only
- Volume 15—Solar Inverters and Electrical Balance of System (CA08100018E)

These volumes are not all-inclusive of every product, but they are meant to be an overview of our product lines. For our full range of product solutions and additional product information, consult Eaton.com/electrical and other catalogs and product guides in our literature library. These references include:

- The Consulting Application Guide (CA08104001E)
- The Eaton Power Quality Product Guide (COR01FYA)

If you don't have the volume that contains the product or information that you are looking for, not to worry. You can access every volume of the catalog library at Eaton.com/electrical in the Literature Library.

By installing our Automatic Tab Updater (ATU), you can be sure you always have the most recent version of each volume and tab.

Icons

Green Leaf

Eaton Green Solutions are products, systems or solutions that represent Eaton benchmarks for environmental performance. The green leaf symbol is our promise that the solution has been reviewed and documented as offering exceptional, industry-leading environmental benefits to customers, consumers and our communities. Though all of Eaton's products and solutions are designed to meet or exceed applicable government standards related to protecting the environment, our products with the Green Leaf designation further provide "exceptional environmental benefit."

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Drawings Online

When you see the Drawings Online icon, go to Eaton.com/electrical and find the products page. There you will find a tab that includes helpful product drawings and illustrations.

Contact Us

If you need additional help, you can find contact information under the Customer Care heading of Eaton.com/electrical.

Enclosed Control

1.1 Enclosed Control Products

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Enclosed Control Products

Contents

Welcome

Welcome to the latest edition of the Enclosed Control Catalog from Eaton's electrical sector. In this updated edition, you will find complete details on our extensive line of enclosed products.

Eaton Corporation

Eaton Corporation is a diversified industrial manufacturer ranked among the largest Fortune 500 companies. The electrical group is Eaton's largest division and is a global leader in electrical control, power distribution, power quality, automation and monitoring products and services. Eaton's electrical products include brands such as MGE Office Protection Systems™, Powerware®, Holec®, and MEM®. Eaton provides PowerChain® solutions to serve the needs of the industrial, institutional, IT, data center, mission critical, utility, residential and OEM markets worldwide.

PowerChain Management solutions help enterprises achieve sustainable and competitive advantages through proactive management of the power system as a strategic, integrated asset throughout its life cycle. With Eaton's distribution, generation and power quality equipment; full-scale engineering services; and information management systems, the power system is positioned to deliver powerful results: greater reliability, operating cost efficiencies, effective use of capital, enhanced safety and risk mitigation.

Eaton Support and Service Center Capabilities

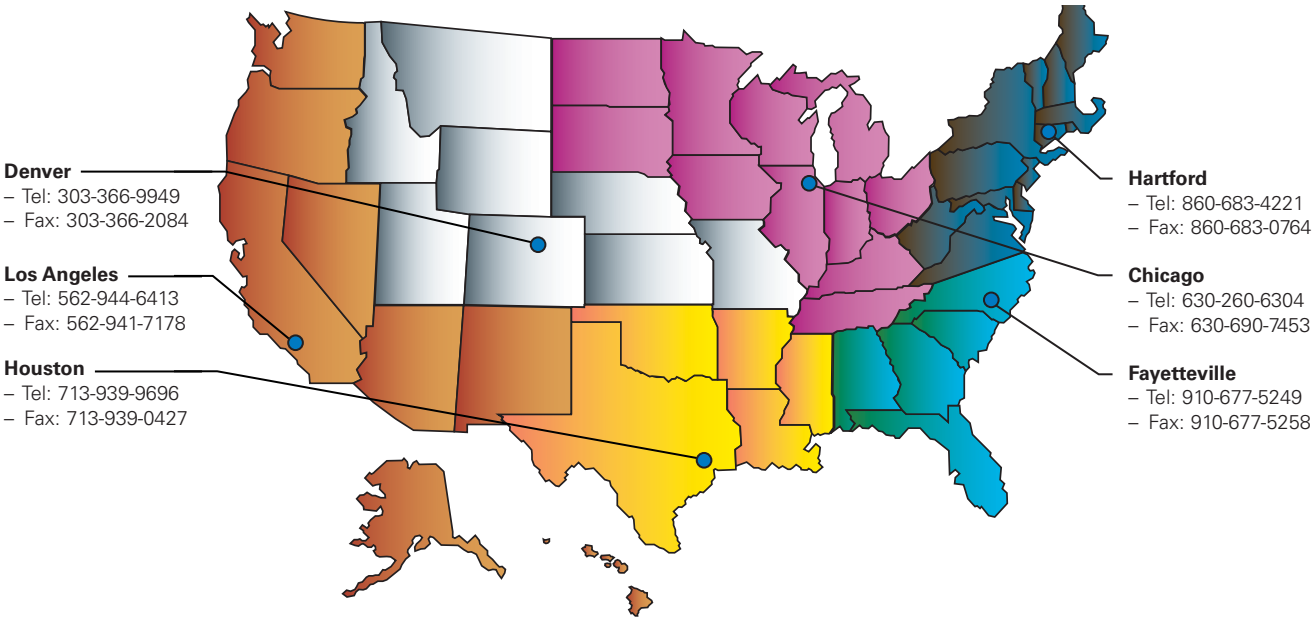
Enclosed Control Service Center Product Offering

- Type 1, 12, 3R, 4, 4X and 7/9 enclosures
- Non-combination starters
- Combination starters—non-fusible/fusible and circuit breaker
- Full voltage non-reversing, reversing and multi-speed
- Freedom™ (NEMA® Size 00–5), vacuum contactors, soft starters, lighting contactors, motor control centers and MCC aftermarket
- Modifications including cover control, CPTs, auxiliary contacts, heaters and more

Eaton Provides Enclosed Control Solutions That Are Unmatched In The Industry

- Local assembly and manufacturing capabilities
- Assembly and wiring of enclosed control and motor control centers
- Customized enclosed motor starting and lighting panels
- Modified pump panels
- Engineering support
- Custom AutoCAD® drawing capabilities
- Quick-ship capabilities
- Customer visits are welcome!

Six regional service centers



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Technical Reference

Enclosure Types

Enclosures provide mechanical and electrical protection for operator and equipment. Brief descriptions of the various types of enclosures offered by Eaton are given below. See NEMA® Standards Publication No. 250 for more comprehensive descriptions, definitions and/or test criteria. All Eaton enclosures are NEMA ICS 6 compliant.

Enclosure Type Overview

Type 1 (Conforms to IP40)—for Indoor Use

Suitable for most applications where unusual service conditions do not exist and where a measure of protection from accidental contact with enclosed equipment is required. Designed to meet tests for rod entry and rust resistance. Enclosure is sheet steel, treated to resist corrosion. Depending on the size, knockouts are provided on the top, bottom and sometimes on the side.

Type 3R (Conforms to IP52)—for Outdoor Use

Primarily intended for applications where falling rain, sleet or external ice formations are present. Gasketed cover. Designed to meet tests for rain, rod entry, external icing and rust resistance. Enclosure is sheet steel, treated to resist corrosion. Depending on the size, a blank cover plate is attached to the top (for a conduit hub) and knockouts are provided on the bottom.

Cover-mounted pilot device holes are provided and covered with hole plugs.

Type 4 (Conforms to IP65)—for Indoor or Outdoor Use

Provides a measure of protection from splashing water, hose-directed water and wind blown dust or rain. Constructed of sheet steel with gasketed cover.

Designed to meet tests for hose-down, external icing and corrosion protection. When conduit connections are specified, enclosure has two watertight hubs (power) installed top and bottom or one control hub installed in bottom—depending on size.

Cover-mounted pilot device holes are provided and covered with hole plugs.

Type 4X (Conforms to IP65)—for Indoor or Outdoor Use

Provides a measure of protection from splashing water, hose-directed water, wind blown dust, rain and corrosion. Constructed of stainless steel with gasketed cover. Designed to meet same tests as Type 4 except enclosure must pass a 200-hour salt spray corrosion resistance test.

304-grade stainless steel provided as standard. Select 316-grade option for improved corrosion resistance.

Type 7/9—for Hazardous Gas Locations

For use in Class I, Group B, C or D; Class II, Groups E, F and Class III indoor locations as defined in the National Electrical Code®. Type 7/9 enclosures must withstand the pressure generated by the explosion of internally trapped gases and be able to contain the explosion so that gases in the surrounding atmosphere are not ignited. Under normal operation, the surface temperature of the enclosure must be below the point where it could ignite explosive gases present in the surrounding atmosphere. Designed to meet explosion, temperature and hydrostatic design tests.

Type 12 (Conforms to IP62)—for Indoor Use

Provides a degree of protection from dripping liquids (non-corrosive), falling dirt and dust. Designed to meet tests for drip, dust and rust resistance. Constructed of sheet steel. Hole plugs cover pilot device holes. There are no knockouts, hub cover plates or hubs installed.

Safety Interlock

The Type 12 enclosure can be ordered with a safety interlock on the door that can be padlocked off. A vault-type door latch system is used. A tapered plate holds the gasketed door tight against the case edge to provide a positive seal. The special door interlock consists of the door handle and a screwdriver operated cover defeater.

The cover defeater and the disconnect interlock defeater are both recessed screwdriver operated devices that cannot be manipulated with other types of tools.

Enclosure Ratings

IEC IP Index of Protection Ratings

First Number	Description
0	No protection
1	Protection against solid objects greater than 50 mm
2	Protection against solid objects greater than 12 mm
3	Protection against solid objects greater than 2.5 mm
4	Protection against solid objects greater than 1 mm
5	Total protection against dust—limited ingress (dust protected)
6	Total protection against dust (dust-tight)

Second Number	Description
0	No protection
1	Protection against vertically falling drops of water
2	Protection against dripping water when tilted up to 15 degrees
3	Protection against spraying water
4	Protection against splashing water
5	Protection against water jets
6	Protection against heavy seas
7	Protection against the effects of immersion
8	Protection against submersion

The UL®, NEMA and IEC organizations (and other international groups) define degrees of protection provided by electrical enclosures with respect to personnel, equipment within the housing and the ingress of water.

Subtle differences do exist between the test procedures and specifications of these organizations.

To claim ratings to NEMA type specifications, the testing is performed and certified by the manufacturers themselves.

To comply to UL and IEC specifications, the manufacturers must submit product samples, materials used and other data to an independent testing laboratory before ratings can be claimed.

In addition, IEC "IP" ratings differ from NEMA type in that they do not apply to protection against the risk of explosion or conditions such as humidity, corrosive gases, fungi or vermin. In addition, different parts of the equipment can have different degrees of protection and still comply.

The table below is a comparison of the NEMA/UL/IEC enclosure specifications to be used as an approximate reference only. **Do not use the table to convert from IEC to NEMA designations.**

NEMA/UL/IEC Enclosure Type Cross-Reference—Approximate

IEC 529 does not specify equivalents to NEMA enclosure types 7, 8, 9 or 10.

NEMA Enclosure Rating	IP10	IP20	IP21	IP22	IP23	IP30	IP31	IP32	IP33	IP40	IP41	IP42	IP43	IP50	IP51	IP52	IP53	IP54	IP55	IP56	IP60	IP61	IP62	IP63	IP64	IP65	IP66	IP67	IP68
1	■	■	■	■	■	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	■	■	■	■	■	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	—	—	—	—
3R	■	■	■	■	■	■	■	■	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3S	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	—	—	—	—
4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	—	—
4X	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	—	—
6	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	—
6P	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
12	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	—	—	—	
13	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	—	—	—	

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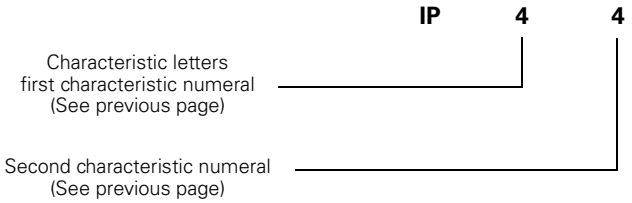
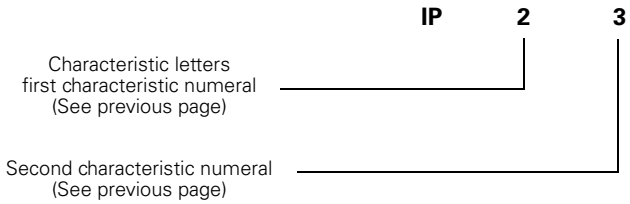
IEC Environmental Enclosure Ratings—Examples of Designations



An enclosure with this designation is protected against the penetration of solid objects greater than 1.0 mm and against splashing water.



An enclosure with this designation is protected against the penetration of solid objects greater than 12 mm and against splashing water.

Motor Circuit Elements

Disconnect Switch— horsepower rated—located in sight of controller—arranged for padlocking in open position—disconnects motor and controller from ungrounded power conductors—position indicating—readily accessible—115% carrying capacity of full load motor current—interrupting capacity of stalled motor current—may serve as disconnect for more than one motor if motors are driving parts of a single machine or motors are all in a single room within sight of disconnecting means, must equal sum of horsepower ratings to be disconnected—device may be general use switch, motor circuit switch or circuit breaker meeting code requirements—disconnecting means should contain motor branch-circuit short-circuit and ground fault protection.

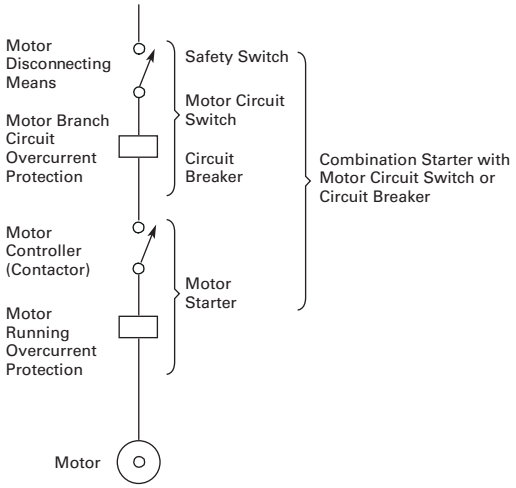
Motor Running Overcurrent Protection— called overload relay—protects motor and control apparatus against overheating due to motor overload—does not protect against short-circuits or ground faults—selected to trip at not more than 125% full load motor current, 40°C rise motors—115% all other motors—continuous duty motor protection—intermittent duty motors protected by branch circuit protection—sufficient time delay to permit motor to start and accelerate load without tripping—sensing devices (heater coils) in ungrounded conductor for single-phase—three sensing devices (heater coils) required for three-phase.

Contactor— starting, stopping motor it controls—interrupt stalled motor current—horsepower rated—not lower than horsepower of motor controlled—contactor not in sight of connected motor must have disconnect capable of locking in open position or manually operable switch that will prevent contactor closing within sight of motor—interrupt all ungrounded power lines—manually or magnetically operated.

Controller or Starter— non-combination contains contactor and motor running overcurrent protection in one enclosure—starts, stops, protects and regulates motor—combination starters contain disconnecting means, branch short-circuit protection in same enclosure. (See motor control sections—three-phase, single-phase and DC.)

Reduced Voltage— restrictions in power supply capacity or machine design may require reduced voltage starting—motor connected to power supply at voltage lower than supply voltage—requires use of primary resistance, reactance or use of autotransformer—special motor designs such as part winding and wye-delta considered as reduced voltage starting.

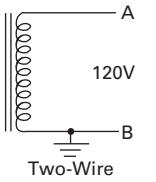
Typical Motor Circuit



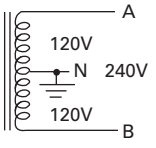
Power Supplies

All electrical power supplied as AC or DC—primarily AC—generation, transmission and some distribution of power at high voltage—most power distribution at use voltage for industrial and residential is 600V and under—AC power generally at a frequency of 60 Hz—50 and 25 Hz used in some specific areas—AC distribution at use location single- or three-phase—limited areas have two-phase.

Single-Phase Power Supply



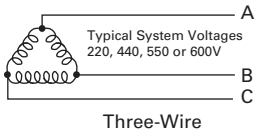
Two-Wire



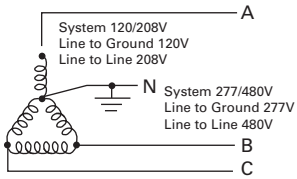
Three-Wire

Single-Phase— two-wire, 120V one line grounded—120/240V three-wire center line grounded—residential distribution, lighting, heat, fractional horsepower motors, business machines.

Three-Phase Power Supply



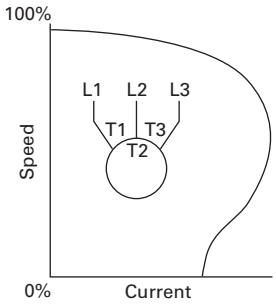
Three-Wire



Four-Wire

Three-Phase— three-wire delta 220/440V, 550V—four-wire wye 120/208 and 277/480V neutral line grounded—primary industrial power distribution—main motor drives, integral horsepower motors, lighting, heating, fractional horsepower motors, business machines—used as three-phase or single-phase power supply.

Squirrel Cage Speed



AC Squirrel Cage Motor— single- or three-phase—single-phase requires starting winding—three-phase self-starting—stationary stator winding—no electrical connection to short circuited rotor—torque produced from magnetic reaction of stator and rotor fields—speed a function of supply frequency and number of electrical poles wound on stator—considered as constant speed even though speed decreases slightly with increased load—high inrush currents during starting on full voltage—rugged construction—easily serviced and maintained—high efficiency—good running power factor when delivering full load—requires motor control only for stator windings.

Functions of Control

Controller functions to start, stop, reverse, regulate and protect connected motor—when functions do not include speed regulation, device is known as a starter rather than controller—**general** applications of control functions on fans, pumps, heating and applications of variable torque and horsepower where relatively infrequent cycling is necessary—functions usually starting and stopping with or without motor running overcurrent protection—manual or magnetic control—**Commercial and Industrial** control functions for constant horsepower, constant or variable torque machine loads, constant torque metal working machinery, variable torque and horsepower fans and blowers, constant power heating, lighting, pumps and motors for all types of applications—may include speed regulation—good for cycling or infrequent starting and stopping—manual or magnetic.

Remote and Local Control

Local Control— controlling or sensing device, master switch or pilot device initiating operation located in same enclosure as controller.

Remote Control— controlling devices located at some other point than controller—may have more than one operating point with control devices connected in parallel or in series, depending on operating sequence required.

Wiring Diagrams

A symbolic representation of operation and function of control devices.

Jogging, Inching, Plugging Service

Jogging or inching—momentary operation of driven machine for small movement or positioning—requires non-maintained operator and electrical control circuit—control subject to motor inrush current on each jog or inch cycle—contactor derated where the contactor is opened or closed more than five times per minute or more than ten times in a 10-minute period.

Plugging—plugging stop or plugging reverse—reverse power supplied to motor—motor generates braking—contactors subjected to higher than normal motor inrush during plugging—requires reversing contactors—contactor derated for plugging service.

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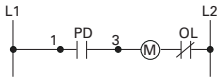
Two- and Three-Wire Control

Two-Wire Control

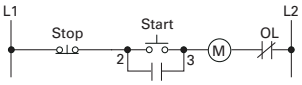
Two-Wire Wiring



Two-wire control is a control function that uses a maintained contact type of pilot device to provide low voltage release (LVR).

Three-Wire Control

Three-Wire Wiring



Three-wire control is a control function that uses a momentary contact pilot device and a holding circuit contact to provide low voltage protection (LVP).

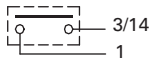
Panel Diagram—wiring, panel and pilot device layout—actual position of devices—power line bold and control lines light—circuit symbols show basic construction details.

Line Diagram—connection representation but not wiring configuration—sequence and function of devices but not location—symbols do not represent physical construction of device.

Typical Line Diagram

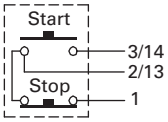
Remote Pilot Devices

Two-Wire Control

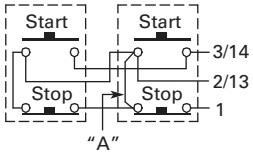


Not for Use with Auto Reset OL Relays

Three-Wire Control



When More than One Pushbutton Station is Used, Omit Connector "A" and Connect per Sketch Below

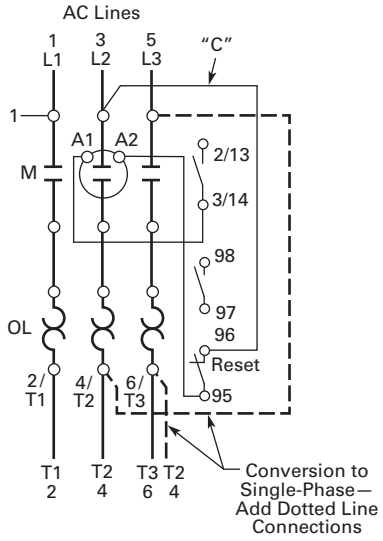


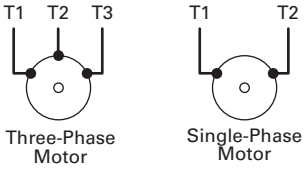
Separate Control

Remove Wire "C" if Supplied and Connect Separate Control Lines to the Number 1 Terminal on the Remote Pilot Device and to the Number 96 Terminal on the Overload Relay

Connections for Non-Reversing Starter

Front View of Panel





NEMA Contactors and Starters

Freedom Breaker Combination—Bi-Metallic OL

Freedom Fusible Combination—C440 SSOL

Freedom Full Voltage Controls

Contents

Product Description

Eaton's Freedom Series™ starters and contactors feature a compact, space-saving design, high strength, impact and temperature resistant insulating materials.

Features

- C440 solid-state electronic overload providing reliable, accurate and value-driven protection, including communication capabilities, while reducing inventory carrying costs with wide FLA adjustment (5:1) and selectable trip class
- Adjustable bimetallic ambient compensated overload relays with interchangeable heater packs—available in three basic sizes, covering applications up to 900 hp
- Fixed heater overloads optional
- A full line of snap-on accessories—top and side mounted auxiliary contacts, solid-state and pneumatic timers, and so on
- Straight-through wiring—line lugs at top, load lugs at bottom
- Horizontal or vertical mounting on upright panel for application freedom
- Screw type power terminals have captive, backed-out self-lifting pressure plates with ± screws—reduced wiring time
- Accessible terminals for easy wiring. Optional fingerproof shields available to prevent electrical shock
- Top located coil terminals convenient and readily accessible. 45 mm contactor magnet coils have three terminals, permitting either top or diagonal wiring—easy to replace European or U.S. style starters or contactors without changing wiring layout
- Encapsulated dual voltage/frequency magnet coils—permanently marked with voltage, frequency and part number
- Designed to meet or exceed UL, CSA®, IEC, VDE, BS and other international standards and listings

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL Listed
- cUL® Listed (indicates appropriate CSA Standard investigation)
- ABS Type Approved
- OSHPD Certified (OSP-0015-10)

Certified Type 2 Coordination

Eaton's Freedom Series NEMA starters are UL Certified to achieve IEC 947 Type 2 coordination against 100,000 A short-circuit fault currents. Any brand of properly selected fuse can be used. Type 2 coordination means that the starter will be suitable for further use following a short-circuit fault.

ISO 9001 Certification

When you turn to Eaton's products, you turn to quality. The International Standards Organization (ISO®) has established a series of standards acknowledged by 91 industrialized nations to bring harmony to the international quest for quality. The ISO certification process covers 20 quality system elements in design, production and installation that must conform to achieve registration. The enclosed control is manufactured in our Fayetteville, NC plant, and this facility is registered ISO 9001. This commitment to quality results in increased product reliability and total customer satisfaction.

Freedom NEMA contactors and starters are extremely rugged products built for any application. Their long electrical/mechanical life is extended through easy maintainability.

- Meets and exceeds all UL and CSA standards
- Sized based on standard NEMA size classifications
- Designed and built for a variety of demanding applications
- Easy coil change and inspectable/replaceable contacts
- Available open and in Type 1, 3R, 4, 4X, 7/9 and 12 enclosures

Short-Circuit Protection

Fuses and **inverse-time circuit breakers** may be selected per Article 430, Part D of the National Electrical Code to protect motor branch circuits from fault conditions. If higher ratings or settings are required to start the motor, do **not** exceed the maximum as listed in Exception No. 2, Article 430-52.

Additional Reference

Catalog Number Selection

NEMA Freedom Line Enclosed Control

2

EC N 22 2 1 A A F -

Design
N = Freedom NEMA
2 = A200

Class		Page
01 =	Non-reversing contactor—three-pole	**V10-T2-10**
	Non-reversing contactor—two-pole	**V10-T2-12**
	Non-reversing contactor—four-pole	**V10-T2-14**
	Non-reversing contactor—five-pole	**V10-T2-15**
02 =	Reversing contactor—three-pole	**V10-T2-16**
05 =	Non-combination non-reversing starter	**V10-T2-18**
05 =	Non-combination single-phase non-reversing starter	**V10-T2-20**
06 =	Non-combination reversing starter	**V10-T2-21**
07 =	Non-combination non-reversing starter with CPT	**V10-T2-23**
16 =	Combination non-reversing starter—fusible disconnect	**V10-T2-25**
	Combination non-reversing starter—non-fusible disconnect	**V10-T2-27**
	Special enclosure combination non-reversing starter—fusible/non-fusible disconnect	**V10-T2-29**
17 =	Combination reversing starter—fusible disconnect	**V10-T2-31**
	Combination reversing starter—non-fusible disconnect	**V10-T2-33**
18 =	Combination non-reversing starter—fusible disconnect with CPT	**V10-T2-35**
	Combination non-reversing starter—non-fusible disconnect with CPT	**V10-T2-37**
22 =	Combination non-reversing starter—circuit breaker	**V10-T2-39**
	Special enclosure combination non-reversing starter—circuit breaker	**V10-T2-42**
23 =	Combination reversing starter—circuit breaker	**V10-T2-44**
24 =	Combination non-reversing starter—circuit breaker with CPT	**V10-T2-47**

NEMA Size

A =	Size 00	**3** =	Size 3	**7** =	Size 7
0 =	Size 0	**4** =	Size 4	**8** =	Size 8
1 =	Size 1	**5** =	Size 5	**9** =	Size 9
2 =	Size 2	**6** =	Size 6		

Enclosure Type

1 =	Type 1—General purpose
2 =	Type 3R—Rainproof
3 =	Type 4—Watertight (painted steel)
4 =	Type 4X—Watertight (304-Grade stainless steel)
5 =	Type 4X—Corrosion (non-metallic)
6 =	Type 7/9—Bolted hazardous location
7 =	Type 7/9—Threaded hazardous location
8 =	Type 12—Dust-tight
9 =	Type 4X—316-Grade stainless steel

Coil Voltage and/or Control Transformers
See code tables below

Cover Control
Type 1 non-comb. (NEW BOX 1 only), **Page V10-T2-6**
Type 1 non-comb., **Page V10-T2-7**
All others, **Page V10-T2-8**

Contactors
3 = Three poles

Disconnect Fuse Clip Ratings

A = None	**G** = 100 A/600 V R	**N** = 600 A/600 V R
B = 30 A/250 V R	**H** = 200 A/250 V R	**P** = 800 A/600 V L
C = 30 A/600 V R	**J** = 200 A/600 V R	**Q** = 1200 A/600 V L
D = 60 A/250 V R	**K** = 400 A/250 V R	**R** = 1600 A/600 V L
E = 60 A/600 V R	**L** = 400 A/600 V R	**S** = 2000 A/600 V L
F = 100 A/250 V R	**M** = 600 A/250 V R	**T** = By description

Circuit Breaker Ratings

A = None	**H** = 150 A	**R** = 3000 A
B = 3 A	**J** = 250 A	**T** = By description
C = 7 A	**K** = 400 A	**5** = 3 A ①
D = 15 A	**L** = 600 A	**6** = 7 A ①
E = 30 A	**M** = 800 A	**7** = 15 A ①
F = 50 A	**N** = 1000 A	**8** = 30 A ①
W = 70 A	**P** = 1200 A	**9** = 50 A ①
G = 100 A	**Q** = 2000 A	**I** = 100 A ①

Modification/Overload Codes
All modification codes, see **Tab 15**.
For solid-state overload codes, **Page V10-T2-5**

Magnetic Coil Codes (System Voltage) ②

Code	Magnet Coil	Code	Magnet Coil	Code	Magnet Coil
A	120/60–110/50	**K**	240/50	**U**	24/50
B	240/60–220/50	**L**	380/50	**V**	32/50
C	460/60–440/50	**M**	415/50	**W**	48/60
D	575/60–550/50	**P**	12 Vdc	**X**	104–120/60
E	208/60	**Q**	24 Vdc	**Y**	48/50
G	550/50	**R**	48 Vdc	**Z**	By description
H	277/60	**S**	125 Vdc		
J	208–240/60	**T**	24/60		

Control Power Transformer Codes (System Voltage)

Code	Primary	Secondary
B	240/480–220/440 wired for 240 V	120/60–110/50
C	240/480–220/440 wired for 480 V	120/60–110/50
D	600/60–550/50	120/60–110/50
E	208/60	120/60
H	277/60	120/60
L	380/50	110/50
M	415/50	110/50
Q	208/60	24
R	240/480–220/440 wired for 240 V	24
S	240/480–220/440 wired for 480 V	24
T	600/60	24
U	277/60	24
V	380/50	24
W	415/50	24
X	240/480/600 wired for 480 V	120
Y	240/480/600 wired for 480 V	24
Z	By description	—

Notes

① Use for 0–3, HMCP 600 V applications only.

② When control power transformer modification codes (**C1**–**C11**) are used or when starter class includes CPT (that is ECN07, 18) see the table at right for system voltage code.

C440 Solid-State Overload Modifications

Reliability and Improved Uptime

- C440 provides the users with peace of mind knowing that their assets are protected with the highest level of motor protection and communication capability in its class
- Extends the life of plant assets with selectable motor protection features such as trip class, phase unbalance and ground fault
- Protects against unnecessary downtime by discovering changes in your system (line/load) with remote monitoring capabilities
- Status LED provides added assurance that valuable assets are protected by indicating the overload operational status

Flexibility

- Improves return on investment by reducing inventory carrying costs with wide FLA adjustment (5:1) and selectable trip class
- Design incorporates built-in ground fault protection thus eliminating the need for separate CTs and modules
- Flexible communication with optional I/O enables easy integration into plant management systems for remote monitoring and control

Monitoring Capabilities

- Individual phase currents RMS
- Average three-phase current RMS
- Thermal memory
- Fault indication (overload, phase loss, phase unbalance, ground fault)

Safety

- IP20 rated terminal blocks
- Available in Eaton's industry leading FlashGard MCCs
- Tested to the highest industry standards such as UL, CSA, CE and IEC
- RoHS compliant

For solid-state overload enclosed control, add R63 or R64 modification code after the base Catalog Number. (Example, ECN0501AAA-**R63**/B).

Modification	IEC Size	NEMA Size	Full Load Current Adjustment Range (A)	Three-Phase without Ground Fault Auto/Manual Reset Overload Selectable Class 10/20/30	Three-Phase with Ground Fault Auto/Manual Reset Overload Selectable Class 10/20/30
Solid-state electronic overload relay ①	B and C	00	0.33–1.65 ②	**R63/A**	**R64/A**
			1–5	**R63/B**	**R64/B**
			4–20	**R63/C**	**R64/C**
	C and D	0 and 1	0.33–1.65 ②	**R63/A**	**R64/A**
			1–5	**R63/B**	**R64/B**
			4–20	**R63/C**	**R64/C**
			9–45	**R63/D**	**R64/D**
	D	2	9–45	**R63/D**	**R64/D**
	D, F and G	3	20–100	**R63/E**	**R64/E**
	G	4	28–140	**R63/F**	**R64/F**
	N/A	5	60–300	**R63/G**	**R64/G**
	N/A	6	120–600	**R63/H**	**R64/H**

Notes

① Features:
- Self-powered
- Phase loss protection
- Current adjustment knob
- ±1% repeat accuracy
- 1NO and 1NC isolated contacts

② Not UL Listed.

Cover Control

Product Selection

2

Type 1 Non-Combination Cover Control (Box 1 Only)

- Cover control for non-combination starters uses M22 style devices as standard
- Pushbuttons are momentary type
- Field convertible selector switches from momentary to maintained operation and vice versa
- Cover control kits include hardware, M22 pushbuttons, bracket and pre-wired wire harnesses
- See Volume 7, Tab 1, for more details on M22 pushbuttons

Type 1 Non-Combination Cover Control (Box 1 Only)

Box 1 offering includes FVNR contactor sizes 00–2, electronic FVNR starters size 00–2 and bi-metallic FVNR starters size 00–1.

Description	Factory Installed Flange Control Position 9 Cover Control Code	Field Installation Kits Catalog Number
Non-Reversing		
No cover mounted pilot devices	**A**	—
STOP/START oval pushbuttons	**B**	**C600M1**
With red RUN pilot light	**C**	**C600M101_** ①
With red RUN/green OFF lights	**D**	**C600M102_** ①
OFF/ON oval pushbuttons	**E**	**C600M2**
With red RUN pilot light	**F**	**C600M201_** ①
With red RUN/green OFF lights	**G**	**C600M202_** ①
STOP/START selector switch	**S**	**C600M13**
With red RUN pilot light	**T**	**C600M131_** ①
With red RUN/green OFF lights	**U**	**C600M132_** ①
OFF/ON selector switch	**V**	**C600M14**
With red RUN pilot light	**W**	**C600M141_** ①
With red RUN/green OFF lights	**X**	**C600M142_** ①
HAND/OFF/AUTO selector switch	**H**	**C600M12**
With red RUN pilot light	**J**	**C600M121_** ①
With red RUN/green OFF lights	**K**	**C600M122_** ①
Green START pushbutton	**L**	**C600M3**
Red STOP pushbutton	**Y**	**C600M7** ①
Green ON pushbutton	**M**	**C600M4**
Red OFF pushbutton	**N**	**C600M5**
Red RUN pilot light	**P**	**C600M9_** ①
Green OFF pilot light	**Q**	**C600M10_** ①
Red RUN/green OFF lights	**R**	**C600M11_** ①
TEST/OFF/AUTO selector switch	—	**C600M8**

Note

① Add code letter from the table below to catalog number for voltage. Example: C600M101**A**.

Rating	Code Letter
85–264 Vac	**A**
480 Vac	**C**
12–30 Vac/Vdc	**T**

Type 1 Non-Combination Cover Control (Box 2 and Larger Enclosures Only)

- Cover control for combination starters uses 10250T style devices as standard
- Selector switches are maintained with lever operators
- Pushbuttons are momentary type with extended pushbutton
- The kit includes hardware and connecting wires (where possible)
- For factory installed control devices other than shown below, refer to modification codes, **Tab 15**

Type 1 Cover Control

Type 1 Non-Combination Cover Control (Box 2 and Larger Enclosures Only)

Box 2 and Larger Enclosure offering includes contactors size 3–5, electronic starters size 3–5 and bi-metallic starters size 2–5.

Description	Factory Installed Flange Control ① Position 9 Cover Control Code	Field Installation Kits Catalog Number
Non-Reversing		
No cover mounted pilot devices	**A**	**C400GK0**
STOP/START pushbuttons	**B**	**C400GK1**
With red RUN pilot light	**C**	**C400GK12** ②
With red RUN/green OFF lights	**D**	**C400GK16** ②
HAND/OFF/AUTO selector switch	**H**	**C400GK3**
With red RUN pilot light	**J**	**C400GK32** ②
With red RUN/green OFF lights	**K**	**C400GK36** ②
Red RUN pilot light	**P**	**C400GK42** ②
Green OFF	**Q**	**C400GK41** ②
Red RUN/green OFF pilot lights	**R**	**C400GK46** ②
Reversing		
No cover mounted pilot devices	**A**	**C400GK0**
FOR/REV/STOP pushbuttons	**B**	**C400GR1**
With two red pilot lights	**C**	**C400GR14** ②
UP/STOP/DOWN pushbuttons	**E**	**C400GR2**
With two red pilot lights	**F**	**C400GR24** ②
Two red pilot lights	**P**	**C400GK44** ②
One green pilot light	**Q**	**C400GK41** ②

Notes

① For more available factory installed flange control, see **Page V10-T2-8**.

② Add code letter from the table below to catalog number for voltage—kits only. Example: C400GK0**B**.

Rating	Code Letter	Rating	Code Letter	Rating	Code Letter
120 V 60 Hz	**A**	277 V 60 Hz	**H**	480 V 60 Hz	**C**
208 V 60 Hz	**E**	380 V 50 Hz	**L**	600 V 60 Hz	**D**
240 V 60 Hz	**B**				

Type 1 Combination and All Type 3R, 4X and 12 Cover Control

- Cover control for combination starters uses 10250T style devices as standard
- Selector switches are maintained with lever operators
- Pushbuttons are momentary type with extended pushbutton
- The kit includes hardware and connecting wires (where possible)
- For factory installed control devices other than shown below, refer to modification codes, **Tab 15**

10250T Cover Control Kits

Type 1 Combination and All Type 3R, 4X and 12 Cover Control ①

Description	Factory Installed Flange Control Position 9 Cover Control Code	Field Installation Kits Catalog Number
Non-Reversing		
No cover mounted pilot devices	**A**	—
START/STOP pushbuttons	**B**	**C400T1**
With red RUN pilot light	**C**	—
With red RUN/green OFF lights	**D**	—
ON/OFF pushbuttons	**E**	**C400T2**
With red RUN pilot light	**F**	—
With red RUN/green OFF lights	**G**	—
HAND/OFF/AUTO selector switch	**H**	**C400T12**
With red RUN pilot light	**J**	—
With red RUN/green OFF lights	**K**	—
START pushbutton	**L**	**C400T3**
ON pushbutton	**M**	**C400T4**
OFF pushbutton	**N**	**C400T5**
Red RUN pilot light	**P**	**C400T9** ②
Green OFF	**Q**	**C400T10** ②
Red RUN/green OFF pilot lights	**R**	**C400T11** ②
START/STOP selector switch	**S**	**C400T13**
With red RUN pilot light	**T**	—
With red RUN/green OFF lights	**U**	—
ON/OFF selector switch	**V**	**C400T14**
With red RUN pilot light	**W**	—
With red RUN/green OFF lights	**X**	—
Reversing		
No cover mounted pilot devices	**A**	—
FOR/REV/STOP pushbuttons	**B**	**C400T6**
With two red pilot lights	**C**	—
With two red/one green pilot lights	**D**	—
UP/STOP/DOWN pushbuttons	**E**	—
With two red pilot lights	**F**	—
FOR/OFF/REV selector switch	**H**	**C400T15**
With two red pilot lights	**J**	—
With two red/one green pilot lights	**K**	—
Two red pilot lights	**P**	③
One green pilot light	**Q**	**C400T10** ②
Two red/one green pilot lights	**R**	—
OPEN/OFF/CLOSE selector switch	**V**	**C400T16**
With two red pilot lights	**W**	—
With two red/one green pilot lights	**X**	—

Notes

① For Type 1 non-combination filed installation kits, see **Page V10-T2-7**.

② Add code letter from the table below to catalog number for voltage—kits only. Example: C400T9**B**.

Rating	Code Letter	Rating	Code Letter	Rating	Code Letter
120 V 60 Hz	**A**	277 V 60 Hz	**H**	480 V 60 Hz	**C**
208V 60 Hz	**E**	380 V 50 Hz	**L**	600 V 60 Hz	**D**
240 V 60 Hz	**B**				

③ Order quantity (2) of **C400T10**.

Type 1 Non-Combination Empty Enclosure (Box 1 Only)

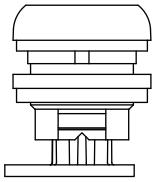
There is a universal empty enclosure for the non-metallic Type 1 Non-Combination Box 1 regardless of the starter or the contactor needed. The only difference is the length of the easily interchangeable reset rod. The reset rod kit provides everything needed to install the correct reset rod, including all the reset rod lengths, a protective shroud, a paddle and a reset button with nut.

Box 1 offering includes FVNR contactors size 00–2, FVR contactors size 00–0, FVNR electronic starters size 00–2, and FVNR bi-metallic starters size 00-1.

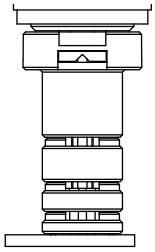
Empty Enclosure Stocking Needs	Catalog Number
Empty enclosure	**C899B001**
Reset rod kit	**RESET001**

The table below shows which reset rod is used with each starter or contactor.

Starter or Contactor	Reset Rod Length
NEMA FVNR Size 00–2, solid-state overload	0.43-inch reset
NEMA FVNR Size 00–1, bi-metallic overload	1.68-inch reset
All NEMA FVNR and FVR contactors	No reset needed



FVNR Solid State
OL Reset—0.43 inches



FVNR Bi-Metallic
OL Reset—1.68 inches

Contactors

Non-Reversing Contactors

Features

- One-phase or three-phase magnetic
- Two-, three-, four- or five-pole non-reversing or three-pole reversing
- 600 V maximum

Product Selection

Class ECN01—Non-Reversing Contactor—Three-Pole

NEMA Size	Continuous Ampere Rating	Motor Voltage	Maximum hp Rating ①	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial Catalog Number	Component Contactor (Open) Catalog Number
00	9	—	—	120	**ECN01A1A3A**	**ECN01A2A3A**	(Select contactor from Size 0 listing)		**CN15AN3AB**
		200	1-1/2	208	**ECN01A1E3A**	**ECN01A2E3A**			**CN15AN3EB**
		230	1-1/2	240	**ECN01A1B3A**	**ECN01A2B3A**			**CN15AN3BB**
		460	2	480	**ECN01A1C3A**	**ECN01A2C3A**			**CN15AN3CB**
		575	2	600	**ECN01A1D3A**	**ECN01A2D3A**			**CN15AN3DB**
0	18	—	—	120	**ECN0101A3A**	**ECN0102A3A**	**ECN0104A3A**	**ECN0108A3A**	**CN15BN3AB**
		200	3	208	**ECN0101E3A**	**ECN0102E3A**	**ECN0104E3A**	**ECN0108E3A**	**CN15BN3EB**
		230	3	240	**ECN0101B3A**	**ECN0102B3A**	**ECN0104B3A**	**ECN0108B3A**	**CN15BN3BB**
		460	5	480	**ECN0101C3A**	**ECN0102C3A**	**ECN0104C3A**	**ECN0108C3A**	**CN15BN3CB**
		575	5	600	**ECN0101D3A**	**ECN0102D3A**	**ECN0104D3A**	**ECN0108D3A**	**CN15BN3DB**
1	27	—	—	120	**ECN0111A3A**	**ECN0112A3A**	**ECN0114A3A**	**ECN0118A3A**	**CN15DN3AB**
		200	7-1/2	208	**ECN0111E3A**	**ECN0112E3A**	**ECN0114E3A**	**ECN0118E3A**	**CN15DN3EB**
		230	7-1/2	240	**ECN0111B3A**	**ECN0112B3A**	**ECN0114B3A**	**ECN0118B3A**	**CN15DN3BB**
		460	10	480	**ECN0111C3A**	**ECN0112C3A**	**ECN0114C3A**	**ECN0118C3A**	**CN15DN3CB**
		575	10	600	**ECN0111D3A**	**ECN0112D3A**	**ECN0114D3A**	**ECN0118D3A**	**CN15DN3DB**
2	45	—	—	120	**ECN0121A3A**	**ECN0122A3A**	**ECN0124A3A**	**ECN0128A3A**	**CN15GN3AB**
		200	10	208	**ECN0121E3A**	**ECN0122E3A**	**ECN0124E3A**	**ECN0128E3A**	**CN15GN3EB**
		230	15	240	**ECN0121B3A**	**ECN0122B3A**	**ECN0124B3A**	**ECN0128B3A**	**CN15GN3BB**
		460	25	480	**ECN0121C3A**	**ECN0122C3A**	**ECN0124C3A**	**ECN0128C3A**	**CN15GN3CB**
		575	25	600	**ECN0121D3A**	**ECN0122D3A**	**ECN0124D3A**	**ECN0128D3A**	**CN15GN3DB**
3	90	—	—	120	**ECN0131A3A**	**ECN0132A3A**	**ECN0134A3A**	**ECN0138A3A**	**CN15KN3A**
		200	25	208	**ECN0131E3A**	**ECN0132E3A**	**ECN0134E3A**	**ECN0138E3A**	**CN15KN3E**
		230	30	240	**ECN0131B3A**	**ECN0132B3A**	**ECN0134B3A**	**ECN0138B3A**	**CN15KN3B**
		460	50	480	**ECN0131C3A**	**ECN0132C3A**	**ECN0134C3A**	**ECN0138C3A**	**CN15KN3C**
		575	50	600	**ECN0131D3A**	**ECN0132D3A**	**ECN0134D3A**	**ECN0138D3A**	**CN15KN3D**

Notes

① Maximum horsepower rating of contactors for 380 V 50 Hz applications.

NEMA Size	00	0	1	2	3	4	5	6
Horsepower	1-1/2	5	10	25	50	75	150	300

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN0104A3A. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECN01—Non-Reversing Contactor—Three-Pole, continued

NEMA Size	Continuous Ampere Rating	Motor Voltage	Maximum hp Rating ①	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial Catalog Number	Component Contactor (Open) Catalog Number
4	135	—	—	120	**ECN0141A3A**	**ECN0142A3A**	**ECN0144A3A**	**ECN0148A3A**	**CN15NN3A**
		200	40	208	**ECN0141E3A**	**ECN0142E3A**	**ECN0144E3A**	**ECN0148E3A**	**CN15NN3E**
		230	50	240	**ECN0141B3A**	**ECN0142B3A**	**ECN0144B3A**	**ECN0148B3A**	**CN15NN3B**
		460	100	480	**ECN0141C3A**	**ECN0142C3A**	**ECN0144C3A**	**ECN0148C3A**	**CN15NN3C**
		575	100	600	**ECN0141D3A**	**ECN0142D3A**	**ECN0144D3A**	**ECN0148D3A**	**CN15NN3D**
5	270	—	—	120	**ECN0151A3A**	**ECN0152A3A**	**ECN0154A3A**	**ECN0158A3A**	**CN15SN3A**
		200	75	208	**ECN0151E3A**	**ECN0152E3A**	**ECN0154E3A**	**ECN0158E3A**	**CN15SN3E**
		230	100	240	**ECN0151B3A**	**ECN0152B3A**	**ECN0154B3A**	**ECN0158B3A**	**CN15SN3B**
		460	200	480	**ECN0151C3A**	**ECN0152C3A**	**ECN0154C3A**	**ECN0158C3A**	**CN15SN3C**
		575	200	600	**ECN0151D3A**	**ECN0152D3A**	**ECN0154D3A**	**ECN0158D3A**	**CN15SN3D**
6	540	—	—	120	**ECN0161A3A**	**ECN0162A3A**	**ECN0164A3A**	**ECN0168A3A**	**CN15TN3A**
		200	150	208	**ECN0161E3A**	**ECN0162E3A**	**ECN0164E3A**	**ECN0168E3A**	**CN15TN3E**
		230	200	240	**ECN0161B3A**	**ECN0162B3A**	**ECN0164B3A**	**ECN0168B3A**	**CN15TN3B**
		460	400	480	**ECN0161C3A**	**ECN0162C3A**	**ECN0164C3A**	**ECN0168C3A**	**CN15TN3C**
		575	400	600	**ECN0161D3A**	**ECN0162D3A**	**ECN0164D3A**	**ECN0168D3A**	**CN15TN3D**
7	810	—	—	120	**ECN0171A3A**	**ECN0172A3A**	**ECN0173A3A** ③	**ECN0178A3A**	**CN15UN3A**
		230	300	240	**ECN0171B3A**	**ECN0172B3A**	**ECN0173B3A** ③	**ECN0178B3A**	**CN15UN3B**
		460	600	480	**ECN0171C3A**	**ECN0172C3A**	**ECN0173C3A** ③	**ECN0178C3A**	**CN15UN3C**
		575	600	600	**ECN0171D3A**	**ECN0172D3A**	**ECN0173D3A** ③	**ECN0178D3A**	**CN15UN3D**
8	1215	—	—	120	**ECN0181A3A**	**ECN0182A3A**	**ECN0183A3A** ③	**ECN0188A3A**	**CN15VN3A**
		230	450	240	**ECN0181B3A**	**ECN0182B3A**	**ECN0183B3A** ③	**ECN0188B3A**	**CN15VN3B**
		460	900	480	**ECN0181C3A**	**ECN0182C3A**	**ECN0183C3A** ③	**ECN0188C3A**	**CN15VN3C**
		575	900	600	**ECN0181D3A**	**ECN0182D3A**	**ECN0183D3A** ③	**ECN0188D3A**	**CN15VN3D**
9	2250	—	—	120	**ECN0191A3A**	**ECN0192A3A**	**ECN0193A3A** ③	**ECN0198A3A**	**CN15WN3A**
		230	800	240	**ECN0191B3A**	**ECN0192B3A**	**ECN0193B3A** ③	**ECN0198B3A**	**CN15WN3B**
		460	1600	480	**ECN0191C3A**	**ECN0192C3A**	**ECN0193C3A** ③	**ECN0198C3A**	**CN15WN3C**
		575	1600	600	**ECN0191D3A**	**ECN0192D3A**	**ECN0193D3A** ③	**ECN0198D3A**	**CN15WN3D**

Notes

① Maximum horsepower rating of contactors for 380 V 50 Hz applications.

NEMA Size	00	0	1	2	3	4	5	6
Horsepower	1-1/2	5	10	25	50	75	150	300

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN0144A3A. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Type 4 (painted steel) sizes 7–9.

2

Class ECN01—Non-Reversing Contactor—Two-Pole

NEMA Size	Continuous Ampere Rating	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial Catalog Number	Component Contactor (Open) Catalog Number
00	9	115	1/3	120	**ECN01A1A2A**	(Select contactor from Size 0 listing)			**CN15AN2AB**
		—	—	208	**ECN01A1E2A**				**CN15AN2EB**
		230	1	240	**ECN01A1B2A**				**CN15AN2BB**
		—	—	480	**ECN01A1C2A**				**CN15AN2CB**
		—	—	600	**ECN01A1D2A**				**CN15AN2DB**
0	18	115	1	120	**ECN0101A2A**	**ECN0102A2A**	**ECN0104A2A**	**ECN0108A2A**	**CN15BN2AB**
		—	—	208	**ECN0101E2A**	**ECN0102E2A**	**ECN0104E2A**	**ECN0108E2A**	**CN15BN2EB**
		230	2	240	**ECN0101B2A**	**ECN0102B2A**	**ECN0104B2A**	**ECN0108B2A**	**CN15BN2BB**
		—	—	480	**ECN0101C2A**	**ECN0102C2A**	**ECN0104C2A**	**ECN0108C2A**	**CN15BN2CB**
		—	—	600	**ECN0101D2A**	**ECN0102D2A**	**ECN0104D2A**	**ECN0108D2A**	**CN15BN2DB**
1	27	115	2	120	**ECN0111A2A**	**ECN0112A2A**	**ECN0114A2A**	**ECN0118A2A**	**CN15DN2AB**
		—	—	208	**ECN0111E2A**	**ECN0112E2A**	**ECN0114E2A**	**ECN0118E2A**	**CN15DN2EB**
		230	3	240	**ECN0111B2A**	**ECN0112B2A**	**ECN0114B2A**	**ECN0118B2A**	**CN15DN2BB**
		—	—	480	**ECN0111C2A**	**ECN0112C2A**	**ECN0114C2A**	**ECN0118C2A**	**CN15DN2CB**
		—	—	600	**ECN0111D2A**	**ECN0112D2A**	**ECN0114D2A**	**ECN0118D2A**	**CN15DN2DB**
2	45	115	3	120	**ECN0121A2A**	**ECN0122A2A**	**ECN0124A2A**	**ECN0128A2A**	**CN15GN2AB**
		—	—	208	**ECN0121E2A**	**ECN0122E2A**	**ECN0124E2A**	**ECN0128E2A**	**CN15GN2EB**
		230	7-1/2	240	**ECN0121B2A**	**ECN0122B2A**	**ECN0124B2A**	**ECN0128B2A**	**CN15GN2BB**
		—	—	480	**ECN0121C2A**	**ECN0122C2A**	**ECN0124C2A**	**ECN0128C2A**	**CN15GN2CB**
		—	—	600	**ECN0121D2A**	**ECN0122D2A**	**ECN0124D2A**	**ECN0128D2A**	**CN15GN2DB**
3	90	115	7-1/2	120	**ECN0131A2A**	**ECN0132A2A**	**ECN0134A2A**	**ECN0138A2A**	**CN15KN2A**
		—	—	208	**ECN0131E2A**	**ECN0132E2A**	**ECN0134E2A**	**ECN0138E2A**	**CN15KN2E**
		230	15	240	**ECN0131B2A**	**ECN0132B2A**	**ECN0134B2A**	**ECN0138B2A**	**CN15KN2B**
		—	—	480	**ECN0131C2A**	**ECN0132C2A**	**ECN0134C2A**	**ECN0138C2A**	**CN15KN2C**
		—	—	600	**ECN0131D2A**	**ECN0132D2A**	**ECN0134D2A**	**ECN0138D2A**	**CN15KN2D**
4	135	—	—	120	**ECN0141A2A**	**ECN0142A2A**	**ECN0144A2A**	**ECN0148A2A**	**CN15NN2A**
		—	—	208	**ECN0141E2A**	**ECN0142E2A**	**ECN0144E2A**	**ECN0148E2A**	**CN15NN2E**
		—	—	240	**ECN0141B2A**	**ECN0142B2A**	**ECN0144B2A**	**ECN0148B2A**	**CN15NN2B**
		—	—	480	**ECN0141C2A**	**ECN0142C2A**	**ECN0144C2A**	**ECN0148C2A**	**CN15NN2C**
		—	—	600	**ECN0141D2A**	**ECN0142D2A**	**ECN0144D2A**	**ECN0148D2A**	**CN15NN2D**

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN0104A2A. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECN01—Non-Reversing Contactor—Two-Pole, continued

NEMA Size	Continuous Ampere Rating	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial Catalog Number	Component Contactor (Open) Catalog Number
5	270	—	—	120	**ECN0151A2A**	**ECN0152A2A**	**ECN0154A2A**	**ECN0158A2A**	**CN15SN2A**
		—	—	208	**ECN0151E2A**	**ECN0152E2A**	**ECN0154E2A**	**ECN0158E2A**	**CN15SN2E**
		—	—	240	**ECN0151B2A**	**ECN0152B2A**	**ECN0154B2A**	**ECN0158B2A**	**CN15SN2B**
		—	—	480	**ECN0151C2A**	**ECN0152C2A**	**ECN0154C2A**	**ECN0158C2A**	**CN15SN2C**
		—	—	600	**ECN0151D2A**	**ECN0152D2A**	**ECN0154D2A**	**ECN0158D2A**	**CN15SN2D**
6	540	—	—	120	**ECN0161A2A**	**ECN0162A2A**	**ECN0164A2A**	**ECN0168A2A**	**CN15TN2A**
		—	—	208	**ECN0161E2A**	**ECN0162E2A**	**ECN0164E2A**	**ECN0168E2A**	**CN15TN2E**
		—	—	240	**ECN0161B2A**	**ECN0162B2A**	**ECN0164B2A**	**ECN0168B2A**	**CN15TN2B**
		—	—	480	**ECN0161C2A**	**ECN0162C2A**	**ECN0164C2A**	**ECN0168C2A**	**CN15TN2C**
		—	—	600	**ECN0161D2A**	**ECN0162D2A**	**ECN0164D2A**	**ECN0168D2A**	**CN15TN2D**
7	810	—	—	120	**ECN0171A2A**	**ECN0172A2A**	**ECN0173A2A** ②	**ECN0178A2A**	**CN15UN2A**
		—	—	208	**ECN0171E2A**	**ECN0172E2A**	**ECN0173E2A** ②	**ECN0178E2A**	**CN15UN2E**
		—	—	240	**ECN0171B2A**	**ECN0172B2A**	**ECN0173B2A** ②	**ECN0178B2A**	**CN15UN2B**
		—	—	480	**ECN0171C2A**	**ECN0172C2A**	**ECN0173C2A** ②	**ECN0178C2A**	**CN15UN2C**
		—	—	600	**ECN0171D2A**	**ECN0172D2A**	**ECN0173D2A** ②	**ECN0178D2A**	**CN15UN2D**
8	1215	—	—	120	**ECN0181A2A**	**ECN0182A2A**	**ECN0183A2A** ②	**ECN0188A2A**	**CN15VN2A**
		—	—	208	**ECN0181E2A**	**ECN0182E2A**	**ECN0183E2A** ②	**ECN0188E2A**	**CN15VN2E**
		—	—	240	**ECN0181B2A**	**ECN0182B2A**	**ECN0183B2A** ②	**ECN0188B2A**	**CN15VN2B**
		—	—	480	**ECN0181C2A**	**ECN0182C2A**	**ECN0183C2A** ②	**ECN0188C2A**	**CN15VN2C**
		—	—	600	**ECN0181D2A**	**ECN0182D2A**	**ECN0183D2A** ②	**ECN0188D2A**	**CN15VN2D**
9	2250	—	—	120	**ECN0181A2A**	**ECN0192A2A**	**ECN0193A2A** ②	**ECN0198A2A**	**CN15WN2A**
		—	—	208	**ECN0181E2A**	**ECN0192E2A**	**ECN0193E2A** ②	**ECN0198E2A**	**CN15WN2E**
		—	—	240	**ECN0191B2A**	**ECN0192B2A**	**ECN0193B2A** ②	**ECN0198B2A**	**CN15WN2B**
		—	—	480	**ECN0191C2A**	**ECN0192C2A**	**ECN0193C2A** ②	**ECN0198C2A**	**CN15WN2C**
		—	—	600	**ECN0191D2A**	**ECN0192D2A**	**ECN0193D2A** ②	**ECN0198D2A**	**CN15WN2D**

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN015**4**A2A. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② Type 4 (painted steel) sizes 7–9.

2

Class ECN01—Non-Reversing Contactor—Four-Pole

NEMA Size	Continuous Ampere Rating	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial Catalog Number	Component Contactor (Open) Catalog Number
00	9	—	—	120	**ECN01A1A4A**	(Select contactor from Size 0 listing)			**CN15AN4AB**
		200	1-1/2	208	**ECN01A1E4A**				**CN15AN4EB**
		230	1-1/2	240	**ECN01A1B4A**				**CN15AN4BB**
		460	2	480	**ECN01A1C4A**				**CN15AN4CB**
		575	2	600	**ECN01A1D4A**				**CN15AN4DB**
0	18	—	—	120	**ECN0101A4A**	**ECN0102A4A**	**ECN0104A4A**	**ECN0108A4A**	(Select contactor from Size 0 listing)
		200	3	208	**ECN0101E4A**	**ECN0102E4A**	**ECN0104E4A**	**ECN0108E4A**	
		230	3	240	**ECN0101B4A**	**ECN0102B4A**	**ECN0104B4A**	**ECN0108B4A**	
		460	5	480	**ECN0101C4A**	**ECN0102C4A**	**ECN0104C4A**	**ECN0108C4A**	
		575	5	600	**ECN0101D4A**	**ECN0102D4A**	**ECN0104D4A**	**ECN0108D4A**	
1	27	—	—	120	**ECN0111A4A**	**ECN0112A4A**	**ECN0114A4A**	**ECN0118A4A**	**CN15DN4AB**
		200	7-1/2	208	**ECN0111E4A**	**ECN0112E4A**	**ECN0114E4A**	**ECN0118E4A**	**CN15DN4EB**
		230	7-1/2	240	**ECN0111B4A**	**ECN0112B4A**	**ECN0114B4A**	**ECN0118B4A**	**CN15DN4BB**
		460	10	480	**ECN0111C4A**	**ECN0112C4A**	**ECN0114C4A**	**ECN0118C4A**	**CN15DN4CB**
		575	10	600	**ECN0111D4A**	**ECN0112D4A**	**ECN0114D4A**	**ECN0118D4A**	**CN15DN4DB**
2	45	—	—	120	**ECN0121A4A**	**ECN0122A4A**	**ECN0124A4A**	**ECN0128A4A**	**CN15GN4AB**
		200	10	208	**ECN0121E4A**	**ECN0122E4A**	**ECN0124E4A**	**ECN0128E4A**	**CN15GN4EB**
		230	15	240	**ECN0121B4A**	**ECN0122B4A**	**ECN0124B4A**	**ECN0128B4A**	**CN15GN4BB**
		460	25	480	**ECN0121C4A**	**ECN0122C4A**	**ECN0124C4A**	**ECN0128C4A**	**CN15GN4CB**
		575	25	600	**ECN0121D4A**	**ECN0122D4A**	**ECN0124D4A**	**ECN0128D4A**	**CN15GN4DB**

Note

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN0104A4A. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECN01—Non-Reversing Contactor—Five-Pole

NEMA Size	Continuous Ampere Rating	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial Catalog Number	Component Contactor (Open) Catalog Number
0	9	—	—	120	**ECN01A1A5A**	(Select contactor from Size 0 listing)			
		200	1-1/2	208	**ECN01A1E5A**				
		230	1-1/2	240	**ECN01A1B5A**				
		460	2	480	**ECN01A1C5A**				
		575	2	600	**ECN01A1D5A**				
0	18	—	—	120	**ECN0101A5A**	(Select contactor from Size 0 listing)			
		200	3	208	**ECN0101E5A**				
		230	3	240	**ECN0101B5A**				
		460	5	480	**ECN0101C5A**				
		575	5	600	**ECN0101D5A**				
1	27	—	—	120	**ECN0111A5A**	**ECN0112A5A**	**ECN0114A5A**	**ECN0118A5A**	**CN15DN5AB**
		200	7-1/2	208	**ECN0111E5A**	**ECN0112E5A**	**ECN0114E5A**	**ECN0118E5A**	**CN15DN5EB**
		230	7-1/2	240	**ECN0111B5A**	**ECN0112B5A**	**ECN0114B5A**	**ECN0118B5A**	**CN15DN5BB**
		460	10	480	**ECN0111C5A**	**ECN0112C5A**	**ECN0114C5A**	**ECN0118C5A**	**CN15DN5CB**
		575	10	600	**ECN0111D5A**	**ECN0112D5A**	**ECN0114D5A**	**ECN0118D5A**	**CN15DN5DB**
2	45	—	—	120	**ECN0121A5A**	**ECN0122A5A**	**ECN0124A5A**	**ECN0128A5A**	**CN15GN5AB**
		200	10	208	**ECN0121E5A**	**ECN0122E5A**	**ECN0124E5A**	**ECN0128E5A**	**CN15GN5EB**
		230	15	240	**ECN0121B5A**	**ECN0122B5A**	**ECN0124B5A**	**ECN0128B5A**	**CN15GN5BB**
		460	25	480	**ECN0121C5A**	**ECN0122C5A**	**ECN0124C5A**	**ECN0128C5A**	**CN15GN5CB**
		575	25	600	**ECN0121D5A**	**ECN0122D5A**	**ECN0124D5A**	**ECN0128D5A**	**CN15GN5DB**

Note

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN011**4**A5A. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Reversing Contactors

2

Product Selection

Class ECN02—Reversing Contactor—Three-Pole

NEMA Size	Continuous Ampere Rating	Motor Voltage	Maximum hp Rating ①	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial Catalog Number	Component Contactor (Open) Catalog Number
00	9	—	—	120	**ECN02A1A3A**	(Select contactor from Size 0 listing)			**CN55AN3AB**
		200	1-1/2	208	**ECN02A1E3A**				**CN55AN3EB**
		230	1-1/2	240	**ECN02A1B3A**				**CN55AN3BB**
		460	2	480	**ECN02A1C3A**				**CN55AN3CB**
		575	2	600	**ECN02A1D3A**				**CN55AN3DB**
0	18	—	—	120	**ECN0201A3A**	**ECN0202A3A**	**ECN0204A3A**	**ECN0208A3A**	**CN55BN3AB**
		200	3	208	**ECN0201E3A**	**ECN0202E3A**	**ECN0204E3A**	**ECN0208E3A**	**CN55BN3EB**
		230	3	240	**ECN0201B3A**	**ECN0202B3A**	**ECN0204B3A**	**ECN0208B3A**	**CN55BN3BB**
		460	5	480	**ECN0201C3A**	**ECN0202C3A**	**ECN0204C3A**	**ECN0208C3A**	**CN55BN3CB**
		575	5	600	**ECN0201D3A**	**ECN0202D3A**	**ECN0204D3A**	**ECN0208D3A**	**CN55BN3DB**
1	27	—	—	120	**ECN0211A3A**	**ECN0212A3A**	**ECN0214A3A**	**ECN0218A3A**	**CN55DN3AB**
		200	7-1/2	208	**ECN0211E3A**	**ECN0212E3A**	**ECN0214E3A**	**ECN0218E3A**	**CN55DN3EB**
		230	7-1/2	240	**ECN0211B3A**	**ECN0212B3A**	**ECN0214B3A**	**ECN0218B3A**	**CN55DN3BB**
		460	10	480	**ECN0211C3A**	**ECN0212C3A**	**ECN0214C3A**	**ECN0218C3A**	**CN55DN3CB**
		575	10	600	**ECN0211D3A**	**ECN0212D3A**	**ECN0214D3A**	**ECN0218D3A**	**CN55DN3DB**
2	45	—	—	120	**ECN0221A3A**	**ECN0222A3A**	**ECN0224A3A**	**ECN0228A3A**	**CN55GN3AB**
		200	10	208	**ECN0221E3A**	**ECN0222E3A**	**ECN0224E3A**	**ECN0228E3A**	**CN55GN3EB**
		230	15	240	**ECN0221B3A**	**ECN0222B3A**	**ECN0224B3A**	**ECN0228B3A**	**CN55GN3BB**
		460	25	480	**ECN0221C3A**	**ECN0222C3A**	**ECN0224C3A**	**ECN0228C3A**	**CN55GN3CB**
		575	25	600	**ECN0221D3A**	**ECN0222D3A**	**ECN0224D3A**	**ECN0228D3A**	**CN55GN3DB**
3	90	—	—	120	**ECN0231A3A**	**ECN0232A3A**	**ECN0234A3A**	**ECN0238A3A**	**CN55KN3A**
		200	25	208	**ECN0231E3A**	**ECN0232E3A**	**ECN0234E3A**	**ECN0238E3A**	**CN55KN3E**
		230	30	240	**ECN0231B3A**	**ECN0232B3A**	**ECN0234B3A**	**ECN0238B3A**	**CN55KN3B**
		460	50	480	**ECN0231C3A**	**ECN0232C3A**	**ECN0234C3A**	**ECN0238C3A**	**CN55KN3C**
		575	50	600	**ECN0231D3A**	**ECN0232D3A**	**ECN0234D3A**	**ECN0238D3A**	**CN55KN3D**
4	135	—	—	120	**ECN0241A3A**	**ECN0242A3A**	**ECN0244A3A**	**ECN0248A3A**	**CN55NN3A**
		200	40	208	**ECN0241E3A**	**ECN0242E3A**	**ECN0244E3A**	**ECN0248E3A**	**CN55NN3E**
		230	50	240	**ECN0241B3A**	**ECN0242B3A**	**ECN0244B3A**	**ECN0248B3A**	**CN55NN3B**
		460	100	480	**ECN0241C3A**	**ECN0242C3A**	**ECN0244C3A**	**ECN0248C3A**	**CN55NN3C**
		575	100	600	**ECN0241D3A**	**ECN0242D3A**	**ECN0244D3A**	**ECN0248D3A**	**CN55NN3D**

Notes

① Maximum horsepower rating of contactors for 380 V 50 Hz applications.

NEMA Size	00	0	1	2	3	4	5	6
Horsepower	1-1/2	5	10	25	50	75	150	300

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN0204A3A. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECN02—Reversing Contactor—Three-Pole, continued

NEMA Size	Continuous Ampere Rating	Motor Voltage	Maximum hp Rating ①	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial Catalog Number	Component Contactor (Open) Catalog Number
5	270	—	—	120	**ECN0251A3A**	**ECN0252A3A**	**ECN0254A3A**	**ECN0258A3A**	**CN55SN3A**
		200	75	208	**ECN0251E3A**	**ECN0252E3A**	**ECN0254E3A**	**ECN0258E3A**	**CN55SN3E**
		230	100	240	**ECN0251B3A**	**ECN0252B3A**	**ECN0254B3A**	**ECN0258B3A**	**CN55SN3B**
		460	200	480	**ECN0251C3A**	**ECN0252C3A**	**ECN0254C3A**	**ECN0258C3A**	**CN55SN3C**
		575	200	600	**ECN0251D3A**	**ECN0252D3A**	**ECN0254D3A**	**ECN0258D3A**	**CN55SN3D**
6	540	—	—	120	**ECN0261A3A**	**ECN0262A3A**	**ECN0263A3A** ③	**ECN0268A3A**	**CN55TN3A**
		200	150	208	**ECN0261E3A**	**ECN0262E3A**	**ECN0263E3A** ③	**ECN0268E3A**	**CN55TN3E**
		230	200	240	**ECN0261B3A**	**ECN0262B3A**	**ECN0263B3A** ③	**ECN0268B3A**	**CN55TN3B**
		460	400	480	**ECN0261C3A**	**ECN0262C3A**	**ECN0263C3A** ③	**ECN0268C3A**	**CN55TN3C**
		575	400	600	**ECN0261D3A**	**ECN0262D3A**	**ECN0263D3A** ③	**ECN0268D3A**	**CN55TN3D**
7	810	—	—	120	**ECN0271A3A**	**ECN0272A3A**	**ECN0273A3A** ③	**ECN0278A3A**	**CN55UN3A**
		230	300	240	**ECN0271B3A**	**ECN0272B3A**	**ECN0273B3A** ③	**ECN0278B3A**	**CN55UN3B**
		460	600	480	**ECN0271C3A**	**ECN0272C3A**	**ECN0273C3A** ③	**ECN0278C3A**	**CN55UN3C**
		575	600	600	**ECN0271D3A**	**ECN0272D3A**	**ECN0273D3A** ③	**ECN0278D3A**	**CN55UN3D**
8	1215	—	—	120	**ECN0281A3A**	**ECN0282A3A**	**ECN0283A3A** ③	**ECN0288A3A**	**CN55VN3A**
		230	450	240	**ECN0281B3A**	**ECN0282B3A**	**ECN0283B3A** ③	**ECN0288B3A**	**CN55VN3B**
		460	900	480	**ECN0281C3A**	**ECN0282C3A**	**ECN0283C3A** ③	**ECN0288C3A**	**CN55VN3C**
		575	900	600	**ECN0281D3A**	**ECN0282D3A**	**ECN0283D3A** ③	**ECN0288D3A**	**CN55VN3D**
9	2250	—	—	120	**ECN0291A3A**	**ECN0292A3A**	**ECN0293A3A** ③	**ECN0298A3A**	**CN55WN3A**
		230	800	240	**ECN0291B3A**	**ECN0292B3A**	**ECN0293B3A** ③	**ECN0298B3A**	**CN55WN3B**
		460	1600	480	**ECN0291C3A**	**ECN0292C3A**	**ECN0293C3A** ③	**ECN0298C3A**	**CN55WN3C**
		575	1600	600	**ECN0291D3A**	**ECN0292D3A**	**ECN0293D3A** ③	**ECN0298D3A**	**CN55WN3D**

Notes

① Maximum horsepower rating of contactors for 380 V 50 Hz applications.

NEMA Size	00	0	1	2	3	4	5	6
Horsepower	1-1/2	5	10	25	50	75	150	300

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN025**4**A3A. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Type 4 (painted steel) sizes 6–9.

Starters

Non-Combination Starters

Features

- C440 Solid-State Overload or Bi-Metallic Overload offering available
- Three-phase or single-phase magnetic
- Three-pole non-reversing or three-pole reversing
- 600 V maximum

Product Selection

Class ECN05—Non-Combination Non-Reversing Starter

NEMA Size	Motor Voltage	Maximum hp Rating ①	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
00	—	—	120	**ECN05A1AAA**	**ECN05A2AAA**	**ECN05A4AAA**	**ECN05A8AAA**	**AN16AN0AC**
	200	1-1/2	208	**ECN05A1EAA**	**ECN05A2EAA**	**ECN05A4EAA**	**ECN05A8EAA**	**AN16AN0EC**
	230	1-1/2	240	**ECN05A1BAA**	**ECN05A2BAA**	**ECN05A4BAA**	**ECN05A8BAA**	**AN16AN0BC**
	460	2	480	**ECN05A1CAA**	**ECN05A2CAA**	**ECN05A4CAA**	**ECN05A8CAA**	**AN16AN0CC**
	575	2	600	**ECN05A1DAA**	**ECN05A2DAA**	**ECN05A4DAA**	**ECN05A8DAA**	**AN16AN0DC**
0	—	—	120	**ECN0501AAA**	**ECN0502AAA**	**ECN0504AAA**	**ECN0508AAA**	**AN16BN0AC**
	200	3	208	**ECN0501EAA**	**ECN0502EAA**	**ECN0504EAA**	**ECN0508EAA**	**AN16BN0EC**
	230	3	240	**ECN0501BAA**	**ECN0502BAA**	**ECN0504BAA**	**ECN0508BAA**	**AN16BN0BC**
	460	5	480	**ECN0501CAA**	**ECN0502CAA**	**ECN0504CAA**	**ECN0508CAA**	**AN16BN0CC**
	575	5	600	**ECN0501DAA**	**ECN0502DAA**	**ECN0504DAA**	**ECN0508DAA**	**AN16BN0DC**
1	—	—	120	**ECN0511AAA**	**ECN0512AAA**	**ECN0514AAA**	**ECN0518AAA**	**AN16DN0AB**
	200	7-1/2	208	**ECN0511EAA**	**ECN0512EAA**	**ECN0514EAA**	**ECN0518EAA**	**AN16DN0EB**
	230	7-1/2	240	**ECN0511BAA**	**ECN0512BAA**	**ECN0514BAA**	**ECN0518BAA**	**AN16DN0BB**
	460	10	480	**ECN0511CAA**	**ECN0512CAA**	**ECN0514CAA**	**ECN0518CAA**	**AN16DN0CB**
	575	10	600	**ECN0511DAA**	**ECN0512DAA**	**ECN0514DAA**	**ECN0518DAA**	**AN16DN0DB**
2	—	—	120	**ECN0521AAA**	**ECN0522AAA**	**ECN0524AAA**	**ECN0528AAA**	**AN16GN0AB**
	200	10	208	**ECN0521EAA**	**ECN0522EAA**	**ECN0524EAA**	**ECN0528EAA**	**AN16GN0EB**
	230	15	240	**ECN0521BAA**	**ECN0522BAA**	**ECN0524BAA**	**ECN0528BAA**	**AN16GN0BB**
	460	25	480	**ECN0521CAA**	**ECN0522CAA**	**ECN0524CAA**	**ECN0528CAA**	**AN16GN0CB**
	575	25	600	**ECN0521DAA**	**ECN0522DAA**	**ECN0524DAA**	**ECN0528DAA**	**AN16GN0DB**
3	—	—	120	**ECN0531AAA**	**ECN0532AAA**	**ECN0534AAA**	**ECN0538AAA**	**AN16KN0A**
	200	25	208	**ECN0531EAA**	**ECN0532EAA**	**ECN0534EAA**	**ECN0538EAA**	**AN16KN0E**
	230	30	240	**ECN0531BAA**	**ECN0532BAA**	**ECN0534BAA**	**ECN0538BAA**	**AN16KN0B**
	460	50	480	**ECN0531CAA**	**ECN0532CAA**	**ECN0534CAA**	**ECN0538CAA**	**AN16KN0C**
	575	50	600	**ECN0531DAA**	**ECN0532DAA**	**ECN0534DAA**	**ECN0538DAA**	**AN16KN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

Cover control is indicated by the ninth digit. For example, ECN0511AJA is a HOA switch with red run light.
See the cover control table on **V10-T2-6–V10-T2-8** for full offering.

① Maximum horsepower rating of contactors for 380 V 50 Hz applications.

NEMA Size	00	0	1	2	3	4	5	6
Horsepower	1-1/2	5	10	25	50	75	150	300

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN0504AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECN05—Non-Combination Non-Reversing Starter, continued

NEMA Size	Motor Voltage	Maximum hp Rating ①	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
4	—	—	120	**ECN0541AAA**	**ECN0542AAA**	**ECN0544AAA**	**ECN0548AAA**	**AN16NN0A**
	200	40	208	**ECN0541EAA**	**ECN0542EAA**	**ECN0544EAA**	**ECN0548EAA**	**AN16NN0E**
	230	50	240	**ECN0541BAA**	**ECN0542BAA**	**ECN0544BAA**	**ECN0548BAA**	**AN16NN0B**
	460	100	480	**ECN0541CAA**	**ECN0542CAA**	**ECN0544CAA**	**ECN0548CAA**	**AN16NN0C**
	575	100	600	**ECN0541DAA**	**ECN0542DAA**	**ECN0544DAA**	**ECN0548DAA**	**AN16NN0D**
5	—	—	120	**ECN0551AAA**	**ECN0552AAA**	**ECN0554AAA**	**ECN0558AAA**	**AN16SN0AB**
	200	75	208	**ECN0551EAA**	**ECN0552EAA**	**ECN0554EAA**	**ECN0558EAA**	**AN16SN0EB**
	230	100	240	**ECN0551BAA**	**ECN0552BAA**	**ECN0554BAA**	**ECN0558BAA**	**AN16SN0BB**
	460	200	480	**ECN0551CAA**	**ECN0552CAA**	**ECN0554CAA**	**ECN0558CAA**	**AN16SN0CB**
	575	200	600	**ECN0551DAA**	**ECN0552DAA**	**ECN0554DAA**	**ECN0558DAA**	**AN16SN0DB**
6	—	—	120	**ECN0561AAA**	**ECN0562AAA**	**ECN0564AAA**	**ECN0568AAA**	**AN16TN0AB**
	200	150	208	**ECN0561EAA**	**ECN0562EAA**	**ECN0564EAA**	**ECN0568EAA**	**AN16TN0EB**
	230	200	240	**ECN0561BAA**	**ECN0562BAA**	**ECN0564BAA**	**ECN0568BAA**	**AN16TN0BB**
	460	400	480	**ECN0561CAA**	**ECN0562CAA**	**ECN0564CAA**	**ECN0568CAA**	**AN16TN0CB**
	575	400	600	**ECN0561DAA**	**ECN0562DAA**	**ECN0564DAA**	**ECN0568DAA**	**AN16TN0DB**
7	—	—	120	**ECN0571AAA**	**ECN0572AAA**	**ECN0573AAA** ③	**ECN0578AAA**	**AN16UN0AB**
	230	300	240	**ECN0571BAA**	**ECN0572BAA**	**ECN0573BAA** ③	**ECN0578BAA**	**AN16UN0BB**
	460	600	480	**ECN0571CAA**	**ECN0572CAA**	**ECN0573CAA** ③	**ECN0578CAA**	**AN16UN0CB**
	575	600	600	**ECN0571DAA**	**ECN0572DAA**	**ECN0573DAA** ③	**ECN0578DAA**	**AN16UN0DB**
8	—	—	120	**ECN0581AAA**	**ECN0582AAA**	**ECN0583AAA** ③	**ECN0588AAA**	**AN16VN0AB**
	230	450	240	**ECN0581BAA**	**ECN0582BAA**	**ECN0583BAA** ③	**ECN0588BAA**	**AN16VN0BB**
	460	900	480	**ECN0581CAA**	**ECN0582CAA**	**ECN0583CAA** ③	**ECN0588CAA**	**AN16VN0CB**
	575	900	600	**ECN0581DAA**	**ECN0582DAA**	**ECN0583DAA** ③	**ECN0588DAA**	**AN16VN0DB**
9	—	—	120	**ECN0591AAA**	**ECN0592AAA**	**ECN0593AAA** ③	**ECN0598AAA**	**AN16WN0A**
	230	800	240	**ECN0591BAA**	**ECN0592BAA**	**ECN0593BAA** ③	**ECN0598BAA**	**AN16WN0B**
	460	1600	480	**ECN0591CAA**	**ECN0592CAA**	**ECN0593CAA** ③	**ECN0598CAA**	**AN16WN0C**
	575	1600	600	**ECN0591DAA**	**ECN0592DAA**	**ECN0593DAA** ③	**ECN0598DAA**	**AN16WN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① Maximum horsepower rating of contactors for 380 V 50 Hz applications.

NEMA Size	00	0	1	2	3	4	5	6
Horsepower	1-1/2	5	10	25	50	75	150	300

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN0544AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Type 4 (painted steel) sizes 7–9.

Class ECN05—Non-Combination Single-Phase Non-Reversing Starter

NEMA Size	Motor Voltage	Maximum hp Rating ①	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
00	115	1/3	120	**ECN05A1AAA-S29**	(Select contactor from Size 0 listing)			**AN16AN0AC**
	230	1	240	**ECN05A1BAA-S29**				**AN16AN0BC**
0	115	1	120	**ECN0501AAA-S29**	**ECN0502AAA-S29**	**ECN0504AAA-S29**	**ECN0508AAA-S29**	**AN16BN0AC**
	230	2	240	**ECN0501BAA-S29**	**ECN0502BAA-S29**	**ECN0504BAA-S29**	**ECN0508BAA-S29**	**AN16BN0BC**
1	115	2	120	**ECN0511AAA-S29**	**ECN0512AAA-S29**	**ECN0514AAA-S29**	**ECN0518AAA-S29**	**AN16DN0AB**
	230	3	240	**ECN0511BAA-S29**	**ECN0512BAA-S29**	**ECN0514BAA-S29**	**ECN0518BAA-S29**	**AN16DN0BB**
2	115	3	120	**ECN0521AAA-S29**	**ECN0522AAA-S29**	**ECN0524AAA-S29**	**ECN0528AAA-S29**	**AN16GN0AB**
	230	7-1/2	240	**ECN0521BAA-S29**	**ECN0522BAA-S29**	**ECN0524BAA-S29**	**ECN0528BAA-S29**	**AN16GN0BB**
3	115	7-1/2	120	**ECN0531AAA-S29**	**ECN0532AAA-S29**	**ECN0534AAA-S29**	**ECN0538AAA-S29**	**AN16KN0A**
	230	15	240	**ECN0531BAA-S29**	**ECN0532BAA-S29**	**ECN0534BAA-S29**	**ECN0538BAA-S29**	**AN16KN0B**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① Maximum horsepower rating of contactors for 380 V 50 Hz applications.

NEMA Size	00	0	1	2	3	4	5	6
Horsepower	1-1/2	5	10	25	50	75	150	300

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN0504AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to 3.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECN06—Non-Combination Reversing Starter

NEMA Size	Motor Voltage	Maximum hp Rating ①	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
00	—	—	120	**ECN06A1AAA**	**ECN06A2AAA**	**ECN06A4AAA**	**ECN06A8AAA**	**AN56AN0AC**
	200	1-1/2	208	**ECN06A1EAA**	**ECN06A2EAA**	**ECN06A4EAA**	**ECN06A8EAA**	**AN56AN0EC**
	230	1-1/2	240	**ECN06A1BAA**	**ECN06A2BAA**	**ECN06A4BAA**	**ECN06A8BAA**	**AN56AN0BC**
	460	2	480	**ECN06A1CAA**	**ECN06A2CAA**	**ECN06A4CAA**	**ECN06A8CAA**	**AN56AN0CC**
	575	2	600	**ECN06A1DAA**	**ECN06A2DAA**	**ECN06A4DAA**	**ECN06A8DAA**	**AN56AN0DC**
0	—	—	120	**ECN0601AAA**	**ECN0602AAA**	**ECN0604AAA**	**ECN0608AAA**	**AN56BN0AC**
	200	3	208	**ECN0601EAA**	**ECN0602EAA**	**ECN0604EAA**	**ECN0608EAA**	**AN56BN0EC**
	230	3	240	**ECN0601BAA**	**ECN0602BAA**	**ECN0604BAA**	**ECN0608BAA**	**AN56BN0BC**
	460	5	480	**ECN0601CAA**	**ECN0602CAA**	**ECN0604CAA**	**ECN0608CAA**	**AN56BN0CC**
	575	5	600	**ECN0601DAA**	**ECN0602DAA**	**ECN0604DAA**	**ECN0608DAA**	**AN56BN0DC**
1	—	—	120	**ECN0611AAA**	**ECN0612AAA**	**ECN0614AAA**	**ECN0618AAA**	**AN56DN0AB**
	200	7-1/2	208	**ECN0611EAA**	**ECN0612EAA**	**ECN0614EAA**	**ECN0618EAA**	**AN56DN0EB**
	230	7-1/2	240	**ECN0611BAA**	**ECN0612BAA**	**ECN0614BAA**	**ECN0618BAA**	**AN56DN0BB**
	460	10	480	**ECN0611CAA**	**ECN0612CAA**	**ECN0614CAA**	**ECN0618CAA**	**AN56DN0CB**
	575	10	600	**ECN0611DAA**	**ECN0612DAA**	**ECN0614DAA**	**ECN0618DAA**	**AN56DN0DB**
2	—	—	120	**ECN0621AAA**	**ECN0622AAA**	**ECN0624AAA**	**ECN0628AAA**	**AN56GN0AB**
	200	10	208	**ECN0621EAA**	**ECN0622EAA**	**ECN0624EAA**	**ECN0628EAA**	**AN56GN0EB**
	230	15	240	**ECN0621BAA**	**ECN0622BAA**	**ECN0624BAA**	**ECN0628BAA**	**AN56GN0BB**
	460	25	480	**ECN0621CAA**	**ECN0622CAA**	**ECN0624CAA**	**ECN0628CAA**	**AN56GN0CB**
	575	25	600	**ECN0621DAA**	**ECN0622DAA**	**ECN0624DAA**	**ECN0628DAA**	**AN56GN0DB**
3	—	—	120	**ECN0631AAA**	**ECN0632AAA**	**ECN0634AAA**	**ECN0638AAA**	**AN56KN0A**
	200	25	208	**ECN0631EAA**	**ECN0632EAA**	**ECN0634EAA**	**ECN0638EAA**	**AN56KN0E**
	230	30	240	**ECN0631BAA**	**ECN0632BAA**	**ECN0634BAA**	**ECN0638BAA**	**AN56KN0B**
	460	50	480	**ECN0631CAA**	**ECN0632CAA**	**ECN0634CAA**	**ECN0638CAA**	**AN56KN0C**
	575	50	600	**ECN0631DAA**	**ECN0632DAA**	**ECN0634DAA**	**ECN0638DAA**	**AN56KN0D**
4	—	—	120	**ECN0641AAA**	**ECN0642AAA**	**ECN0644AAA**	**ECN0648AAA**	**AN56NN0A**
	200	40	208	**ECN0641EAA**	**ECN0642EAA**	**ECN0644EAA**	**ECN0648EAA**	**AN56NN0E**
	230	50	240	**ECN0641BAA**	**ECN0642BAA**	**ECN0644BAA**	**ECN0648BAA**	**AN56NN0B**
	460	100	480	**ECN0641CAA**	**ECN0642CAA**	**ECN0644CAA**	**ECN0648CAA**	**AN56NN0C**
	575	100	600	**ECN0641DAA**	**ECN0642DAA**	**ECN0644DAA**	**ECN0648DAA**	**AN56NN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① Maximum horsepower rating of contactors for 380 V 50 Hz applications.

NEMA Size	00	0	1	2	3	4	5	6
Horsepower	1-1/2	5	10	25	50	75	150	300

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN0604AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECN06—Non-Combination Reversing Starter, continued

NEMA Size	Motor Voltage	Maximum hp Rating ①	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
5	—	—	120	**ECN0651AAA**	**ECN0652AAA**	**ECN0654AAA**	**ECN0658AAA**	**AN56SN0AB**
	200	75	208	**ECN0651EAA**	**ECN0652EAA**	**ECN0654EAA**	**ECN0658EAA**	**AN56SN0EB**
	230	100	240	**ECN0651BAA**	**ECN0652BAA**	**ECN0654BAA**	**ECN0658BAA**	**AN56SN0BB**
	460	200	480	**ECN0651CAA**	**ECN0652CAA**	**ECN0654CAA**	**ECN0658CAA**	**AN56SN0CB**
	575	200	600	**ECN0651DAA**	**ECN0652DAA**	**ECN0654DAA**	**ECN0658DAA**	**AN56SN0DB**
6	—	—	120	**ECN0661AAA**	**ECN0662AAA**	**ECN0663AAA** ③	**ECN0668AAA**	**AN56TN0AB**
	200	150	208	**ECN0661EAA**	**ECN0662EAA**	**ECN0663EAA** ③	**ECN0668EAA**	**AN56TN0EB**
	230	200	240	**ECN0661BAA**	**ECN0662BAA**	**ECN0663BAA** ③	**ECN0668BAA**	**AN56TN0BB**
	460	400	480	**ECN0661CAA**	**ECN0662CAA**	**ECN0663CAA** ③	**ECN0668CAA**	**AN56TN0CB**
	575	400	600	**ECN0661DAA**	**ECN0662DAA**	**ECN0663DAA** ③	**ECN0668DAA**	**AN56TN0DB**
7	—	—	120	**ECN0671AAA**	**ECN0672AAA**	**ECN0673AAA** ③	**ECN0678AAA**	**AN56UN0AB**
	230	300	240	**ECN0671BAA**	**ECN0672BAA**	**ECN0673BAA** ③	**ECN0678BAA**	**AN56UN0BB**
	460	600	480	**ECN0671CAA**	**ECN0672CAA**	**ECN0673CAA** ③	**ECN0678CAA**	**AN56UN0CB**
	575	600	600	**ECN0671DAA**	**ECN0672DAA**	**ECN0673DAA** ③	**ECN0678DAA**	**AN56UN0DB**
8	—	—	120	**ECN0681AAA**	**ECN0682AAA**	**ECN0683AAA** ③	**ECN0688AAA**	**AN56VN0AB**
	230	450	240	**ECN0681BAA**	**ECN0682BAA**	**ECN0683BAA** ③	**ECN0688BAA**	**AN56VN0BB**
	460	900	480	**ECN0681CAA**	**ECN0682CAA**	**ECN0683CAA** ③	**ECN0688CAA**	**AN56VN0CB**
	575	900	600	**ECN0681DAA**	**ECN0682DAA**	**ECN0683DAA** ③	**ECN0688DAA**	**AN56VN0DB**
9	—	—	120	**ECN0691AAA**	**ECN0692AAA**	**ECN0693AAA** ③	**ECN0698AAA**	**AN56WN0A**
	230	800	240	**ECN0691BAA**	**ECN0692BAA**	**ECN0693BAA** ③	**ECN0698BAA**	**AN56WN0B**
	460	1600	480	**ECN0691CAA**	**ECN0692CAA**	**ECN0693CAA** ③	**ECN0698CAA**	**AN56WN0C**
	575	1600	600	**ECN0691DAA**	**ECN0692DAA**	**ECN0693DAA** ③	**ECN0698DAA**	**AN56WN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① Maximum horsepower rating of contactors for 380 V 50 Hz applications.

NEMA Size	00	0	1	2	3	4	5	6
Horsepower	1-1/2	5	10	25	50	75	150	300

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN0654AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Type 4 (painted steel) sizes 6–9.

Class ECN07—Non-Combination Non-Reversing Starter with CPT

NEMA Size	Primary Voltage ①	Maximum hp Rating ②	Secondary Voltage Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ③ Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
00	208	1-1/2	120	**ECN07A1EAA**	**ECN07A2EAA**	**ECN07A4EAA**	**ECN07A8EAA**	**AN16AN0EC**
	240	1-1/2		**ECN07A1BAA**	**ECN07A2BAA**	**ECN07A4BAA**	**ECN07A8BAA**	**AN16AN0BC**
	480	2		**ECN07A1CAA**	**ECN07A2CAA**	**ECN07A4CAA**	**ECN07A8CAA**	**AN16AN0CC**
	600	3		**ECN07A1DAA**	**ECN07A2DAA**	**ECN07A4DAA**	**ECN07A8DAA**	**AN16AN0DC**
0	208	3	120	**ECN0701EAA**	**ECN0702EAA**	**ECN0704EAA**	**ECN0708EAA**	**AN16BN0EC**
	240	3		**ECN0701BAA**	**ECN0702BAA**	**ECN0704BAA**	**ECN0708BAA**	**AN16BN0BC**
	480	5		**ECN0701CAA**	**ECN0702CAA**	**ECN0704CAA**	**ECN0708CAA**	**AN16BN0CC**
	600	5		**ECN0701DAA**	**ECN0702DAA**	**ECN0704DAA**	**ECN0708DAA**	**AN16BN0DC**
1	208	7-1/2	120	**ECN0711EAA**	**ECN0712EAA**	**ECN0714EAA**	**ECN0718EAA**	**AN16DN0EB**
	240	7-1/2		**ECN0711BAA**	**ECN0712BAA**	**ECN0714BAA**	**ECN0718BAA**	**AN16DN0BB**
	480	10		**ECN0711CAA**	**ECN0712CAA**	**ECN0714CAA**	**ECN0718CAA**	**AN16DN0CB**
	600	10		**ECN0711DAA**	**ECN0712DAA**	**ECN0714DAA**	**ECN0718DAA**	**AN16DN0DB**
2	208	10	120	**ECN0721EAA**	**ECN0722EAA**	**ECN0724EAA**	**ECN0728EAA**	**AN16GN0EB**
	240	15		**ECN0721BAA**	**ECN0722BAA**	**ECN0724BAA**	**ECN0728BAA**	**AN16GN0BB**
	480	25		**ECN0721CAA**	**ECN0722CAA**	**ECN0724CAA**	**ECN0728CAA**	**AN16GN0CB**
	600	25		**ECN0721DAA**	**ECN0722DAA**	**ECN0724DAA**	**ECN0728DAA**	**AN16GN0DB**
3	208	25	120	**ECN0731EAA**	**ECN0732EAA**	**ECN0734EAA**	**ECN0738EAA**	**AN16KN0E**
	240	30		**ECN0731BAA**	**ECN0732BAA**	**ECN0734BAA**	**ECN0738BAA**	**AN16KN0B**
	480	50		**ECN0731CAA**	**ECN0732CAA**	**ECN0734CAA**	**ECN0738CAA**	**AN16KN0C**
	600	50		**ECN0731DAA**	**ECN0732DAA**	**ECN0734DAA**	**ECN0738DAA**	**AN16KN0D**
4	208	40	120	**ECN0741EAA**	**ECN0742EAA**	**ECN0744EAA**	**ECN0748EAA**	**AN16NN0E**
	240	50		**ECN0741BAA**	**ECN0742BAA**	**ECN0744BAA**	**ECN0748BAA**	**AN16NN0B**
	480	100		**ECN0741CAA**	**ECN0742CAA**	**ECN0744CAA**	**ECN0748CAA**	**AN16NN0C**
	600	100		**ECN0741DAA**	**ECN0742DAA**	**ECN0744DAA**	**ECN0748DAA**	**AN16NN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① Other control power transformer primary and/or secondary voltages, see **Page V10-T2-4**.

② Maximum horsepower rating of contactors for 380 V 50 Hz applications.

NEMA Size	00	0	1	2	3	4	5	6
Horsepower	1-1/2	5	10	25	50	75	150	300

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN07A**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECN07—Non-Combination Non-Reversing Starter with CPT, continued

NEMA Size	Primary Voltage ①	Maximum hp Rating ②	Secondary Voltage Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ③ Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
5	208	75	120	**ECN0751EAA**	**ECN0752EAA**	**ECN0754EAA**	**ECN0758EAA**	**AN16SN0EB**
	240	100		**ECN0751BAA**	**ECN0752BAA**	**ECN0754BAA**	**ECN0758BAA**	**AN16SN0BB**
	480	200		**ECN0751CAA**	**ECN0752CAA**	**ECN0754CAA**	**ECN0758CAA**	**AN16SN0CB**
	600	200		**ECN0751DAA**	**ECN0752DAA**	**ECN0754DAA**	**ECN0758DAA**	**AN16SN0DB**
6	208	150	120	**ECN0761EAA**	**ECN0762EAA**	**ECN0763EAA** ④	**ECN0768EAA**	**AN56TN0EB**
	240	200		**ECN0761BAA**	**ECN0762BAA**	**ECN0763BAA** ④	**ECN0768BAA**	**AN56TN0BB**
	480	400		**ECN0761CAA**	**ECN0762CAA**	**ECN0763CAA** ④	**ECN0768CAA**	**AN56TN0CB**
	600	400		**ECN0761DAA**	**ECN0762DAA**	**ECN0763DAA** ④	**ECN0768DAA**	**AN56TN0DB**
7	240	300	120	**ECN0771BAA**	**ECN0772BAA**	**ECN0773BAA** ④	**ECN0778BAA**	**AN16UN0BB**
	480	600		**ECN0771CAA**	**ECN0772CAA**	**ECN0773CAA** ④	**ECN0778CAA**	**AN16UN0CB**
	600	600		**ECN0771DAA**	**ECN0772DAA**	**ECN0773DAA** ④	**ECN0778DAA**	**AN16UN0DB**
8	240	450	120	**ECN0781BAA**	**ECN0782BAA**	**ECN0783BAA** ④	**ECN0788BAA**	**AN16VN0BB**
	480	900		**ECN0781CAA**	**ECN0782CAA**	**ECN0783CAA** ④	**ECN0788CAA**	**AN16VN0CB**
	600	900		**ECN0781DAA**	**ECN0782DAA**	**ECN0783DAA** ④	**ECN0788DAA**	**AN16VN0DB**
9	240	800	120	**ECN0791BAA**	**ECN0792BAA**	**ECN0793BAA** ④	**ECN0798BAA**	**AN16WN0B**
	480	1600		**ECN0791CAA**	**ECN0792CAA**	**ECN0793CAA** ④	**ECN0798CAA**	**AN16WN0C**
	600	1600		**ECN0791DAA**	**ECN0792DAA**	**ECN0793DAA** ④	**ECN0798DAA**	**AN16WN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① Other control power transformer primary and/or secondary voltages, see **Page V10-T2-4**.

② Maximum horsepower rating of contactors for 380 V 50 Hz applications.

NEMA Size	00	0	1	2	3	4	5	6
Horsepower	1-1/2	5	10	25	50	75	150	300

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN0804AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

④ Type 4 (painted steel) sizes 6–9.

Combination Starters—Fusible and Non-Fusible

Features

- Three-phase magnetic
- Three-pole non-reversing or reversing
- Standard interchangeable heater OLR
- Optional electronic overload
- 600 V maximum
- 100,000 rms short-circuit rating with fuses

Product Selection

Class ECN16—Combination Non-Reversing Starter—Fusible Disconnect

		Maximum hp Rating			Type 1 General Purpose	Type 3R Rainproof	Type 4X Watertight and Dust-Tight Stainless Steel ①	Type 12 Dust-Tight Industrial External Reset ②③	Component Starter (Open)
NEMA Size	Motor Voltage	Dual Element Fuses	Magnet Coil Voltage	Fuse Clip Amps	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
00	—	—	120	30 A	ECN16A1AAB	ECN16A2AAB	ECN16A4AAB	ECN16A8AAB	AN16AN0AC
	200	1-1/2	208		ECN16A1EAB	ECN16A2EAB	ECN16A4EAB	ECN16A8EAB	AN16AN0EC
	230	1-1/2	240		ECN16A1BAB	ECN16A2BAB	ECN16A4BAB	ECN16A8BAB	AN16AN0BC
	460	2	480		ECN16A1CAC	ECN16A2CAC	ECN16A4CAC	ECN16A8CAC	AN16AN0CC
	575	2	600		ECN16A1DAC	ECN16A2DAC	ECN16A4DAC	ECN16A8DAC	AN16AN0DC
0	—	—	120	30 A	ECN1601AAB	ECN1602AAB	ECN1604AAB	ECN1608AAB	AN16BN0AC
	200	3	208		ECN1601EAB	ECN1602EAB	ECN1604EAB	ECN1608EAB	AN16BN0EC
	230	3	240		ECN1601BAB	ECN1602BAB	ECN1604BAB	ECN1608BAB	AN16BN0BC
	460	5	480		ECN1601CAC	ECN1602CAC	ECN1604CAC	ECN1608CAC	AN16BN0CC
	575	5	600		ECN1601DAC	ECN1602DAC	ECN1604DAC	ECN1608DAC	AN16BN0DC
1	—	—	120	30 A	ECN1611AAB	ECN1612AAB	ECN1614AAB	ECN1618AAB	AN16DN0AB
	200	7-1/2	208		ECN1611EAB	ECN1612EAB	ECN1614EAB	ECN1618EAB	AN16DN0EB
	230	7-1/2	240		ECN1611BAB	ECN1612BAB	ECN1614BAB	ECN1618BAB	AN16DN0BB
	460	10	480		ECN1611CAC	ECN1612CAC	ECN1614CAC	ECN1618CAC	AN16DN0CB
	575	10	600		ECN1611DAC	ECN1612DAC	ECN1614DAC	ECN1618DAC	AN16DN0DB
2	—	—	120	60 A	ECN1621AAD	ECN1622AAD	ECN1624AAD	ECN1628AAD	AN16GN0AB
	200	10	208		ECN1621EAD	ECN1622EAD	ECN1624EAD	ECN1628EAD	AN16GN0EB
	230	15	240		ECN1621BAD	ECN1622BAD	ECN1624BAD	ECN1628BAD	AN16GN0BB
	460	25	480		ECN1621CAE	ECN1622CAE	ECN1624CAE	ECN1628CAE	AN16GN0CB
	575	25	600		ECN1621DAE	ECN1622DAE	ECN1624DAE	ECN1628DAE	AN16GN0DB
3	—	—	120	100 A	ECN1631AAF	ECN1632AAF	ECN1634AAF	ECN1638AAF	AN16KN0A
	200	25	208		ECN1631EAF	ECN1632EAF	ECN1634EAF	ECN1638EAF	AN16KN0E
	230	30	240		ECN1631BAF	ECN1632BAF	ECN1634BAF	ECN1638BAF	AN16KN0B
	460	50	480		ECN1631CAG	ECN1632CAG	ECN1634CAG	ECN1638CAG	AN16KN0C
	575	50	600		ECN1631DAG	ECN1632DAG	ECN1634DAG	ECN1638DAG	AN16KN0D

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN16A**4**AAB. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

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Class ECN16—Combination Non-Reversing Starter—Fusible Disconnect, continued

NEMA Size	Motor Voltage	Maximum hp Rating Dual Element Fuses	Magnet Coil Voltage	Fuse Clip Amps	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) Catalog Number
4	—	—	120	200 A	ECN1641AAH	ECN1642AAH	ECN1644AAH	ECN1648AAH	AN16NN0A
	200	40	208		ECN1641EAH	ECN1642EAH	ECN1644EAH	ECN1648EAH	AN16NN0E
	230	50	240		ECN1641BAH	ECN1642BAH	ECN1644BAH	ECN1648BAH	AN16NN0B
	460	100	480		ECN1641CAJ	ECN1642CAJ	ECN1644CAJ	ECN1648CAJ	AN16NN0C
	575	100	600		ECN1641DAJ	ECN1642DAJ	ECN1644DAJ	ECN1648DAJ	AN16NN0D
5	—	—	120	400 A	ECN1651AAK	ECN1652AAK	ECN1654AAK	ECN1658AAK	AN16SN0AB
	200	75	208		ECN1651EAK	ECN1652EAK	ECN1654EAK	ECN1658EAK	AN16SN0EB
	230	100	240		ECN1651BAK	ECN1652BAK	ECN1654BAK	ECN1658BAK	AN16SN0BB
	460	200	480		ECN1651CAL	ECN1652CAL	ECN1654CAL	ECN1658CAL	AN16SN0CB
	575	200	600		ECN1651DAL	ECN1652DAL	ECN1654DAL	ECN1658DAL	AN16SN0DB
6	—	—	120	600 A	ECN1661AAM	ECN1662AAM	ECN1663AAM ④	ECN1668AAM	AN16TN0AB
	200	150	208		ECN1661EAM	ECN1662EAM	ECN1663EAM ④	ECN1668EAM	AN16TN0EB
	230	200	240		ECN1661BAM	ECN1662BAM	ECN1663BAM ④	ECN1668BAM	AN16TN0BB
	460	400	480		ECN1661CAN	ECN1662CAN	ECN1663CAN ④	ECN1668CAN	AN16TN0CB
	575	400	600		ECN1661DAN	ECN1662DAN	ECN1663DAN ④	ECN1668DAN	AN16TN0DB
7	—	—	120	⑤	ECN1671AAU	ECN1672AAU	ECN1673AAU ④	ECN1678AAU	AN16UN0AB
	230	300	240		ECN1671BAU	ECN1672BAU	ECN1673BAU ④	ECN1678BAU	AN16UN0BB
	460	600	480		ECN1671CAU	ECN1672CAU	ECN1673CAU ④	ECN1678CAU	AN16UN0CB
	575	600	600		ECN1671DAU	ECN1672DAU	ECN1673DAU ④	ECN1678DAU	AN16UN0DB
8	—	—	120	⑤	ECN1681AAU	ECN1682AAU	ECN1683AAU ④	ECN1688AAU	AN16VN0AB
	230	450	240		ECN1681BAU	ECN1682BAU	ECN1683BAU ④	ECN1688BAU	AN16VN0BB
	460	900	480		ECN1681CAU	ECN1682CAU	ECN1683CAU ④	ECN1688CAU	AN16VN0CB
	575	900	600		ECN1681DAU	ECN1682DAU	ECN1683DAU ④	ECN1688DAU	AN16VN0DB
9	—	—	120	⑤	ECN1691AAU	ECN1692AAU	ECN1693AAU ④	ECN1698AAU	AN16WN0A
	230	800	240		ECN1691BAU	ECN1692BAU	ECN1693BAU ④	ECN1698BAU	AN16WN0B
	460	1000 ⑥	480		ECN1691CAU	ECN1692CAU	ECN1693CAU ④	ECN1698CAU	AN16WN0C
	575	1000	600		ECN1691DAU	ECN1692DAU	ECN1693DAU ④	ECN1698DAU	AN16WN0D

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN1644AAH. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

④ Type 4 (painted steel) sizes 6–9.

⑤ Supply hp, voltage, FLA and whether motor is design E or not when ordering the starter.

⑥ For 1250 and 1600 hp ratings at 460 V, consult Eaton.

Class ECN16—Combination Non-Reversing Starter—Non-Fusible Disconnect ①

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage	Disconnect Amps	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
00	—	—	120	30 A	ECN16A1AAA	ECN16A2AAA	ECN16A4AAA	ECN16A8AAA	AN16AN0AC
	200	1-1/2	208		ECN16A1EAA	ECN16A2EAA	ECN16A4EAA	ECN16A8EAA	AN16AN0EC
	230	1-1/2	240		ECN16A1BAA	ECN16A2BAA	ECN16A4BAA	ECN16A8BAA	AN16AN0BC
	460	2	480		ECN16A1CAA	ECN16A2CAA	ECN16A4CAA	ECN16A8CAA	AN16AN0CC
	575	2	600		ECN16A1DAA	ECN16A2DAA	ECN16A4DAA	ECN16A8DAA	AN16AN0DC
0	—	—	120	30 A	ECN1601AAA	ECN1602AAA	ECN1604AAA	ECN1608AAA	AN16BN0AC
	200	3	208		ECN1601EAA	ECN1602EAA	ECN1604EAA	ECN1608EAA	AN16BN0EC
	230	3	240		ECN1601BAA	ECN1602BAA	ECN1604BAA	ECN1608BAA	AN16BN0BC
	460	5	480		ECN1601CAA	ECN1602CAA	ECN1604CAA	ECN1608CAA	AN16BN0CC
	575	5	600		ECN1601DAA	ECN1602DAA	ECN1604DAA	ECN1608DAA	AN16BN0DC
1	—	—	120	30 A	ECN1611AAA	ECN1612AAA	ECN1614AAA	ECN1618AAA	AN16DN0AB
	200	7-1/2	208		ECN1611EAA	ECN1612EAA	ECN1614EAA	ECN1618EAA	AN16DN0EB
	230	7-1/2	240		ECN1611BAA	ECN1612BAA	ECN1614BAA	ECN1618BAA	AN16DN0BB
	460	10	480		ECN1611CAA	ECN1612CAA	ECN1614CAA	ECN1618CAA	AN16DN0CB
	575	10	600		ECN1611DAA	ECN1612DAA	ECN1614DAA	ECN1618DAA	AN16DN0DB
2	—	—	120	60 A	ECN1621AAA	ECN1622AAA	ECN1624AAA	ECN1628AAA	AN16GN0AB
	200	10	208		ECN1621EAA	ECN1622EAA	ECN1624EAA	ECN1628EAA	AN16GN0EB
	230	15	240		ECN1621BAA	ECN1622BAA	ECN1624BAA	ECN1628BAA	AN16GN0BB
	460	25	480		ECN1621CAA	ECN1622CAA	ECN1624CAA	ECN1628CAA	AN16GN0CB
	575	25	600		ECN1621DAA	ECN1622DAA	ECN1624DAA	ECN1628DAA	AN16GN0DB
3	—	—	120	100 A	ECN1631AAA	ECN1632AAA	ECN1634AAA	ECN1638AAA	AN16KN0A
	200	25	208		ECN1631EAA	ECN1632EAA	ECN1634EAA	ECN1638EAA	AN16KN0E
	230	30	240		ECN1631BAA	ECN1632BAA	ECN1634BAA	ECN1638BAA	AN16KN0B
	460	50	480		ECN1631CAA	ECN1632CAA	ECN1634CAA	ECN1638CAA	AN16KN0C
	575	50	600		ECN1631DAA	ECN1632DAA	ECN1634DAA	ECN1638DAA	AN16KN0D
4	—	—	120	200 A	ECN1641AAA	ECN1642AAA	ECN1644AAA	ECN1648AAA	AN16NN0A
	200	40	208		ECN1641EAA	ECN1642EAA	ECN1644EAA	ECN1648EAA	AN16NN0E
	230	50	240		ECN1641BAA	ECN1642BAA	ECN1644BAA	ECN1648BAA	AN16NN0B
	460	100	480		ECN1641CAA	ECN1642CAA	ECN1644CAA	ECN1648CAA	AN16NN0C
	575	100	600		ECN1641DAA	ECN1642DAA	ECN1644DAA	ECN1648DAA	AN16NN0D

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① Field installed fuse clips available, see **Tab 13**.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN16A**4**AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

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Class ECN16—Combination Non-Reversing Starter—Non-Fusible Disconnect, continued ①

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage	Disconnect Amps	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
5	—	—	120	400 A	ECN1651AAA	ECN1652AAA	ECN1654AAA	ECN1658AAA	AN16SN0AB
	200	75	208		ECN1651EAA	ECN1652EAA	ECN1654EAA	ECN1658EAA	AN16SN0EB
	230	100	240		ECN1651BAA	ECN1652BAA	ECN1654BAA	ECN1658BAA	AN16SN0BB
	460	200	480		ECN1651CAA	ECN1652CAA	ECN1654CAA	ECN1658CAA	AN16SN0CB
	575	200	600		ECN1651DAA	ECN1652DAA	ECN1654DAA	ECN1658DAA	AN16SN0DB
6	—	—	120	600 A	ECN1661AAA	ECN1662AAA	ECN1663AAA ⑤	ECN1668AAA	AN16TN0AB
	200	150	208		ECN1661EAA	ECN1662EAA	ECN1663EAA ⑤	ECN1668EAA	AN16TN0EB
	230	200	240		ECN1661BAA	ECN1662BAA	ECN1663BAA ⑤	ECN1668BAA	AN16TN0BB
	460	400	480		ECN1661CAA	ECN1662CAA	ECN1663CAA ⑤	ECN1668CAA	AN16TN0CB
	575	400	600		ECN1661DAA	ECN1662DAA	ECN1663DAA ⑤	ECN1668DAA	AN16TN0DB
7	—	—	120	⑥	ECN1671AAA	ECN1672AAA	ECN1673AAA ⑤	ECN1678AAA	AN16UN0AB
	230	300	240		ECN1671BAA	ECN1672BAA	ECN1673BAA ⑤	ECN1678BAA	AN16UN0BB
	460	600	480		ECN1671CAA	ECN1672CAA	ECN1673CAA ⑤	ECN1678CAA	AN16UN0CB
	575	600	600		ECN1671DAA	ECN1672DAA	ECN1673DAA ⑤	ECN1678DAA	AN16UN0DB
8	—	—	120	⑥	ECN1681AAA	ECN1682AAA	ECN1683AAA ⑤	ECN1688AAA	AN16VN0AB
	230	450	240		ECN1681BAA	ECN1682BAA	ECN1683BAA ⑤	ECN1688BAA	AN16VN0BB
	460	900	480		ECN1681CAA	ECN1682CAA	ECN1683CAA ⑤	ECN1688CAA	AN16VN0CB
	575	900	600		ECN1681DAA	ECN1682DAA	ECN1683DAA ⑤	ECN1688DAA	AN16VN0DB
9	—	—	120	⑥	ECN1691AAA	ECN1692AAA	ECN1693AAA ⑤	ECN1698AAA	AN16WN0A
	230	800	240		ECN1691BAA	ECN1692BAA	ECN1693BAA ⑤	ECN1698BAA	AN16WN0B
	460	1000 ⑦	480		ECN1691CAA	ECN1692CAA	ECN1693CAA ⑤	ECN1698CAA	AN16WN0C
	575	1000	600		ECN1691DAA	ECN1692DAA	ECN1693DAA ⑤	ECN1698DAA	AN16WN0D

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① Field installed fuse clips available, see **Tab 13**.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN165**4**AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

⑤ Type 4 (painted steel) sizes 6–9.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering the starter.

⑦ For 1250 and 1600 hp ratings at 460 V, consult Eaton.

Class ECN16—Special Enclosure Combination Non-Reversing Starter—Fusible/Non-Fusible Disconnect

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage	Fuse Clip Amperes ①	Type 1 General Purpose External Reset Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel External Reset Catalog Number	Type 12 Dust-Tight Industrial ② External Reset Catalog Number	Type 12 Dust-Tight Industrial ② Internal Reset Catalog Number	Component Starter (Open) Catalog Number
Horizontal Enclosure—Fusible									
1	—	—	120	30 A	**ECN1611AAB-E13**	—	**ECN1618AAB-E13**	**ECN1618AAB-E13R5**	**AN16DN0AB**
	200	7-1/2	208		**ECN1611EAB-E13**	—	**ECN1618EAB-E13**	**ECN1618EAB-E13R5**	**AN16DN0EB**
	230	7-1/2	240		**ECN1611BAB-E13**	—	**ECN1618BAB-E13**	**ECN1618BAB-E13R5**	**AN16DN0BB**
	460	10	480		**ECN1611CAC-E13**	—	**ECN1618CAC-E13**	**ECN1618CAC-E13R5**	**AN16DN0CB**
	575	10	600		**ECN1611DAC-E13**	—	**ECN1618DAC-E13**	**ECN1618DAC-E13R5**	**AN16DN0DB**
2	—	—	120	60 A	**ECN1621AAD-E13**	—	**ECN1628AAD-E13**	**ECN1628AAD-E13R5**	**AN16GN0AB**
	200	10	208		**ECN1621EAD-E13**	—	**ECN1628EAD-E13**	**ECN1628EAD-E13R5**	**AN16GN0EB**
	230	15	240		**ECN1621BAD-E13**	—	**ECN1628BAD-E13**	**ECN1628BAD-E13R5**	**AN16GN0BB**
	460	25	480		**ECN1621CAE-E13**	—	**ECN1628CAE-E13**	**ECN1628CAE-E13R5**	**AN16GN0CB**
	575	25	600		**ECN1621DAE-E13**	—	**ECN1628DAE-E13**	**ECN1628DAE-E13R5**	**AN16GN0DB**
Horizontal Enclosure—Non-Fusible									
1	—	—	120	—	**ECN1611AAA-E13**	—	**ECN1618AAA-E13**	**ECN1618AAA-E13R5**	**AN16DN0AB**
	200	7-1/2	208		**ECN1611EAA-E13**	—	**ECN1618EAA-E13**	**ECN1618EAA-E13R5**	**AN16DN0EB**
	230	7-1/2	240		**ECN1611BAA-E13**	—	**ECN1618BAA-E13**	**ECN1618BAA-E13R5**	**AN16DN0BB**
	460	10	480		**ECN1611CAA-E13**	—	**ECN1618CAA-E13**	**ECN1618CAA-E13R5**	**AN16DN0CB**
	575	10	600		**ECN1611DAA-E13**	—	**ECN1618DAA-E13**	**ECN1618DAA-E13R5**	**AN16DN0DB**
2	—	—	120	—	**ECN1621AAA-E13**	—	**ECN1628AAA-E13**	**ECN1628AAA-E13R5**	**AN16GN0AB**
	200	10	208		**ECN1621EAA-E13**	—	**ECN1628EAA-E13**	**ECN1628EAA-E13R5**	**AN16GN0EB**
	230	15	240		**ECN1621BAA-E13**	—	**ECN1628BAA-E13**	**ECN1628BAA-E13R5**	**AN16GN0BB**
	460	25	480		**ECN1621CAA-E13**	—	**ECN1628CAA-E13**	**ECN1628CAA-E13R5**	**AN16GN0CB**
	575	25	600		**ECN1621DAA-E13**	—	**ECN1628DAA-E13**	**ECN1628DAA-E13R5**	**AN16GN0DB**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① Fuse clips are for Class R fuses only. For H and J fuses, see modifications in **Tab 15**.

② To order Type 12 enclosures with safety door interlock add modification **E11**.

Class ECN16—Special Enclosure Combination Non-Reversing Starter—Fusible/Non-Fusible Disconnect, continued

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage	Fuse Clip Amperes ①	Type 1 General Purpose External Reset Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② External Reset Catalog Number	Type 12 Dust-Tight Industrial ③ External Reset Catalog Number	Type 12 Dust-Tight Industrial ③ Internal Reset Catalog Number	Component Starter (Open) Catalog Number
Oversize Enclosure—without Control Transformer—Fusible									
0	—	—	120	30 A	**ECN1601AAB-E3**	**ECN1604AAB-E3**	**ECN1608AAB-E3**	**ECN1608AAB-E3R5**	**AN16BN0AC**
	200	3	208		**ECN1601EAB-E3**	**ECN1604EAB-E3**	**ECN1608EAB-E3**	**ECN1608EAB-E3R5**	**AN16BN0EC**
	230	3	240		**ECN1601BAB-E3**	**ECN1604BAB-E3**	**ECN1608BAB-E3**	**ECN1608BAB-E3R5**	**AN16BN0BC**
	460	5	480		**ECN1601CAC-E3**	**ECN1604CAC-E3**	**ECN1608CAC-E3**	**ECN1608CAC-E3R5**	**AN16BN0CC**
	575	5	600		**ECN1601DAC-E3**	**ECN1604DAC-E3**	**ECN1608DAC-E3**	**ECN1608DAC-E3R5**	**AN16BN0DC**
1	—	—	120	30 A	**ECN1611AAB-E3**	**ECN1614AAB-E3**	**ECN1618AAB-E3**	**ECN1618AAB-E3R5**	**AN16DN0AB**
	200	7-1/2	208		**ECN1611EAB-E3**	**ECN1614EAB-E3**	**ECN1618EAB-E3**	**ECN1618EAB-E3R5**	**AN16DN0EB**
	230	7-1/2	240		**ECN1611BAB-E3**	**ECN1614BAB-E3**	**ECN1618BAB-E3**	**ECN1618BAB-E3R5**	**AN16DN0BB**
	460	10	480		**ECN1611CAC-E3**	**ECN1614CAC-E3**	**ECN1618CAC-E3**	**ECN1618CAC-E3R5**	**AN16DN0CB**
	575	10	600		**ECN1611DAC-E3**	**ECN1614DAC-E3**	**ECN1618DAC-E3**	**ECN1618DAC-E3R5**	**AN16DN0DB**
2	—	—	120	60 A	**ECN1621AAD-E3**	**ECN1624AAD-E3**	**ECN1628AAD-E3**	**ECN1628AAD-E3R5**	**AN16GN0AB**
	200	10	208		**ECN1621EAD-E3**	**ECN1624EAD-E3**	**ECN1628EAD-E3**	**ECN1628EAD-E3R5**	**AN16GN0EB**
	230	15	240		**ECN1621BAD-E3**	**ECN1624BAD-E3**	**ECN1628BAD-E3**	**ECN1628BAD-E3R5**	**AN16GN0BB**
	460	25	480		**ECN1621CAE-E3**	**ECN1624CAE-E3**	**ECN1628CAE-E3**	**ECN1628CAE-E3R5**	**AN16GN0CB**
	575	25	600		**ECN1621DAE-E3**	**ECN1624DAE-E3**	**ECN1628DAE-E3**	**ECN1628DAE-E3R5**	**AN16GN0DB**
Oversize Enclosure—without Control Transformer—Non-Fusible									
0	—	—	120	—	**ECN1601AAA-E3**	**ECN1604AAA-E3**	**ECN1608AAA-E3**	**ECN1608AAA-E3R5**	**AN16BN0AC**
	200	3	208		**ECN1601EAA-E3**	**ECN1604EAA-E3**	**ECN1608EAA-E3**	**ECN1608EAA-E3R5**	**AN16BN0EC**
	230	3	240		**ECN1601BAA-E3**	**ECN1604BAA-E3**	**ECN1608BAA-E3**	**ECN1608BAA-E3R5**	**AN16BN0BC**
	460	5	480		**ECN1601CAA-E3**	**ECN1604CAA-E3**	**ECN1608CAA-E3**	**ECN1608CAA-E3R5**	**AN16BN0CC**
	575	5	600		**ECN1601DAA-E3**	**ECN1604DAA-E3**	**ECN1608DAA-E3**	**ECN1608DAA-E3R5**	**AN16BN0DC**
1	—	—	120	—	**ECN1611AAA-E3**	**ECN1614AAA-E3**	**ECN1618AAA-E3**	**ECN1618AAA-E3R5**	**AN16DN0AB**
	200	7-1/2	208		**ECN1611EAA-E3**	**ECN1614EAA-E3**	**ECN1618EAA-E3**	**ECN1618EAA-E3R5**	**AN16DN0EB**
	230	7-1/2	240		**ECN1611BAA-E3**	**ECN1614BAA-E3**	**ECN1618BAA-E3**	**ECN1618BAA-E3R5**	**AN16DN0BB**
	460	10	480		**ECN1611CAA-E3**	**ECN1614CAA-E3**	**ECN1618CAA-E3**	**ECN1618CAA-E3R5**	**AN16DN0CB**
	575	10	600		**ECN1611DAA-E3**	**ECN1614DAA-E3**	**ECN1618DAA-E3**	**ECN1618DAA-E3R5**	**AN16DN0DB**
2	—	—	120	—	**ECN1621AAA-E3**	**ECN1624AAA-E3**	**ECN1628AAA-E3**	**ECN1628AAA-E3R5**	**AN16GN0AB**
	200	10	208		**ECN1621EAA-E3**	**ECN1624EAA-E3**	**ECN1628EAA-E3**	**ECN1628EAA-E3R5**	**AN16GN0EB**
	230	15	240		**ECN1621BAA-E3**	**ECN1624BAA-E3**	**ECN1628BAA-E3**	**ECN1628BAA-E3R5**	**AN16GN0BB**
	460	25	480		**ECN1621CAA-E3**	**ECN1624CAA-E3**	**ECN1628CAA-E3**	**ECN1628CAA-E3R5**	**AN16GN0CB**
	575	25	600		**ECN1621DAA-E3**	**ECN1624DAA-E3**	**ECN1628DAA-E3**	**ECN1628DAA-E3R5**	**AN16GN0DB**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① Fuse clips are for Class R fuses only. For H and J fuses, see modifications in **Tab 13**.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN1604AAB-E3. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ To order Type 12 enclosures with safety door interlock add modification **E11**.

Class ECN17—Combination Reversing Starter—Fusible Disconnect

NEMA Size	Motor Voltage	Maximum hp Rating Dual Element Fuses	Magnet Coil Voltage	Fuse Clip Amperes	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial ②③ Catalog Number	Component Starter (Open) Catalog Number
0	—	—	120	30 A	**ECN1701AAB**	**ECN1702AAB**	**ECN1704AAB**	**ECN1708AAB**	**AN56BN0AC**
	200	3	208		**ECN1701EAB**	**ECN1702EAB**	**ECN1704EAB**	**ECN1708EAB**	**AN56BN0EC**
	230	3	240		**ECN1701BAB**	**ECN1702BAB**	**ECN1704BAB**	**ECN1708BAB**	**AN56BN0BC**
	460	5	480		**ECN1701CAC**	**ECN1702CAC**	**ECN1704CAC**	**ECN1708CAC**	**AN56BN0CC**
	575	5	600		**ECN1701DAC**	**ECN1702DAC**	**ECN1704DAC**	**ECN1708DAC**	**AN56BN0DC**
1	—	—	120	30 A	**ECN1711AAB**	**ECN1712AAB**	**ECN1714AAB**	**ECN1718AAB**	**AN56DN0AB**
	200	7-1/2	208		**ECN1711EAB**	**ECN1712EAB**	**ECN1714EAB**	**ECN1718EAB**	**AN56DN0EB**
	230	7-1/2	240		**ECN1711BAB**	**ECN1712BAB**	**ECN1714BAB**	**ECN1718BAB**	**AN56DN0BB**
	460	10	480		**ECN1711CAC**	**ECN1712CAC**	**ECN1714CAC**	**ECN1718CAC**	**AN56DN0CB**
	575	10	600		**ECN1711DAC**	**ECN1712DAC**	**ECN1714DAC**	**ECN1718DAC**	**AN56DN0DB**
2	—	—	120	60 A	**ECN1721AAD**	**ECN1722AAD**	**ECN1724AAD**	**ECN1728AAD**	**AN56GN0AB**
	200	10	208		**ECN1721EAD**	**ECN1722EAD**	**ECN1724EAD**	**ECN1728EAD**	**AN56GN0EB**
	230	15	240		**ECN1721BAD**	**ECN1722BAD**	**ECN1724BAD**	**ECN1728BAD**	**AN56GN0BB**
	460	25	480		**ECN1721CAE**	**ECN1722CAE**	**ECN1724CAE**	**ECN1728CAE**	**AN56GN0CB**
	575	25	600		**ECN1721DAE**	**ECN1722DAE**	**ECN1724DAE**	**ECN1728DAE**	**AN56GN0DB**
3	—	—	120	100 A	**ECN1731AAF**	**ECN1732AAF**	**ECN1734AAF**	**ECN1738AAF**	**AN56KN0A**
	200	25	208		**ECN1731EAF**	**ECN1732EAF**	**ECN1734EAF**	**ECN1738EAF**	**AN56KN0E**
	230	30	240		**ECN1731BAF**	**ECN1732BAF**	**ECN1734BAF**	**ECN1738BAF**	**AN56KN0B**
	460	50	480		**ECN1731CAG**	**ECN1732CAG**	**ECN1734CAG**	**ECN1738CAG**	**AN56KN0C**
	575	50	600		**ECN1731DAG**	**ECN1732DAG**	**ECN1734DAG**	**ECN1738DAG**	**AN56KN0D**
4	—	—	120	200 A	**ECN1741AAH**	**ECN1742AAH**	**ECN1744AAH**	**ECN1748AAH**	**AN56NN0A**
	200	40	208		**ECN1741EAH**	**ECN1742EAH**	**ECN1744EAH**	**ECN1748EAH**	**AN56NN0E**
	230	50	240		**ECN1741BAH**	**ECN1742BAH**	**ECN1744BAH**	**ECN1748BAH**	**AN56NN0B**
	460	100	480		**ECN1741CAJ**	**ECN1742CAJ**	**ECN1744CAJ**	**ECN1748CAJ**	**AN56NN0C**
	575	100	600		**ECN1741DAJ**	**ECN1742DAJ**	**ECN1744DAJ**	**ECN1748DAJ**	**AN56NN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN170**4**AAB. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

Class ECN17—Combination Reversing Starter—Fusible Disconnect, continued

NEMA Size	Motor Voltage	Maximum hp Rating Dual Element Fuses	Magnet Coil Voltage	Fuse Clip Amperes	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial ②③ Catalog Number	Component Starter (Open) Catalog Number
5	—	—	120	400 A	**ECN1751AAK**	**ECN1752AAK**	**ECN1754AAK**	**ECN1758AAK**	**AN56SN0AB**
	200	75	208		**ECN1751EAK**	**ECN1752EAK**	**ECN1754EAK**	**ECN1758EAK**	**AN56SN0EB**
	230	100	240		**ECN1751BAK**	**ECN1752BAK**	**ECN1754BAK**	**ECN1758BAK**	**AN56SN0BB**
	460	200	480		**ECN1751CAL**	**ECN1752CAL**	**ECN1754CAL**	**ECN1758CAL**	**AN56SN0CB**
	575	200	600		**ECN1751DAL**	**ECN1752DAL**	**ECN1754DAL**	**ECN1758DAL**	**AN56SN0DB**
6	—	—	120	600 A	**ECN1761AAM**	**ECN1762AAM** ④	**ECN1763AAM**	**ECN1768AAM**	**AN56TN0AB**
	200	150	208		**ECN1761EAM**	**ECN1762EAM** ④	**ECN1763EAM**	**ECN1768EAM**	**AN56TN0EB**
	230	200	240		**ECN1761BAM**	**ECN1762BAM** ④	**ECN1763BAM**	**ECN1768BAM**	**AN56TN0BB**
	460	400	480		**ECN1761CAN**	**ECN1762CAN** ④	**ECN1763CAN**	**ECN1768CAN**	**AN56TN0CB**
	575	400	600		**ECN1761DAN**	**ECN1762DAN** ④	**ECN1763DAN**	**ECN1768DAN**	**AN56TN0DB**
7	—	—	120	⑤	**ECN1771AAU**	**ECN1772AAU** ④	**ECN1773AAU**	**ECN1778AAU**	**AN56UN0AB**
	230	300	240		**ECN1771BAU**	**ECN1772BAU** ④	**ECN1773BAU**	**ECN1778BAU**	**AN56UN0BB**
	460	600	480		**ECN1771CAU**	**ECN1772CAU** ④	**ECN1773CAU**	**ECN1778CAU**	**AN56UN0CB**
	575	600	600		**ECN1771DAU**	**ECN1772DAU** ④	**ECN1773DAU**	**ECN1778DAU**	**AN56UN0DB**
8	—	—	120	⑤	**ECN1781AAU**	**ECN1782AAU** ④	**ECN1783AAU**	**ECN1788AAU**	**AN56VN0AB**
	230	450	240		**ECN1781BAU**	**ECN1782BAU** ④	**ECN1783BAU**	**ECN1788BAU**	**AN56VN0BB**
	460	900	480		**ECN1781CAU**	**ECN1782CAU** ④	**ECN1783CAU**	**ECN1788CAU**	**AN56VN0CB**
	575	900	600		**ECN1781DAU**	**ECN1782DAU** ④	**ECN1783DAU**	**ECN1788DAU**	**AN56VN0DB**
9	—	—	120	⑤	**ECN1791AAU**	**ECN1792AAU** ④	**ECN1793AAU**	**ECN1798AAU**	**AN56WN0A**
	230	800	240		**ECN1791BAU**	**ECN1792BAU** ④	**ECN1793BAU**	**ECN1798BAU**	**AN56WN0B**
	460	1000 ⑥	480		**ECN1791CAU**	**ECN1792CAU** ④	**ECN1793CAU**	**ECN1798CAU**	**AN56WN0C**
	575	1000	600		**ECN1791DAU**	**ECN1792DAU** ④	**ECN1793DAU**	**ECN1798DAU**	**AN56WN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN1754AAK. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

④ Type 4 (painted steel) sizes 6–9.

⑤ Supply hp, voltage, FLA and whether motor is design E or not when ordering the starter.

⑥ For 1250 and 1600 hp ratings at 460 V, consult Eaton.

Class ECN17—Combination Reversing Starter—Non-Fusible Disconnect

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage	Disconnect Amps	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) Catalog Number
0	—	—	120	30 A	**ECN1701AAA**	**ECN1702AAA**	**ECN1704AAA**	**ECN1708AAA**	**AN56BN0AC**
	200	3	208		**ECN1701EAA**	**ECN1702EAA**	**ECN1704EAA**	**ECN1708EAA**	**AN56BN0EC**
	230	3	240		**ECN1701BAA**	**ECN1702BAA**	**ECN1704BAA**	**ECN1708BAA**	**AN56BN0BC**
	460	5	480		**ECN1701CAA**	**ECN1702CAA**	**ECN1704CAA**	**ECN1708CAA**	**AN56BN0CC**
	575	5	600		**ECN1701DAA**	**ECN1702DAA**	**ECN1704DAA**	**ECN1708DAA**	**AN56BN0DC**
1	—	—	120	30 A	**ECN1711AAA**	**ECN1712AAA**	**ECN1714AAA**	**ECN1718AAA**	**AN56DN0AB**
	200	7-1/2	208		**ECN1711EAA**	**ECN1712EAA**	**ECN1714EAA**	**ECN1718EAA**	**AN56DN0EB**
	230	7-1/2	240		**ECN1711BAA**	**ECN1712BAA**	**ECN1714BAA**	**ECN1718BAA**	**AN56DN0BB**
	460	10	480		**ECN1711CAA**	**ECN1712CAA**	**ECN1714CAA**	**ECN1718CAA**	**AN56DN0CB**
	575	10	600		**ECN1711DAA**	**ECN1712DAA**	**ECN1714DAA**	**ECN1718DAA**	**AN56DN0DB**
2	—	—	120	60 A	**ECN1721AAA**	**ECN1722AAA**	**ECN1724AAA**	**ECN1728AAA**	**AN56GN0AB**
	200	10	208		**ECN1721EAA**	**ECN1722EAA**	**ECN1724EAA**	**ECN1728EAA**	**AN56GN0EB**
	230	15	240		**ECN1721BAA**	**ECN1722BAA**	**ECN1724BAA**	**ECN1728BAA**	**AN56GN0BB**
	460	25	480		**ECN1721CAA**	**ECN1722CAA**	**ECN1724CAA**	**ECN1728CAA**	**AN56GN0CB**
	575	25	600		**ECN1721DAA**	**ECN1722DAA**	**ECN1724DAA**	**ECN1728DAA**	**AN56GN0DB**
3	—	—	120	100 A	**ECN1731AAA**	**ECN1732AAA**	**ECN1734AAA**	**ECN1738AAA**	**AN56KN0A**
	200	25	208		**ECN1731EAA**	**ECN1732EAA**	**ECN1734EAA**	**ECN1738EAA**	**AN56KN0E**
	230	30	240		**ECN1731BAA**	**ECN1732BAA**	**ECN1734BAA**	**ECN1738BAA**	**AN56KN0B**
	460	50	480		**ECN1731CAA**	**ECN1732CAA**	**ECN1734CAA**	**ECN1738CAA**	**AN56KN0C**
	575	50	600		**ECN1731DAA**	**ECN1732DAA**	**ECN1734DAA**	**ECN1738DAA**	**AN56KN0D**
4	—	—	120	200 A	**ECN1741AAA**	**ECN1742AAA**	**ECN1744AAA**	**ECN1748AAA**	**AN56NN0A**
	200	40	208		**ECN1741EAA**	**ECN1742EAA**	**ECN1744EAA**	**ECN1748EAA**	**AN56NN0E**
	230	50	240		**ECN1741BAA**	**ECN1742BAA**	**ECN1744BAA**	**ECN1748BAA**	**AN56NN0B**
	460	100	480		**ECN1741CAA**	**ECN1742CAA**	**ECN1744CAA**	**ECN1748CAA**	**AN56NN0C**
	575	100	600		**ECN1741DAA**	**ECN1742DAA**	**ECN1744DAA**	**ECN1748DAA**	**AN56NN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN170**4**AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

Class ECN17—Combination Reversing Starter—Non-Fusible Disconnect, continued

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage	Disconnect Amps	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) Catalog Number
5	—	—	120	400 A	**ECN1751AAA**	**ECN1752AAA**	**ECN1754AAA**	**ECN1758AAA**	**AN56SN0AB**
	200	75	208		**ECN1751EAA**	**ECN1752EAA**	**ECN1754EAA**	**ECN1758EAA**	**AN56SN0EB**
	230	100	240		**ECN1751BAA**	**ECN1752BAA**	**ECN1754BAA**	**ECN1758BAA**	**AN56SN0BB**
	460	200	480		**ECN1751CAA**	**ECN1752CAA**	**ECN1754CAA**	**ECN1758CAA**	**AN56SN0CB**
	575	200	600		**ECN1751DAA**	**ECN1752DAA**	**ECN1754DAA**	**ECN1758DAA**	**AN56SN0DB**
6	—	—	120	600 A	**ECN1761AAA**	**ECN1762AAA**	**ECN1763AAA** ④	**ECN1768AAA**	**AN56TN0AB**
	200	150	208		**ECN1761EAA**	**ECN1762EAA**	**ECN1763EAA** ④	**ECN1768EAA**	**AN56TN0EB**
	230	200	240		**ECN1761BAA**	**ECN1762BAA**	**ECN1763BAA** ④	**ECN1768BAA**	**AN56TN0BB**
	460	400	480		**ECN1761CAA**	**ECN1762CAA**	**ECN1763CAA** ④	**ECN1768CAA**	**AN56TN0CB**
	575	400	600		**ECN1761DAA**	**ECN1762DAA**	**ECN1763DAA** ④	**ECN1768DAA**	**AN56TN0DB**
7	—	—	120	⑤	**ECN1771AAA**	**ECN1772AAA**	**ECN1773AAA** ④	**ECN1778AAA**	**AN56UN0AB**
	230	300	240		**ECN1771BAA**	**ECN1772BAA**	**ECN1773BAA** ④	**ECN1778BAA**	**AN56UN0BB**
	460	600	480		**ECN1771CAA**	**ECN1772CAA**	**ECN1773CAA** ④	**ECN1778CAA**	**AN56UN0CB**
	575	600	600		**ECN1771DAA**	**ECN1772DAA**	**ECN1773DAA** ④	**ECN1778DAA**	**AN56UN0DB**
8	—	—	120	⑤	**ECN1781AAA**	**ECN1782AAA**	**ECN1783AAA** ④	**ECN1788AAA**	**AN56VN0AB**
	230	450	240		**ECN1781BAA**	**ECN1782BAA**	**ECN1783BAA** ④	**ECN1788BAA**	**AN56VN0BB**
	460	900	480		**ECN1781CAA**	**ECN1782CAA**	**ECN1783CAA** ④	**ECN1788CAA**	**AN56VN0CB**
	575	900	600		**ECN1781DAA**	**ECN1782DAA**	**ECN1783DAA** ④	**ECN1788DAA**	**AN56VN0DB**
9	—	—	120	⑤	**ECN1791AAA**	**ECN1792AAA**	**ECN1793AAA** ④	**ECN1798AAA**	**AN56WN0A**
	230	800	240		**ECN1791BAA**	**ECN1792BAA**	**ECN1793BAA** ④	**ECN1798BAA**	**AN56WN0B**
	460	1000 ⑥	480		**ECN1791CAA**	**ECN1792CAA**	**ECN1793CAA** ④	**ECN1798CAA**	**AN56WN0C**
	575	1000	600		**ECN1791DAA**	**ECN1792DAA**	**ECN1793DAA** ④	**ECN1798DAA**	**AN56WN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN1754AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

④ Type 4 (painted steel) sizes 6–9.

⑤ Supply hp, voltage, FLA and whether motor is design E or not when ordering the starter.

⑥ For 1250 and 1600 hp ratings at 460 V, consult Eaton.

Class ECN18—Combination Non-Reversing Starter—Fusible Disconnect with CPT ①

NEMA Size	Primary Voltage ②	Maximum hp Rating	Magnet Coil Voltage	Fuse Clip Amps	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ③ Catalog Number	Type 12 Dust-Tight Industrial External Reset ④⑤ Catalog Number	Component Starter (Open) Catalog Number
00	208	1-1/2	120	30 A ⑥	**ECN18A1EAB**	**ECN18A2EAB**	**ECN18A4EAB**	**ECN18A8EAB**	**AN16AN0EC**
	240	1-1/2			**ECN18A1BAB**	**ECN18A2BAB**	**ECN18A4BAB**	**ECN18A8BAB**	**AN16AN0BC**
	480	2			**ECN18A1CAC**	**ECN18A2CAC**	**ECN18A4CAC**	**ECN18A8CAC**	**AN16AN0CC**
	600	2			**ECN18A1DAC**	**ECN18A2DAC**	**ECN18A4DAC**	**ECN18A8DAC**	**AN16AN0DC**
0	208	3	120	30 A ⑥	**ECN1801EAB**	**ECN1802EAB**	**ECN1804EAB**	**ECN1808EAB**	**AN16BN0EC**
	240	3			**ECN1801BAB**	**ECN1802BAB**	**ECN1804BAB**	**ECN1808BAB**	**AN16BN0BC**
	480	5			**ECN1801CAC**	**ECN1802CAC**	**ECN1804CAC**	**ECN1808CAC**	**AN16BN0CC**
	600	5			**ECN1801DAC**	**ECN1802DAC**	**ECN1804DAC**	**ECN1808DAC**	**AN16BN0DC**
1	208	7-1/2	120	30 A ⑥	**ECN1811EAB**	**ECN1812EAB**	**ECN1814EAB**	**ECN1818EAB**	**AN16DN0EB**
	240	7-1/2			**ECN1811BAB**	**ECN1812BAB**	**ECN1814BAB**	**ECN1818BAB**	**AN16DN0BB**
	480	10			**ECN1811CAC**	**ECN1812CAC**	**ECN1814CAC**	**ECN1818CAC**	**AN16DN0CB**
	600	10			**ECN1811DAC**	**ECN1812DAC**	**ECN1814DAC**	**ECN1818DAC**	**AN16DN0DB**
2	208	10	120	60 A ⑥	**ECN1821EAD**	**ECN1822EAD**	**ECN1824EAD**	**ECN1828EAD**	**AN16GN0EB**
	240	15			**ECN1821BAD**	**ECN1822BAD**	**ECN1824BAD**	**ECN1828BAD**	**AN16GN0BB**
	480	25			**ECN1821CAE**	**ECN1822CAE**	**ECN1824CAE**	**ECN1828CAE**	**AN16GN0CB**
	600	25			**ECN1821DAE**	**ECN1822DAE**	**ECN1824DAE**	**ECN1828DAE**	**AN16GN0DB**
3	208	25	120	100 A	**ECN1831EAF**	**ECN1832EAF**	**ECN1834EAF**	**ECN1838EAF**	**AN16KN0E**
	240	30			**ECN1831BAF**	**ECN1832BAF**	**ECN1834BAF**	**ECN1838BAF**	**AN16KN0B**
	480	50			**ECN1831CAG**	**ECN1832CAG**	**ECN1834CAG**	**ECN1838CAG**	**AN16KN0C**
	600	50			**ECN1831DAG**	**ECN1832DAG**	**ECN1834DAG**	**ECN1838DAG**	**AN16KN0D**
4	208	40	120	200 A	**ECN1841EAH**	**ECN1842EAH**	**ECN1844EAH**	**ECN1848EAH**	**AN16NN0E**
	240	50			**ECN1841BAH**	**ECN1842BAH**	**ECN1844BAH**	**ECN1848BAH**	**AN16NN0B**
	480	100			**ECN1841CAJ**	**ECN1842CAJ**	**ECN1844CAJ**	**ECN1848CAJ**	**AN16NN0C**
	600	100			**ECN1841DAJ**	**ECN1842DAJ**	**ECN1844DAJ**	**ECN1848DAJ**	**AN16NN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① 100,000 rms short-circuit rating.

② Other control power transformer primary and/or secondary voltages, see **Page V10-T2-4**.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN1804EAB. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

④ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

⑤ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

⑥ Fuse clips are for Class R fuses. For H and J fuses, see modifications in **Tab 15**.

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Class ECN18—Combination Non-Reversing Starter—Fusible Disconnect with CPT, continued ①

NEMA Size	Primary Voltage ②	Maximum hp Rating	Magnet Coil Voltage	Fuse Clip Amps	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ③ Catalog Number	Type 12 Dust-Tight Industrial External Reset ④⑤ Catalog Number	Component Starter (Open) Catalog Number
5	208	75	120	400 A	**ECN1851EAK**	**ECN1852EAK**	**ECN1854EAK**	**ECN1858EAK**	**AN16SN0EB**
	240	100			**ECN1851BAK**	**ECN1852BAK**	**ECN1854BAK**	**ECN1858BAK**	**AN16SN0BB**
	480	200			**ECN1851CAL**	**ECN1852CAL**	**ECN1854CAL**	**ECN1858CAL**	**AN16SN0CB**
	600	200			**ECN1851DAL**	**ECN1852DAL**	**ECN1854DAL**	**ECN1858DAL**	**AN16SN0DB**
6	208	150	120	600 A	**ECN1861EAM**	**ECN1862EAM**	**ECN1863EAM** ⑥	**ECN1868EAM**	**AN16TN0EB**
	240	200			**ECN1861BAM**	**ECN1862BAM**	**ECN1863BAM** ⑥	**ECN1868BAM**	**AN16TN0BB**
	480	400			**ECN1861CAN**	**ECN1862CAN**	**ECN1863CAN** ⑥	**ECN1868CAN**	**AN16TN0CB**
	600	400			**ECN1861DAN**	**ECN1862DAN**	**ECN1863DAN** ⑥	**ECN1868DAN**	**AN16TN0DB**
7	240	300	120	⑦	**ECN1871BAU**	**ECN1872BAU**	**ECN1873BAU** ⑥	**ECN1878BAU**	**AN16UN0BB**
	480	600			**ECN1871CAU**	**ECN1872CAU**	**ECN1873CAU** ⑥	**ECN1878CAU**	**AN16UN0CB**
	600	600			**ECN1871DAU**	**ECN1872DAU**	**ECN1873DAU** ⑥	**ECN1878DAU**	**AN16UN0DB**
8	240	450	120	⑦	**ECN1881BAU**	**ECN1882BAU**	**ECN1883BAU** ⑥	**ECN1888BAU**	**AN16VN0BB**
	480	900			**ECN1881CAU**	**ECN1882CAU**	**ECN1883CAU** ⑥	**ECN1888CAU**	**AN16VN0CB**
	600	900			**ECN1881DAU**	**ECN1882DAU**	**ECN1883DAU** ⑥	**ECN1888DAU**	**AN16VN0DB**
9	240	800	120	⑦	**ECN1891BAU**	**ECN1892BAU**	**ECN1893BAU** ⑥	**ECN1898BAU**	**AN16WN0B**
	480	1000 ⑧			**ECN1891CAU**	**ECN1892CAU**	**ECN1893CAU** ⑥	**ECN1898CAU**	**AN16WN0C**
	600	1000			**ECN1891DAU**	**ECN1892DAU**	**ECN1893DAU** ⑥	**ECN1898DAU**	**AN16WN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① 100,000 rms short-circuit rating.

② Other control power transformer primary and/or secondary voltages, see **Page V10-T2-4**.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN185**4**EAK. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

④ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

⑤ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

⑥ Type 4 (painted steel) sizes 6–9.

⑦ Supply hp, voltage, FLA and whether motor is design E or not when ordering the motor.

⑧ For 1250 and 1600 hp ratings at 460 V, consult Eaton.

Class ECN18—Combination Non-Reversing Starter—Non-Fusible Disconnect with CPT

NEMA Size	Primary Voltage ①	Maximum hp Rating	Magnet Coil Voltage	Disconnect Switch Rating	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
00	208	1-1/2	120	30 A	**ECN18A1EAA**	**ECN18A2EAA**	**ECN18A4EAA**	**ECN18A8EAA**	**AN16AN0EC**
	240	1-1/2			**ECN18A1BAA**	**ECN18A2BAA**	**ECN18A4BAA**	**ECN18A8BAA**	**AN16AN0BC**
	480	2			**ECN18A1CAA**	**ECN18A2CAA**	**ECN18A4CAA**	**ECN18A8CAA**	**AN16AN0CC**
	600	2			**ECN18A1DAA**	**ECN18A2DAA**	**ECN18A4DAA**	**ECN18A8DAA**	**AN16AN0DC**
0	208	3	120	30 A	**ECN1801EAA**	**ECN1802EAA**	**ECN1804EAA**	**ECN1808EAA**	**AN16BN0EC**
	240	3			**ECN1801BAA**	**ECN1802BAA**	**ECN1804BAA**	**ECN1808BAA**	**AN16BN0BC**
	480	5			**ECN1801CAA**	**ECN1802CAA**	**ECN1804CAA**	**ECN1808CAA**	**AN16BN0CC**
	600	5			**ECN1801DAA**	**ECN1802DAA**	**ECN1804DAA**	**ECN1808DAA**	**AN16BN0DC**
1	208	7-1/2	120	30 A	**ECN1811EAA**	**ECN1812EAA**	**ECN1814EAA**	**ECN1818EAA**	**AN16DN0EB**
	240	7-1/2			**ECN1811BAA**	**ECN1812BAA**	**ECN1814BAA**	**ECN1818BAA**	**AN16DN0BB**
	480	10			**ECN1811CAA**	**ECN1812CAA**	**ECN1814CAA**	**ECN1818CAA**	**AN16DN0CB**
	600	10			**ECN1811DAA**	**ECN1812DAA**	**ECN1814DAA**	**ECN1818DAA**	**AN16DN0DB**
2	208	10	120	60 A	**ECN1821EAA**	**ECN1822EAA**	**ECN1824EAA**	**ECN1828EAA**	**AN16GN0EB**
	240	15			**ECN1821BAA**	**ECN1822BAA**	**ECN1824BAA**	**ECN1828BAA**	**AN16GN0BB**
	480	25			**ECN1821CAA**	**ECN1822CAA**	**ECN1824CAA**	**ECN1828CAA**	**AN16GN0CB**
	600	25			**ECN1821DAA**	**ECN1822DAA**	**ECN1824DAA**	**ECN1828DAA**	**AN16GN0DB**
3	208	25	120	100 A	**ECN1831EAA**	**ECN1832EAA**	**ECN1834EAA**	**ECN1838EAA**	**AN16KN0E**
	240	30			**ECN1831BAA**	**ECN1832BAA**	**ECN1834BAA**	**ECN1838BAA**	**AN16KN0B**
	480	50			**ECN1831CAA**	**ECN1832CAA**	**ECN1834CAA**	**ECN1838CAA**	**AN16KN0C**
	600	50			**ECN1831DAA**	**ECN1832DAA**	**ECN1834DAA**	**ECN1838DAA**	**AN16KN0D**
4	208	40	120	200 A	**ECN1841EAA**	**ECN1842EAA**	**ECN1844EAA**	**ECN1848EAA**	**AN16NN0E**
	240	50			**ECN1841BAA**	**ECN1842BAA**	**ECN1844BAA**	**ECN1848BAA**	**AN16NN0B**
	480	100			**ECN1841CAA**	**ECN1842CAA**	**ECN1844CAA**	**ECN1848CAA**	**AN16NN0C**
	600	100			**ECN1841DAA**	**ECN1842DAA**	**ECN1844DAA**	**ECN1848DAA**	**AN16NN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① Other control power transformer primary and/or secondary voltages, see **Page V10-T2-4**.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN1804EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

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Class ECN18—Combination Non-Reversing Starter—Non-Fusible Disconnect with CPT, continued

NEMA Size	Primary Voltage ①	Maximum hp Rating	Magnet Coil Voltage	Disconnect Switch Rating	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
5	208	75	120	400 A	**ECN1851EAA**	**ECN1852EAA**	**ECN1854EAA**	**ECN1858EAA**	**AN16SN0EB**
	240	100			**ECN1851BAA**	**ECN1852BAA**	**ECN1854BAA**	**ECN1858BAA**	**AN16SN0BB**
	480	200			**ECN1851CAA**	**ECN1852CAA**	**ECN1854CAA**	**ECN1858CAA**	**AN16SN0CB**
	600	200			**ECN1851DAA**	**ECN1852DAA**	**ECN1854DAA**	**ECN1858DAA**	**AN16SN0DB**
6	208	150	120	600 A	**ECN1861EAA**	**ECN1862EAA**	**ECN1863EAA** ⑤	**ECN1868EAA**	**AN16TN0EB**
	240	200			**ECN1861BAA**	**ECN1862BAA**	**ECN1863BAA** ⑤	**ECN1868BAA**	**AN16TN0BB**
	480	400			**ECN1861CAA**	**ECN1862CAA**	**ECN1863CAA** ⑤	**ECN1868CAA**	**AN16TN0CB**
	600	400			**ECN1861DAA**	**ECN1862DAA**	**ECN1863DAA** ⑤	**ECN1868DAA**	**AN16TN0DB**
7	240	300	120	⑥	**ECN1871BAA**	**ECN1872BAA**	**ECN1873BAA** ⑤	**ECN1878BAA**	**AN16UN0BB**
	480	600			**ECN1871CAA**	**ECN1872CAA**	**ECN1873CAA** ⑤	**ECN1878CAA**	**AN16UN0CB**
	600	600			**ECN1871DAA**	**ECN1872DAA**	**ECN1873DAA** ⑤	**ECN1878DAA**	**AN16UN0DB**
8	240	450	120	⑥	**ECN1881BAA**	**ECN1882BAA**	**ECN1883BAA** ⑤	**ECN1888BAA**	**AN16VN0BB**
	480	900			**ECN1881CAA**	**ECN1882CAA**	**ECN1883CAA** ⑤	**ECN1888CAA**	**AN16VN0CB**
	600	900			**ECN1881DAA**	**ECN1882DAA**	**ECN1883DAA** ⑤	**ECN1888DAA**	**AN16VN0DB**
9	240	800	120	⑥	**ECN1891BAA**	**ECN1892BAA**	**ECN1893BAA** ⑤	**ECN1898BAA**	**AN16WN0B**
	480	1000 ⑦			**ECN1891CAA**	**ECN1892CAA**	**ECN1893CAA** ⑤	**ECN1898CAA**	**AN16WN0C**
	600	1000			**ECN1891DAA**	**ECN1892DAA**	**ECN1893DAA** ⑤	**ECN1898DAA**	**AN16WN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① Other control power transformer primary and/or secondary voltages, see **Page V10-T2-4**.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN185**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

⑤ Type 4 (painted steel) sizes 6–9.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering the starter.

⑦ For 1250 and 1600 hp ratings at 460 V, consult Eaton.

Combination Starters—Circuit Breaker

Features

- Three-phase magnetic
- Three-pole non-reversing or reversing
- Standard interchangeable heater OLR
- Optional electronic overload
- 600 V maximum
- 100,000 rms 480 V, 25,000 rms 600 V

Product Selection

Class ECN22—Combination Non-Reversing Starter—Circuit Breaker

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
00	200	1	120	7A	**ECN22A1AAC**	**ECN22A2AAC**	**ECN22A4AAC**	**ECN22A8AAC**	**AN16AN0AC**
		1-1/2		15A	**ECN22A1AAD**	**ECN22A2AAD**	**ECN22A4AAD**	**ECN22A8AAD**	
	230	1		7A	**ECN22A1AAC**	**ECN22A2AAC**	**ECN22A4AAC**	**ECN22A8AAC**	
		1-1/2		15A	**ECN22A1AAD**	**ECN22A2AAD**	**ECN22A4AAD**	**ECN22A8AAD**	
	460	1		3A	**ECN22A1AAB**	**ECN22A2AAB**	**ECN22A4AAB**	**ECN22A8AAB**	
		2		7A	**ECN22A1AAC**	**ECN22A2AAC**	**ECN22A4AAC**	**ECN22A8AAC**	
	575	1		3A	**ECN22A1AAB**	**ECN22A2AAB**	**ECN22A4AAB**	**ECN22A8AAB**	
		2		7A	**ECN22A1AAC**	**ECN22A2AAC**	**ECN22A4AAC**	**ECN22A8AAC**	
0	200	1	120	7A	**ECN2201AAC**	**ECN2202AAC**	**ECN2204AAC**	**ECN2208AAC**	**AN16BN0AC**
		3		15A	**ECN2201AAD**	**ECN2202AAD**	**ECN2204AAD**	**ECN2208AAD**	
	230	1		7A	**ECN2201AAC**	**ECN2202AAC**	**ECN2204AAC**	**ECN2208AAC**	
		3		15A	**ECN2201AAD**	**ECN2202AAD**	**ECN2204AAD**	**ECN2208AAD**	
	460	1		3A	**ECN2201AAB**	**ECN2202AAB**	**ECN2204AAB**	**ECN2208AAB**	
		3		7A	**ECN2201AAC**	**ECN2202AAC**	**ECN2204AAC**	**ECN2208AAC**	
		5		15A	**ECN2201AAD**	**ECN2202AAD**	**ECN2204AAD**	**ECN2208AAD**	
	575	1		3A	**ECN2201AAB**	**ECN2202AAB**	**ECN2204AAB**	**ECN2208AAB**	
		3		15A	**ECN2201AAD**	**ECN2202AAD**	**ECN2204AAD**	**ECN2208AAD**	
		5		7A	**ECN2201AAC**	**ECN2202AAC**	**ECN2204AAC**	**ECN2208AAC**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① For other magnet coil voltages substitute the eighth digit with appropriate digit based on modification table on **Page V10-T2-4**.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN2204AAC. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

Class ECN22—Combination Non-Reversing Starter—Circuit Breaker, continued

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
1	200	1	120	7 A	**ECN2211AAC**	**ECN2212AAC**	**ECN2214AAC**	**ECN2218AAC**	**AN16DN0AB**
		3		15 A	**ECN2211AAD**	**ECN2212AAD**	**ECN2214AAD**	**ECN2218AAD**	
		5		30 A	**ECN2211AAE**	**ECN2212AAE**	**ECN2214AAE**	**ECN2218AAE**	
		7-1/2		50 A	**ECN2211AAF**	**ECN2212AAF**	**ECN2214AAF**	**ECN2218AAF**	
	230	1		7 A	**ECN2211AAC**	**ECN2212AAC**	**ECN2214AAC**	**ECN2218AAC**	
		3		15 A	**ECN2211AAD**	**ECN2212AAD**	**ECN2214AAD**	**ECN2218AAD**	
		5		30 A	**ECN2211AAE**	**ECN2212AAE**	**ECN2214AAE**	**ECN2218AAE**	
		7-1/2		50 A	**ECN2211AAF**	**ECN2212AAF**	**ECN2214AAF**	**ECN2218AAF**	
	460	1		3 A	**ECN2211AAB**	**ECN2212AAB**	**ECN2214AAB**	**ECN2218AAB**	
		3		7 A	**ECN2211AAC**	**ECN2212AAC**	**ECN2214AAC**	**ECN2218AAC**	
		5		15 A	**ECN2211AAD**	**ECN2212AAD**	**ECN2214AAD**	**ECN2218AAD**	
		10		30 A	**ECN2211AAE**	**ECN2212AAE**	**ECN2214AAE**	**ECN2218AAE**	
	575	1		3 A	**ECN2211AAB**	**ECN2212AAB**	**ECN2214AAB**	**ECN2218AAB**	
		3		7 A	**ECN2211AAC**	**ECN2212AAC**	**ECN2214AAC**	**ECN2218AAC**	
		5		15 A	**ECN2211AAD**	**ECN2212AAD**	**ECN2214AAD**	**ECN2218AAD**	
		10		30 A	**ECN2211AAE**	**ECN2212AAE**	**ECN2214AAE**	**ECN2218AAE**	
2	200	10	120	50 A	**ECN2221AAF**	**ECN2222AAF**	**ECN2224AAF**	**ECN2228AAF**	**AN16GN0AB**
	230	10			**ECN2221AAF**	**ECN2222AAF**	**ECN2224AAF**	**ECN2228AAF**	
		15		70 A	**ECN2221AAW**	**ECN2222AAW**	**ECN2224AAW**	**ECN2228AAW**	
	460	25		50 A	**ECN2221AAF**	**ECN2222AAF**	**ECN2224AAF**	**ECN2228AAF**	
	575	15		30 A	**ECN2221AAE**	**ECN2222AAE**	**ECN2224AAE**	**ECN2228AAE**	
		25		50 A	**ECN2221AAF**	**ECN2222AAF**	**ECN2224AAF**	**ECN2228AAF**	
3	200	20	120	100 A	**ECN2231AAG**	**ECN2232AAG**	**ECN2234AAG**	**ECN2238AAG**	**AN16KN0A**
		25			**ECN2231AAX**	**ECN2232AAX**	**ECN2234AAX**	**ECN2238AAX**	
	230	25			**ECN2231AAG**	**ECN2232AAG**	**ECN2234AAG**	**ECN2238AAG**	
		30			**ECN2231AAX**	**ECN2232AAX**	**ECN2234AAX**	**ECN2238AAX**	
	460	50			**ECN2231AAG**	**ECN2232AAG**	**ECN2234AAG**	**ECN2238AAG**	
	575	30		50 A	**ECN2231AAF**	**ECN2232AAF**	**ECN2234AAF**	**ECN2238AAF**	
		50		100 A	**ECN2231AAG**	**ECN2232AAG**	**ECN2234AAG**	**ECN2238AAG**	
4	200	40	120	150 A	**ECN2241AAH**	**ECN2242AAH**	**ECN2244AAH**	**ECN2248AAH**	**AN16NN0A**
	230	50			**ECN2241AAH**	**ECN2242AAH**	**ECN2244AAH**	**ECN2248AAH**	
	460	100			**ECN2241AAH**	**ECN2242AAH**	**ECN2244AAH**	**ECN2248AAH**	
	575	100			**ECN2241AAH**	**ECN2242AAH**	**ECN2244AAH**	**ECN2248AAH**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① For other magnet coil voltages substitute the eighth digit with appropriate digit based on modification table on **Page V10-T2-4**.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN221**4**AAC. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

Class ECN22—Combination Non-Reversing Starter—Circuit Breaker, continued

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
5	200	50	120	250 A	**ECN2251AAJ**	**ECN2252AAJ**	**ECN2254AAJ**	**ECN2258AAJ**	**AN16SN0AB**
		75		400 A	**ECN2251AAK**	**ECN2252AAK**	**ECN2254AAK**	**ECN2258AAK**	
	230	60		250 A	**ECN2251AAJ**	**ECN2252AAJ**	**ECN2254AAJ**	**ECN2258AAJ**	
		100		400 A	**ECN2251AAK**	**ECN2252AAK**	**ECN2254AAK**	**ECN2258AAK**	
	460	125		250 A	**ECN2251AAJ**	**ECN2252AAJ**	**ECN2254AAJ**	**ECN2258AAJ**	
		200		400 A	**ECN2251AAK**	**ECN2252AAK**	**ECN2254AAK**	**ECN2258AAK**	
	575	150		250 A	**ECN2251AAJ**	**ECN2252AAJ**	**ECN2254AAJ**	**ECN2258AAJ**	
		200		400 A	**ECN2251AAK**	**ECN2252AAK**	**ECN2254AAK**	**ECN2258AAK**	
6	200	150	120	600 A	**ECN2261AAL**	**ECN2262AAL**	**ECN2263AAL** ⑤	**ECN2268AAL**	**AN16TN0AB**
	230	200			**ECN2261AAL**	**ECN2262AAL**	**ECN2263AAL** ⑤	**ECN2268AAL**	
	460	350			**ECN2261AAL**	**ECN2262AAL**	**ECN2263AAL** ⑤	**ECN2268AAL**	
		400		1200 A	**ECN2261AAP**	**ECN2262AAP**	**ECN2263AAP** ⑤	**ECN2268AAP**	
	575	400		600 A	**ECN2261AAL**	**ECN2262AAL**	**ECN2263AAL** ⑤	**ECN2268AAL**	
7	230	300	120	—	**ECN2271AAU**	**ECN2272AAU**	**ECN2273AAU** ⑤	**ECN2278AAU**	**AN16UN0AB**
	460	600		—	**ECN2271AAU**	**ECN2272AAU**	**ECN2273AAU** ⑤	**ECN2278AAU**	
	575	600		—	**ECN2271AAU**	**ECN2272AAU**	**ECN2273AAU** ⑤	**ECN2278AAU**	
8	230	450	120	—	**ECN2281AAU**	**ECN2282AAU**	**ECN2283AAU** ⑤	**ECN2288AAU**	**AN16VN0AB**
	460	900		—	**ECN2281AAU**	**ECN2282AAU**	**ECN2283AAU** ⑤	**ECN2288AAU**	
	575	900		—	**ECN2281AAU**	**ECN2282AAU**	**ECN2283AAU** ⑤	**ECN2288AAU**	
9	230	800	120	—	**ECN2291AAU**	**ECN2292AAU**	**ECN2293AAU** ⑤	**ECN2298AAU**	**AN16WN0A**
	460	1600		—	**ECN2291AAU**	**ECN2292AAU**	**ECN2293AAU** ⑤	**ECN2298AAU**	
	575	1600		—	**ECN2291AAU**	**ECN2292AAU**	**ECN2293AAU** ⑤	**ECN2298AAU**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① For other magnet coil voltages substitute the eighth digit with appropriate digit based on modification table on **Page V10-T2-4**.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN2254AAJ. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

⑤ Type 4 (painted steel) sizes 6–9.

Class ECN22—Special Enclosure Combination Non-Reversing Starter—Circuit Breaker

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial ③ External Reset Catalog Number	Type 12 Dust-Tight Industrial ③ Internal Reset Catalog Number	Component Starter (Open) Catalog Number
Horizontal Enclosure									
1	200	1	120	7 A	**ECN2211AAC-E13**	**ECN2212AAC-E13**	**ECN2214AAC-E13**	**ECN2218AAC-E13**	**AN16DN0AB**
		3		15 A	**ECN2211AAD-E13**	**ECN2212AAD-E13**	**ECN2214AAD-E13**	**ECN2218AAD-E13**	
		5		30 A	**ECN2211AAE-E13**	**ECN2212AAE-E13**	**ECN2214AAE-E13**	**ECN2218AAE-E13**	
		7-1/2		50 A	**ECN2211AAF-E13**	**ECN2212AAF-E13**	**ECN2214AAF-E13**	**ECN2218AAF-E13**	
	230	1		7 A	**ECN2211AAC-E13**	**ECN2212AAC-E13**	**ECN2214AAC-E13**	**ECN2218AAC-E13**	
		3		15 A	**ECN2211AAD-E13**	**ECN2212AAD-E13**	**ECN2214AAD-E13**	**ECN2218AAD-E13**	
		5		30 A	**ECN2211AAE-E13**	**ECN2212AAE-E13**	**ECN2214AAE-E13**	**ECN2218AAE-E13**	
		7-1/2		50 A	**ECN2211AAF-E13**	**ECN2212AAF-E13**	**ECN2214AAF-E13**	**ECN2218AAF-E13**	
	460	1		3A	**ECN2211AAB-E13**	**ECN2212AAB-E13**	**ECN2214AAB-E13**	**ECN2218AAB-E13**	
		3		7 A	**ECN2211AAC-E13**	**ECN2212AAC-E13**	**ECN2214AAC-E13**	**ECN2218AAC-E13**	
		5		15 A	**ECN2211AAD-E13**	**ECN2212AAD-E13**	**ECN2214AAD-E13**	**ECN2218AAD-E13**	
		10		30 A	**ECN2211AAE-E13**	**ECN2212AAE-E13**	**ECN2214AAE-E13**	**ECN2218AAE-E13**	
	575	1		3 A	**ECN2211AAB-E13**	**ECN2212AAB-E13**	**ECN2214AAB-E13**	**ECN2218AAB-E13**	
		3		7 A	**ECN2211AAC-E13**	**ECN2212AAC-E13**	**ECN2214AAC-E13**	**ECN2218AAC-E13**	
		5		15 A	**ECN2211AAD-E13**	**ECN2212AAD-E13**	**ECN2214AAD-E13**	**ECN2218AAD-E13**	
		10		30 A	**ECN2211AAE-E13**	**ECN2212AAE-E13**	**ECN2214AAE-E13**	**ECN2218AAE-E13**	
2	200	10	120	50 A	**ECN2221AAF-E13**	**ECN2222AAF-E13**	**ECN2224AAF-E13**	**ECN2228AAF-E13**	**AN16GN0AB**
	230	10			**ECN2221AAF-E13**	**ECN2222AAF-E13**	**ECN2224AAF-E13**	**ECN2228AAF-E13**	
		15		70 A	**ECN2221AAW-E13**	**ECN2222AAW-E13**	**ECN2224AAW-E13**	**ECN2228AAW-E13**	
	460	25		50 A	**ECN2221AAF-E13**	**ECN2222AAF-E13**	**ECN2224AAF-E13**	**ECN2228AAF-E13**	
	575	15		30 A	**ECN2221AAE-E13**	**ECN2222AAE-E13**	**ECN2224AAE-E13**	**ECN2228AAE-E13**	
		25		50 A	**ECN2221AAF-E13**	**ECN2222AAF-E13**	**ECN2224AAF-E13**	**ECN2228AAF-E13**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① For other magnet coil voltages substitute the eighth digit with appropriate digit based on modification table on **Page V10-T2-4**.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN221**2**AAC-E13. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ To order Type 12 enclosures with safety door interlock add modification **E11**.

Class ECN22—Special Enclosure Combination Non-Reversing Starter—Circuit Breaker, continued

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial ③ External Reset Catalog Number	Type 12 Dust-Tight Industrial ③ Internal Reset Catalog Number	Component Starter (Open) Catalog Number
Oversize Enclosure—without Control Transformer									
0	200	1	120	7 A	**ECN2201AAC-E3**	**ECN2202AAC-E3**	**ECN2204AAC-E3**	**ECN2208AAC-E3**	**AN16BN0AC**
		3		15 A	**ECN2201AAD-E3**	**ECN2202AAD-E3**	**ECN2204AAD-E3**	**ECN2208AAD-E3**	
	230	1		7 A	**ECN2201AAC-E3**	**ECN2202AAC-E3**	**ECN2204AAC-E3**	**ECN2208AAC-E3**	
		3		15 A	**ECN2201AAD-E3**	**ECN2202AAD-E3**	**ECN2204AAD-E3**	**ECN2208AAD-E3**	
	460	1		3 A	**ECN2201AAB-E3**	**ECN2202AAB-E3**	**ECN2204AAB-E3**	**ECN2208AAB-E3**	
		3		7 A	**ECN2201AAC-E3**	**ECN2202AAC-E3**	**ECN2204AAC-E3**	**ECN2208AAC-E3**	
		5		15 A	**ECN2201AAD-E3**	**ECN2202AAD-E3**	**ECN2204AAD-E3**	**ECN2208AAD-E3**	
	575	1		3 A	**ECN2201AAB-E3**	**ECN2202AAB-E3**	**ECN2204AAB-E3**	**ECN2208AAB-E3**	
		3		15 A	**ECN2201AAD-E3**	**ECN2202AAD-E3**	**ECN2204AAD-E3**	**ECN2208AAD-E3**	
		5		7 A	**ECN2201AAC-E3**	**ECN2202AAC-E3**	**ECN2204AAC-E3**	**ECN2208AAC-E3**	
1	200	1	120	7 A	**ECN2211AAC-E3**	**ECN2212AAC-E3**	**ECN2214AAC-E3**	**ECN2218AAC-E3**	**AN16DN0AB**
		3		15 A	**ECN2211AAD-E3**	**ECN2212AAD-E3**	**ECN2214AAD-E3**	**ECN2218AAD-E3**	
		5		30 A	**ECN2211AAE-E3**	**ECN2212AAE-E3**	**ECN2214AAE-E3**	**ECN2218AAE-E3**	
		7-1/2		50 A	**ECN2211AAF-E3**	**ECN2212AAF-E3**	**ECN2214AAF-E3**	**ECN2218AAF-E3**	
	230	1		7 A	**ECN2211AAC-E3**	**ECN2212AAC-E3**	**ECN2214AAC-E3**	**ECN2218AAC-E3**	
		3		15 A	**ECN2211AAD-E3**	**ECN2212AAD-E3**	**ECN2214AAD-E3**	**ECN2218AAD-E3**	
		5		30 A	**ECN2211AAE-E3**	**ECN2212AAE-E3**	**ECN2214AAE-E3**	**ECN2218AAE-E3**	
		7-1/2		50 A	**ECN2211AAF-E3**	**ECN2212AAF-E3**	**ECN2214AAF-E3**	**ECN2218AAF-E3**	
	460	1		3 A	**ECN2211AAB-E3**	**ECN2212AAB-E3**	**ECN2214AAB-E3**	**ECN2218AAB-E3**	
		3		7 A	**ECN2211AAC-E3**	**ECN2212AAC-E3**	**ECN2214AAC-E3**	**ECN2218AAC-E3**	
		5		15 A	**ECN2211AAD-E3**	**ECN2212AAD-E3**	**ECN2214AAD-E3**	**ECN2218AAD-E3**	
		10		30 A	**ECN2211AAE-E3**	**ECN2212AAE-E3**	**ECN2214AAE-E3**	**ECN2218AAE-E3**	
	575	1		3 A	**ECN2211AAB-E3**	**ECN2212AAB-E3**	**ECN2214AAB-E3**	**ECN2218AAB-E3**	
		3		7 A	**ECN2211AAC-E3**	**ECN2212AAC-E3**	**ECN2214AAC-E3**	**ECN2218AAC-E3**	
		5		15 A	**ECN2211AAD-E3**	**ECN2212AAD-E3**	**ECN2214AAD-E3**	**ECN2218AAD-E3**	
		10		30 A	**ECN2211AAE-E3**	**ECN2212AAE-E3**	**ECN2214AAE-E3**	**ECN2218AAE-E3**	
2	200	10	120	50 A	**ECN2221AAF-E3**	**ECN2222AAF-E3**	**ECN2224AAF-E3**	**ECN2228AAF-E3**	**AN16GN0AB**
	230	10			**ECN2221AAF-E3**	**ECN2222AAF-E3**	**ECN2224AAF-E3**	**ECN2228AAF-E3**	
		15		70 A	**ECN2221AAW-E3**	**ECN2222AAW-E3**	**ECN2224AAW-E3**	**ECN2228AAW-E3**	
	460	25		50 A	**ECN2221AAF-E3**	**ECN2222AAF-E3**	**ECN2224AAF-E3**	**ECN2228AAF-E3**	
	575	15		30 A	**ECN2221AAE-E3**	**ECN2222AAE-E3**	**ECN2224AAE-E3**	**ECN2228AAE-E3**	
		25		50 A	**ECN2221AAF-E3**	**ECN2222AAF-E3**	**ECN2224AAF-E3**	**ECN2228AAF-E3**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① For other magnet coil voltages substitute the eighth digit with appropriate digit based on modification table on **Page V10-T2-4**.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN220**2**AAC-E3. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ To order Type 12 enclosures with safety door interlock add modification **E11**.

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Class ECN23—Combination Reversing Starter—Circuit Breaker ①

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ②	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ③ Catalog Number	Type 12 Dust-Tight Industrial External Reset ④⑤ Catalog Number	Component Starter (Open) Catalog Number
00	200	1	120	7 A	**ECN23A1AAC**	**ECN23A2AAC**	**ECN23A4AAC**	**ECN23A8AAC**	**AN56AN0AC**
		1-1/2		15 A	**ECN23A1AAD**	**ECN23A2AAD**	**ECN23A4AAD**	**ECN23A8AAD**	
	230	1		7 A	**ECN23A1AAC**	**ECN23A2AAC**	**ECN23A4AAC**	**ECN23A8AAC**	
		1-1/2		15 A	**ECN23A1AAD**	**ECN23A2AAD**	**ECN23A4AAD**	**ECN23A8AAD**	
	460	1		3 A	**ECN23A1AAB**	**ECN23A2AAB**	**ECN23A4AAB**	**ECN23A8AAB**	
		2		7 A	**ECN23A1AAC**	**ECN23A2AAC**	**ECN23A4AAC**	**ECN23A8AAC**	
	575	1		3 A	**ECN23A1AAB**	**ECN23A2AAB**	**ECN23A4AAB**	**ECN23A8AAB**	
		2		7 A	**ECN23A1AAC**	**ECN23A2AAC**	**ECN23A4AAC**	**ECN23A8AAC**	
0	200	1	120	7 A	**ECN2301AAC**	**ECN2302AAC**	**ECN2304AAC**	**ECN2308AAC**	**AN56BN0AC**
		3		15 A	**ECN2301AAD**	**ECN2302AAD**	**ECN2304AAD**	**ECN2308AAD**	
	230	1		7 A	**ECN2301AAC**	**ECN2302AAC**	**ECN2304AAC**	**ECN2308AAC**	
		3		15 A	**ECN2301AAD**	**ECN2302AAD**	**ECN2304AAD**	**ECN2308AAD**	
	460	1		3 A	**ECN2301AAB**	**ECN2302AAB**	**ECN2304AAB**	**ECN2308AAB**	
		3		7 A	**ECN2301AAC**	**ECN2302AAC**	**ECN2304AAC**	**ECN2308AAC**	
		5		15 A	**ECN2301AAD**	**ECN2302AAD**	**ECN2304AAD**	**ECN2308AAD**	
	575	1		3 A	**ECN2301AAB**	**ECN2302AAB**	**ECN2304AAB**	**ECN2308AAB**	
		3		15 A	**ECN2301AAD**	**ECN2302AAD**	**ECN2304AAD**	**ECN2308AAD**	
		5		7 A	**ECN2301AAC**	**ECN2302AAC**	**ECN2304AAC**	**ECN2308AAC**	
1	200	1	120	7 A	**ECN2311AAC**	**ECN2312AAC**	**ECN2314AAC**	**ECN2318AAC**	**AN56DN0AB**
		3		15 A	**ECN2311AAD**	**ECN2312AAD**	**ECN2314AAD**	**ECN2318AAD**	
		5		30 A	**ECN2311AAE**	**ECN2312AAE**	**ECN2314AAE**	**ECN2318AAE**	
		7-1/2		50 A	**ECN2311AAF**	**ECN2312AAF**	**ECN2314AAF**	**ECN2318AAF**	
	230	1		7 A	**ECN2311AAC**	**ECN2312AAC**	**ECN2314AAC**	**ECN2318AAC**	
		3		15 A	**ECN2311AAD**	**ECN2312AAD**	**ECN2314AAD**	**ECN2318AAD**	
		5		30 A	**ECN2311AAE**	**ECN2312AAE**	**ECN2314AAE**	**ECN2318AAE**	
		7-1/2		50 A	**ECN2311AAF**	**ECN2312AAF**	**ECN2314AAF**	**ECN2318AAF**	
	460	1		3 A	**ECN2311AAB**	**ECN2312AAB**	**ECN2314AAB**	**ECN2318AAB**	
		3		7 A	**ECN2311AAC**	**ECN2312AAC**	**ECN2314AAC**	**ECN2318AAC**	
		5		15 A	**ECN2311AAD**	**ECN2312AAD**	**ECN2314AAD**	**ECN2318AAD**	
		10		30 A	**ECN2311AAE**	**ECN2312AAE**	**ECN2314AAE**	**ECN2318AAE**	
	575	1		3 A	**ECN2311AAB**	**ECN2312AAB**	**ECN2314AAB**	**ECN2318AAB**	
		3		7 A	**ECN2311AAC**	**ECN2312AAC**	**ECN2314AAC**	**ECN2318AAC**	
		5		15 A	**ECN2311AAD**	**ECN2312AAD**	**ECN2314AAD**	**ECN2318AAD**	
		10		30 A	**ECN2311AAE**	**ECN2312AAE**	**ECN2314AAE**	**ECN2318AAE**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① 100,000 rms short-circuit–480 V; 25,000 rms short-circuit–600 V.

② For other magnet coil voltages substitute the eighth digit with appropriate digit based on modification table on **Page V10-T2-4**.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN2304AAC. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

④ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

⑤ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

Class ECN23—Combination Reversing Starter—Circuit Breaker, continued ①

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ②	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ③ Catalog Number	Type 12 Dust-Tight Industrial External Reset ④⑤ Catalog Number	Component Starter (Open) Catalog Number
2	200	10	120	50 A	**ECN2321AAF**	**ECN2322AAF**	**ECN2324AAF**	**ECN2328AAF**	**AN56GN0AB**
	230	10			**ECN2321AAF**	**ECN2322AAF**	**ECN2324AAF**	**ECN2328AAF**	
		15		70 A	**ECN2321AAW**	**ECN2322AAW**	**ECN2324AAW**	**ECN2328AAW**	
	460	25		50 A	**ECN2321AAF**	**ECN2322AAF**	**ECN2324AAF**	**ECN2328AAF**	
	575	15		30 A	**ECN2321AAE**	**ECN2322AAE**	**ECN2324AAE**	**ECN2328AAE**	
		25		50 A	**ECN2321AAF**	**ECN2322AAF**	**ECN2324AAF**	**ECN2328AAF**	
3	200	20	120	100 A	**ECN2331AAG**	**ECN2332AAG**	**ECN2334AAG**	**ECN2338AAG**	**AN56KN0A**
		25			**ECN2331AAX**	**ECN2332AAX**	**ECN2334AAX**	**ECN2338AAX**	
	230	25			**ECN2331AAG**	**ECN2332AAG**	**ECN2334AAG**	**ECN2338AAG**	
		30			**ECN2331AAX**	**ECN2332AAX**	**ECN2334AAX**	**ECN2338AAX**	
	460	50			**ECN2331AAG**	**ECN2332AAG**	**ECN2334AAG**	**ECN2338AAG**	
	575	30		50 A	**ECN2331AAF**	**ECN2332AAF**	**ECN2334AAF**	**ECN2338AAF**	
		50		100 A	**ECN2331AAG**	**ECN2332AAG**	**ECN2334AAG**	**ECN2338AAG**	
4	200	40	120	150 A	**ECN2341AAH**	**ECN2342AAH**	**ECN2344AAH**	**ECN2348AAH**	**AN56NN0A**
	230	50			**ECN2341AAH**	**ECN2342AAH**	**ECN2344AAH**	**ECN2348AAH**	
	460	100			**ECN2341AAH**	**ECN2342AAH**	**ECN2344AAH**	**ECN2348AAH**	
	575	100			**ECN2341AAH**	**ECN2342AAH**	**ECN2344AAH**	**ECN2348AAH**	
5	200	50	230	250 A	**ECN2351AAJ**	**ECN2352AAJ**	**ECN2354AAJ**	**ECN2358AAJ**	**AN56SN0AB**
		75		400 A	**ECN2351AAK**	**ECN2352AAK**	**ECN2354AAK**	**ECN2358AAK**	
	230	60		250 A	**ECN2351AAJ**	**ECN2352AAJ**	**ECN2354AAJ**	**ECN2358AAJ**	
		100		400 A	**ECN2351AAK**	**ECN2352AAK**	**ECN2354AAK**	**ECN2358AAK**	
	460	125		250 A	**ECN2351AAJ**	**ECN2352AAJ**	**ECN2354AAJ**	**ECN2358AAJ**	
		200		400 A	**ECN2351AAK**	**ECN2352AAK**	**ECN2354AAK**	**ECN2358AAK**	
	575	150		250 A	**ECN2351AAJ**	**ECN2352AAJ**	**ECN2354AAJ**	**ECN2358AAJ**	
		200		400 A	**ECN2351AAK**	**ECN2352AAK**	**ECN2354AAK**	**ECN2358AAK**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① 100,000 rms short-circuit–480 V; 25,000 rms short-circuit–600 V.

② For other magnet coil voltages substitute the eighth digit with appropriate digit based on modification table on **Page V10-T2-4**.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN232**4**AAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

④ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

⑤ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

2

Class ECN23—Combination Reversing Starter—Circuit Breaker, continued ①

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ②	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ③ Catalog Number	Type 12 Dust-Tight Industrial External Reset ④⑤ Catalog Number	Component Starter (Open) Catalog Number
6	200	150	120	600 A	**ECN2361AAL**	**ECN2362AAL**	**ECN2363AAL** ⑥	**ECN2368AAL**	**AN56TN0AB**
	230	200			**ECN2361AAL**	**ECN2362AAL**	**ECN2363AAL** ⑥	**ECN2368AAL**	
	460	350			**ECN2361AAL**	**ECN2362AAL**	**ECN2363AAL** ⑥	**ECN2368AAL**	
		400		1200 A	**ECN2361AAP**	**ECN2362AAP**	**ECN2363AAP** ⑥	**ECN2368AAP**	
	575	400		600 A	**ECN2361AAL**	**ECN2362AAL**	**ECN2363AAL** ⑥	**ECN2368AAL**	
7	230	300	120	—	**ECN2371AAU** ⑦	**ECN2372AAU** ⑦	**ECN2373AAU** ⑥⑦	**ECN2378AAU** ⑦	**AN56UN0AB**
	460	600		—	**ECN2371AAU** ⑦	**ECN2372AAU** ⑦	**ECN2373AAU** ⑥⑦	**ECN2378AAU** ⑦	
	575	600		—	**ECN2371AAU** ⑦	**ECN2372AAU** ⑦	**ECN2373AAU** ⑥⑦	**ECN2378AAU** ⑦	
8	230	450	120	—	**ECN2381AAU** ⑦	**ECN2382AAU** ⑦	**ECN2383AAU** ⑥⑦	**ECN2388AAU** ⑦	**AN56VN0AB**
	460	900		—	**ECN2381AAU** ⑦	**ECN2382AAU** ⑦	**ECN2383AAU** ⑥⑦	**ECN2388AAU** ⑦	
	575	900		—	**ECN2381AAU** ⑦	**ECN2382AAU** ⑦	**ECN2383AAU** ⑥⑦	**ECN2388AAU** ⑦	
9	230	800	120	—	**ECN2391AAU** ⑦	**ECN2392AAU** ⑦	**ECN2393AAU** ⑥⑦	**ECN2398AAU** ⑦	**AN56WN0A**
	460	1600		—	**ECN2391AAU** ⑦	**ECN2392AAU** ⑦	**ECN2393AAU** ⑥⑦	**ECN2398AAU** ⑦	
	575	1600		—	**ECN2391AAU** ⑦	**ECN2392AAU** ⑦	**ECN2393AAU** ⑥⑦	**ECN2398AAU** ⑦	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① 100,000 rms short-circuit–480 V; 25,000 rms short-circuit–600 V.

② For other magnet coil voltages substitute the eighth digit with appropriate digit based on modification table on **Page V10-T2-4**.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN2363AAL. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

④ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

⑤ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

⑥ Type 4 (painted steel) sizes 6–9.

⑦ Provide FLA to size disconnect properly.

Class ECN24—Combination Non-Reversing Starter—Circuit Breaker with CPT ①

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ②	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ③ Catalog Number	Type 12 Dust-Tight Industrial External Reset ④⑤ Catalog Number	Component Starter (Open) Catalog Number
00	200	1	120	7 A	**ECN24A1EAC**	**ECN24A2EAC**	**ECN24A4EAC**	**ECN24A8EAC**	**AN16AN0AC**
		1-1/2		15 A	**ECN24A1EAD**	**ECN24A2EAD**	**ECN24A4EAD**	**ECN24A8EAD**	
	230	1		7 A	**ECN24A1BAC**	**ECN24A2BAC**	**ECN24A4BAC**	**ECN24A8BAC**	
		1-1/2		15 A	**ECN24A1BAD**	**ECN24A2BAD**	**ECN24A4BAD**	**ECN24A8BAD**	
	460	1		3 A	**ECN24A1CAB**	**ECN24A2CAB**	**ECN24A4CAB**	**ECN24A8CAB**	
		2		7 A	**ECN24A1CAC**	**ECN24A2CAC**	**ECN24A4CAC**	**ECN24A8CAC**	
	575	1		3 A	**ECN24A1DAB**	**ECN24A2DAB**	**ECN24A4DAB**	**ECN24A8DAB**	
		2		7 A	**ECN24A1DAC**	**ECN24A2DAC**	**ECN24A4DAC**	**ECN24A8DAC**	
0	200	1	120	7 A	**ECN2401EAC**	**ECN2402EAC**	**ECN2404EAC**	**ECN2408EAC**	**AN16BN0AC**
		3		15 A	**ECN2401EAD**	**ECN2402EAD**	**ECN2404EAD**	**ECN2408EAD**	
	230	1		7A	**ECN2401BAC**	**ECN2402BAC**	**ECN2404BAC**	**ECN2408BAC**	
		3		15 A	**ECN2401BAD**	**ECN2402BAD**	**ECN2404BAD**	**ECN2408BAD**	
	460	1		3 A	**ECN2401CAB**	**ECN2402CAB**	**ECN2404CAB**	**ECN2408CAB**	
		3		7 A	**ECN2401CAC**	**ECN2402CAC**	**ECN2404CAC**	**ECN2408CAC**	
		5		15 A	**ECN2401CAD**	**ECN2402CAD**	**ECN2404CAD**	**ECN2408CAD**	
	575	1		3 A	**ECN2401DAB**	**ECN2402DAB**	**ECN2404DAB**	**ECN2408DAB**	
		3		15 A	**ECN2401DAD**	**ECN2402DAD**	**ECN2404DAD**	**ECN2408DAD**	
		5		7 A	**ECN2401DAC**	**ECN2402DAC**	**ECN2404DAC**	**ECN2408DAC**	
1	200	1	120	7 A	**ECN2411EAC**	**ECN2412EAC**	**ECN2414EAC**	**ECN2418EAC**	**AN16DN0AB**
		3		15 A	**ECN2411EAD**	**ECN2412EAD**	**ECN2414EAD**	**ECN2418EAD**	
		5		30 A	**ECN2411EAE**	**ECN2412EAE**	**ECN2414EAE**	**ECN2418EAE**	
		7-1/2		50 A	**ECN2411EAF**	**ECN2412EAF**	**ECN2414EAF**	**ECN2418EAF**	
	230	1		7 A	**ECN2411BAC**	**ECN2412BAC**	**ECN2414BAC**	**ECN2418BAC**	
		3		15 A	**ECN2411BAD**	**ECN2412BAD**	**ECN2414BAD**	**ECN2418BAD**	
		5		30 A	**ECN2411BAE**	**ECN2412BAE**	**ECN2414BAE**	**ECN2418BAE**	
		7-1/2		50 A	**ECN2411BAF**	**ECN2412BAF**	**ECN2414BAF**	**ECN2418BAF**	
	460	1		3 A	**ECN2411CAB**	**ECN2412CAB**	**ECN2414CAB**	**ECN2418CAB**	
		3		7 A	**ECN2411CAC**	**ECN2412CAC**	**ECN2414CAC**	**ECN2418CAC**	
		5		15 A	**ECN2411CAD**	**ECN2412CAD**	**ECN2414CAD**	**ECN2418CAD**	
		10		30 A	**ECN2411CAE**	**ECN2412CAE**	**ECN2414CAE**	**ECN2418CAE**	
	575	1		3 A	**ECN2411DAB**	**ECN2412DAB**	**ECN2414DAB**	**ECN2418DAB**	
		3		7 A	**ECN2411DAC**	**ECN2412DAC**	**ECN2414DAC**	**ECN2418DAC**	
		5		15 A	**ECN2411DAD**	**ECN2412DAD**	**ECN2414DAD**	**ECN2418DAD**	
		10		30 A	**ECN2411DAE**	**ECN2412DAE**	**ECN2414DAE**	**ECN2418DAE**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① 100,000 rms short-circuit–480 V; 25,000 rms short-circuit–600 V.

② For other magnet coil voltages substitute the eighth digit with appropriate digit based on modification table on **Page V10-T2-4**.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN24A**4**EAC. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

④ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code R5.

⑤ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification E11.

2

Class ECN24—Combination Non-Reversing Starter—Circuit Breaker with CPT, continued ①

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ②	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ③ Catalog Number	Type 12 Dust-Tight Industrial External Reset ④⑤ Catalog Number	Component Starter (Open) Catalog Number
2	200	10	120	50 A	**ECN2421EAF**	**ECN2422EAF**	**ECN2424EAF**	**ECN2428EAF**	**AN16GN0AB**
	230	10			**ECN2421BAF**	**ECN2422BAF**	**ECN2424BAF**	**ECN2428BAF**	
		15		70 A	**ECN2421BAW**	**ECN2422BAW**	**ECN2424BAW**	**ECN2428BAW**	
	460	25		50 A	**ECN2421CAF**	**ECN2422CAF**	**ECN2424CAF**	**ECN2428CAF**	
	575	15		30 A	**ECN2421CAE**	**ECN2422CAE**	**ECN2424CAE**	**ECN2428CAE**	
		25		50 A	**ECN2421DAF**	**ECN2422DAF**	**ECN2424DAF**	**ECN2428DAF**	
3	200	20	120	100 A	**ECN2431EAG**	**ECN2432EAG**	**ECN2434EAG**	**ECN2438EAG**	**AN16KN0A**
		25			**ECN2431EAX**	**ECN2432EAX**	**ECN2434EAX**	**ECN2438EAX**	
	230	25			**ECN2431BAG**	**ECN2432BAG**	**ECN2434BAG**	**ECN2438BAG**	
		30			**ECN2431BAX**	**ECN2432BAX**	**ECN2434BAX**	**ECN2438BAX**	
	460	50			**ECN2431CAG**	**ECN2432CAG**	**ECN2434CAG**	**ECN2438CAG**	
	575	30		50 A	**ECN2431DAF**	**ECN2432DAF**	**ECN2434DAF**	**ECN2438DAF**	
		50		100 A	**ECN2431DAG**	**ECN2432DAG**	**ECN2434DAG**	**ECN2438DAG**	
4	200	40	120	150 A	**ECN2441EAH**	**ECN2442EAH**	**ECN2444EAH**	**ECN2448EAH**	**AN16NN0A**
	230	50			**ECN2441BAH**	**ECN2442BAH**	**ECN2444BAH**	**ECN2448BAH**	
	460	100			**ECN2441CAH**	**ECN2442CAH**	**ECN2444CAH**	**ECN2448CAH**	
	575	100			**ECN2441DAH**	**ECN2442DAH**	**ECN2444DAH**	**ECN2448DAH**	
5	200	50	120	250 A	**ECN2451EAJ**	**ECN2452EAJ**	**ECN2454EAJ**	**ECN2458EAJ**	**AN16SN0AB**
		75		400 A	**ECN2451EAK**	**ECN2452EAK**	**ECN2454EAK**	**ECN2458EAK**	
	230	60		250 A	**ECN2451BAJ**	**ECN2452BAJ**	**ECN2454BAJ**	**ECN2458BAJ**	
		100		400 A	**ECN2451BAK**	**ECN2452BAK**	**ECN2454BAK**	**ECN2458BAK**	
	460	125		250 A	**ECN2451CAJ**	**ECN2452CAJ**	**ECN2454CAJ**	**ECN2458CAJ**	
		200		400 A	**ECN2451CAK**	**ECN2452CAK**	**ECN2454CAK**	**ECN2458CAK**	
	575	150		250 A	**ECN2451DAJ**	**ECN2452DAJ**	**ECN2454DAJ**	**ECN2458DAJ**	
		200		400 A	**ECN2451DAK**	**ECN2452DAK**	**ECN2454DAK**	**ECN2458DAK**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① 100,000 rms short-circuit–480 V; 25,000 rms short-circuit–600 V.

② For other magnet coil voltages substitute the eighth digit with appropriate digit based on modification table on **Page V10-T2-4**.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN242**4**EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

④ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code R5.

⑤ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification E11.

Class ECN24—Combination Non-Reversing Starter—Circuit Breaker with CPT, continued ①

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ②	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ③ Catalog Number	Type 12 Dust-Tight Industrial External Reset ④⑤ Catalog Number	Component Starter (Open) Catalog Number
6	200	150	120	600 A	**ECN2461EAL**	**ECN2462EAL**	**ECN2463EAL** ⑥	**ECN2468EAL**	**AN16TN0AB**
	230	200			**ECN2461BAL**	**ECN2462BAL**	**ECN2463BAL** ⑥	**ECN2468BAL**	
	460	350			**ECN2461CAL**	**ECN2462CAL**	**ECN2463CAL** ⑥	**ECN2468CAL**	
		400		1200 A	**ECN2461CAP**	**ECN2462CAP**	**ECN2463CAP** ⑥	**ECN2468CAP**	
	575	400		600 A	**ECN2461DAL**	**ECN2462DAL**	**ECN2463DAL** ⑥	**ECN2468DAL**	
7	230	300	120	—	**ECN2471BAU** ⑦	**ECN2472BAU** ⑦	**ECN2473BAU** ⑥⑦	**ECN2478BAU** ⑦	**AN16UN0AB**
	460	600		—	**ECN2471CAU** ⑦	**ECN2472CAU** ⑦	**ECN2473CAU** ⑥⑦	**ECN2478CAU** ⑦	
	575	600		—	**ECN2471DAU** ⑦	**ECN2472DAU** ⑦	**ECN2473DAU** ⑥⑦	**ECN2478DAU** ⑦	
8	230	450	120	—	**ECN2481BAU** ⑦	**ECN2482BAU** ⑦	**ECN2483BAU** ⑥⑦	**ECN2488BAU** ⑦	**AN16VN0AB**
	460	900		—	**ECN2481CAU** ⑦	**ECN2482CAU** ⑦	**ECN2483CAU** ⑥⑦	**ECN2488CAU** ⑦	
	575	900		—	**ECN2481DAU** ⑦	**ECN2482DAU** ⑦	**ECN2483DAU** ⑥⑦	**ECN2488DAU** ⑦	
9	230	800	120	—	**ECN2491BAU** ⑦	**ECN2492BAU** ⑦	**ECN2493BAU** ⑥⑦	**ECN2498BAU** ⑦	**AN16WN0A**
	460	1600		—	**ECN2491CAU** ⑦	**ECN2492CAU** ⑦	**ECN2493CAU** ⑥⑦	**ECN2498CAU** ⑦	
	575	1600		—	**ECN2491DAU** ⑦	**ECN2492DAU** ⑦	**ECN2493DAU** ⑥⑦	**ECN2498DAU** ⑦	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see Modification Codes in **Tab 15**, or solid-state overload codes on **Page V10-T2-5**.

① 100,000 rms short-circuit–480 V; 25,000 rms short-circuit–600 V.

② For other magnet coil voltages substitute the eighth digit with appropriate digit based on modification table on **Page V10-T2-4**.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN246**3**EAL. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

④ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code R5.

⑤ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification E11.

⑥ Type 4 (painted steel) sizes 6–9.

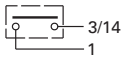
⑦ Provide FLA to size disconnect properly.

Wiring Diagrams

Non-Reversing Starter—Single- and Three-Phase Non-Combination

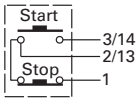
Remote Pilot Devices

Two-Wire Control

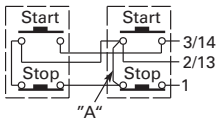


Not for Use with Auto Reset OL Relays

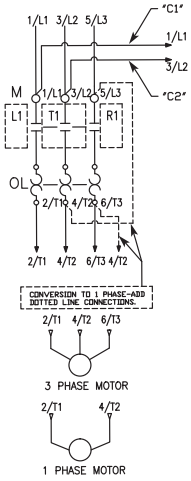
Three-Wire Control



When More than One Pushbutton Station is Used, Omit Connector "A" and Connect per Sketch Below



Connections for Non-Reversing Starter



Non-Reversing Starter—Combination

Connections for Control Stations

Local Control

Figure A
START/STOP Pushbuttons

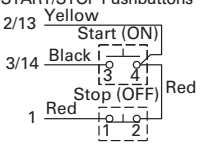


Figure B
START/STOP Selector Switch

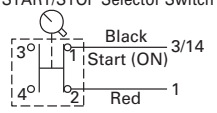


Figure C
Three-Position Selector Switch

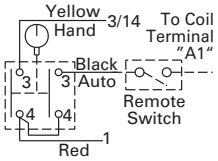


Figure D
Two-Position Selector Switch

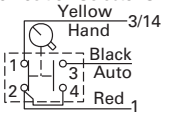


Figure E
Pilot Light (Motor RUN)
Connect to Coil Terminals "A1" and "A2"

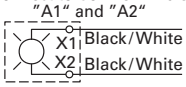
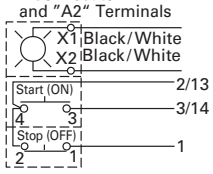
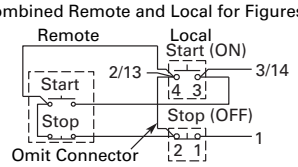


Figure F
START/STOP with Pilot Light
Connect to "A1" and "A2" Terminals



Combined Remote and Local for Figures 1 and 2



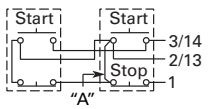
Remote Control

Two-Wire Control

Not for Use with Auto Reset OL Relays

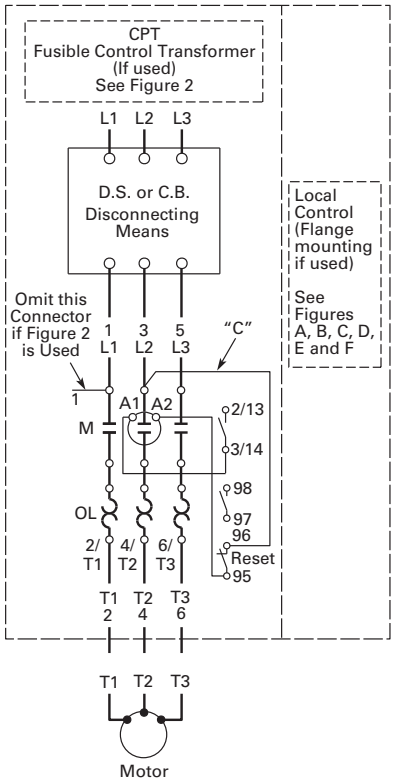
Three-Wire Control

When More than One Pushbutton Station is Used Omit Connector "A" and Connect per Sketch Below



Connections for Starters

Figure 1
Front View Diagram

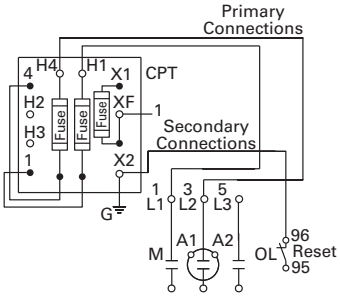


Separate Control

Remove Wire "C" if Supplied and Connect Separate Control Lines to the Number 1 Terminal on the Remote Pilot Device and to the Number 96 Terminal on the Overload Relay

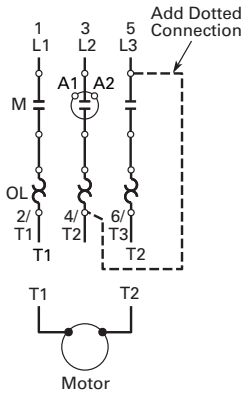
Figure 2
Fusible Control Transformer

Remove Wire "C" (Figure 1) if Used and Connect as Shown Below (All other starter wires remain as shown in Figure 1)



Connections for Dual Voltage Rated Transformer—See Transformer Nameplate

Field Conversion to Single-Phase



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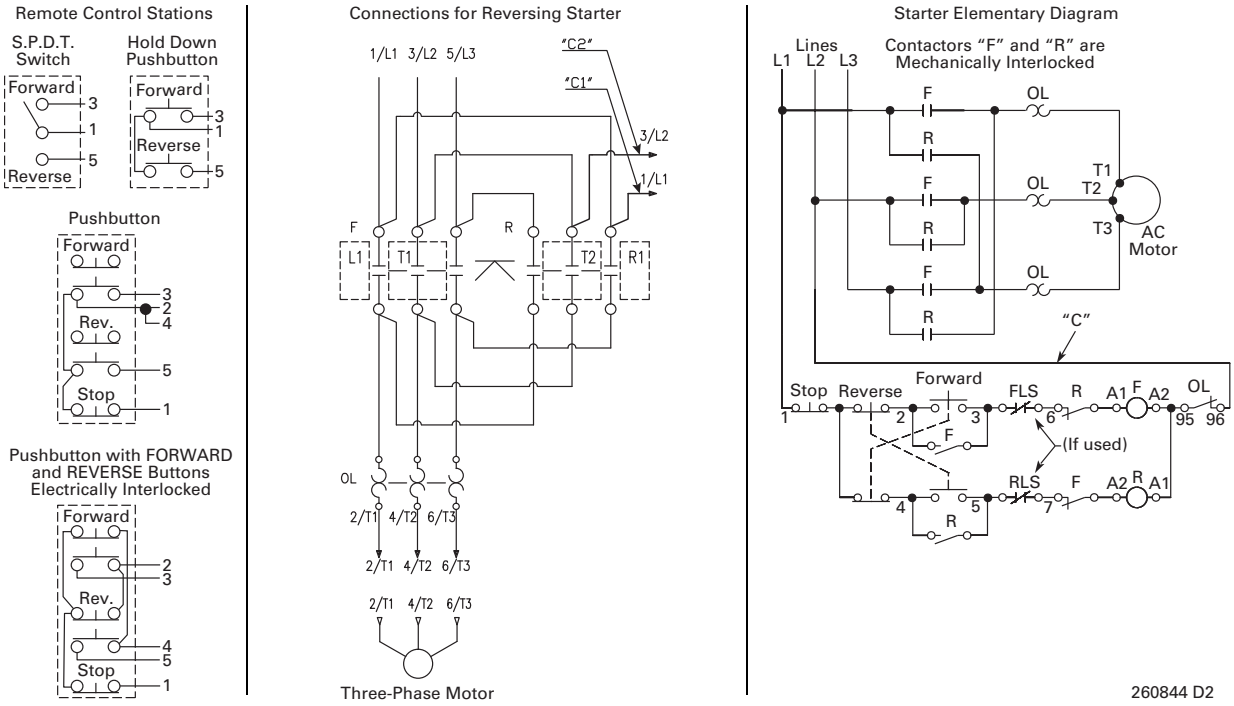
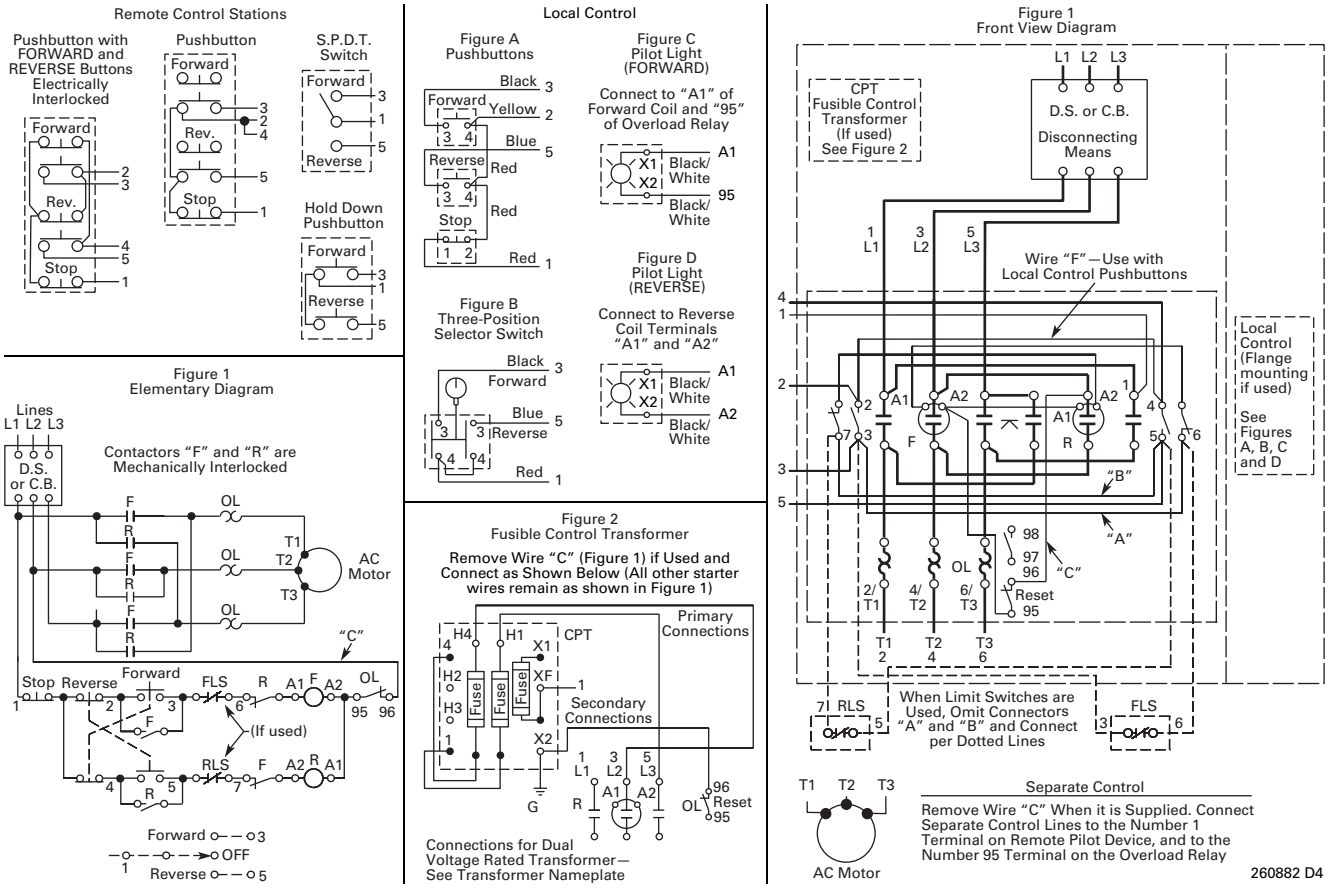
Reversing Starter—Non-Combination

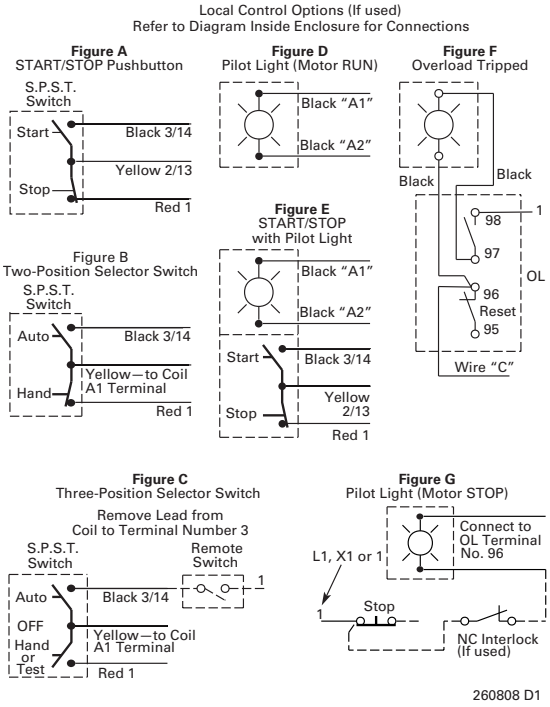


Reversing Starter—Combination

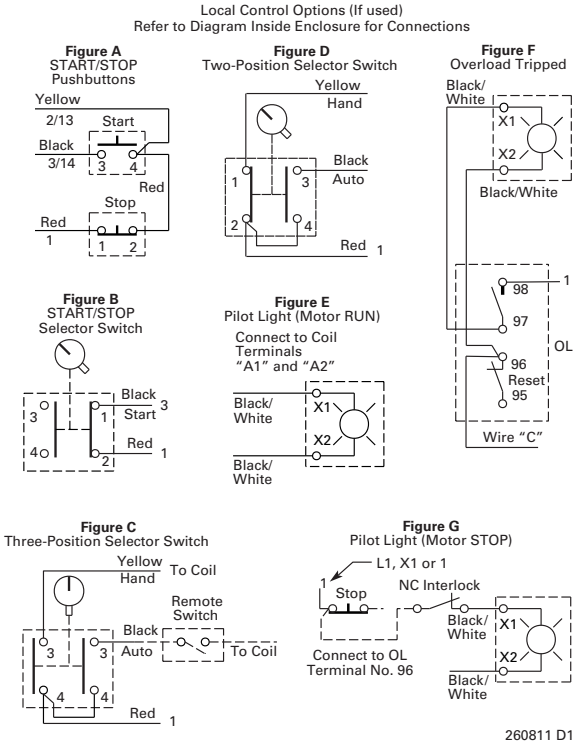


Non-Reversing Cover Control

Type 1 C400GK Control Options

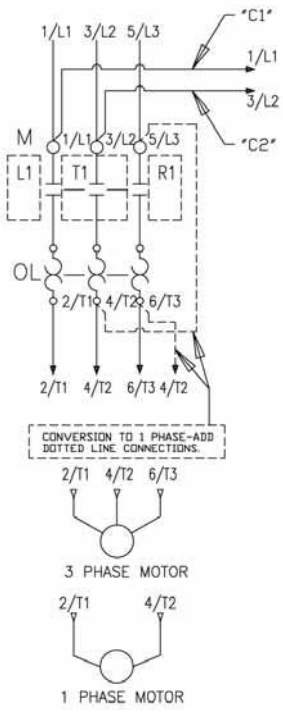


C400T Control Options



Type 1 C600M Control Options

Connections for Non-Reversing Starter



Schematic Symbol Legend

2/13 3/14	Normally Open Auxiliary
61 62	Normally Closed Auxiliary
NO4 NO3	Normally Open Momentary PB
NC1 NC2	Normally Closed Momentary PB
A1 M A2	Contactor Coil
X1 R X2	Red Pilot Light
X1 G X2	Green Pilot Light
95 OL 96	Normally Closed Overload Auxiliary
97 OL 98	Normally Open Overload Auxiliary
1 2	M22-XLED230-T: Used to lower voltage for pilot lights.
STOP/OFF START/ON NO4 NO3	Two-position selector switch (STOP/START, OFF/ON)
HAND 0 AUTO NO4 NO3	Three-position selector switch (HOA)
L1 T1 R1	Signifies Location of Side and Top Adder Auxiliary Referenced on Diagram Under Auxiliary Symbol

CAUTION

READ AND FOLLOW INSTRUCTIONS PRIOR TO WIRING OR CONNECTING POWER! THIS PRODUCT CAN BE FACTORY OR FIELD CONFIGURED FOR MULTIPLE CONTROL MODES OR CONTROL VOLTAGES. CHECK NAMEPLATE FOR COIL VOLTAGE.

SEPARATE CONTROL POWER

FOR COIL VOLTAGES 120V AND LESS: CONNECT SEPARATE CONTROL LINES TO THE NO. 61 TERMINAL ON THE TOP ADDER AUX. AND TO THE NO. 96 TERMINAL ON THE OVERLOAD RELAY.

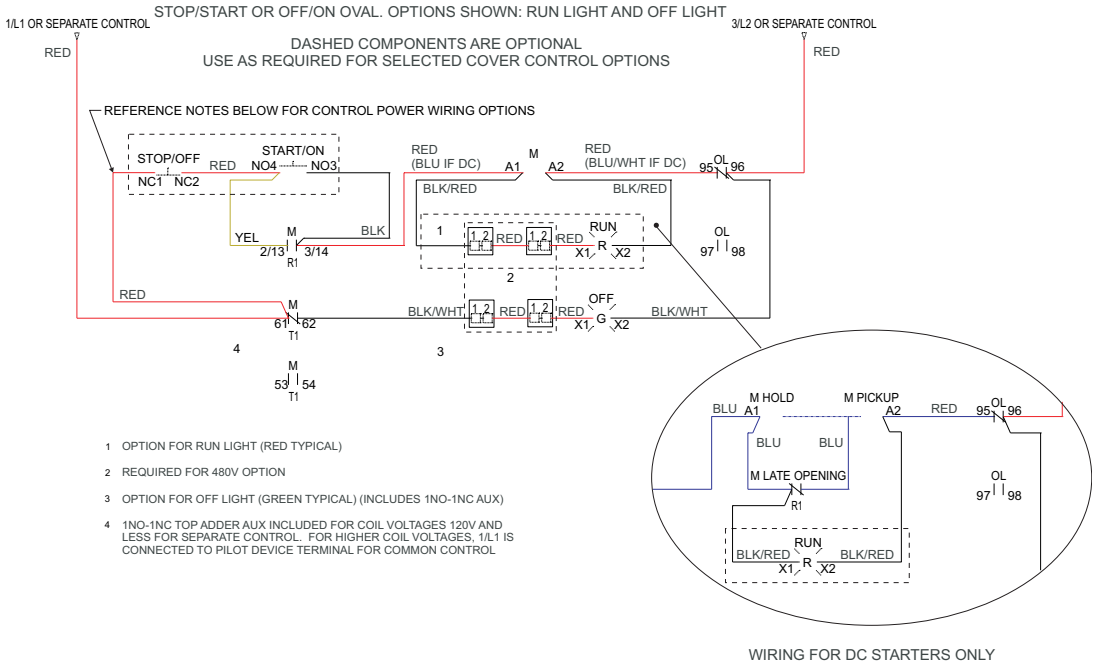
FOR COIL VOLTAGES GREATER THAN 120V: REMOVE WIRE "C2" IF SUPPLIED. IF WIRE "C1" IS TERMINATED ON L1, DISCONNECT FROM L1. CONNECT SEPARATE CONTROL LINES TO THE "C1" WIRE OR APPROPRIATE PILOT DEVICE TERMINAL PER DIAGRAM AND TO THE NO. 96 TERMINAL ON THE OVERLOAD RELAY.

COMMON CONTROL POWER

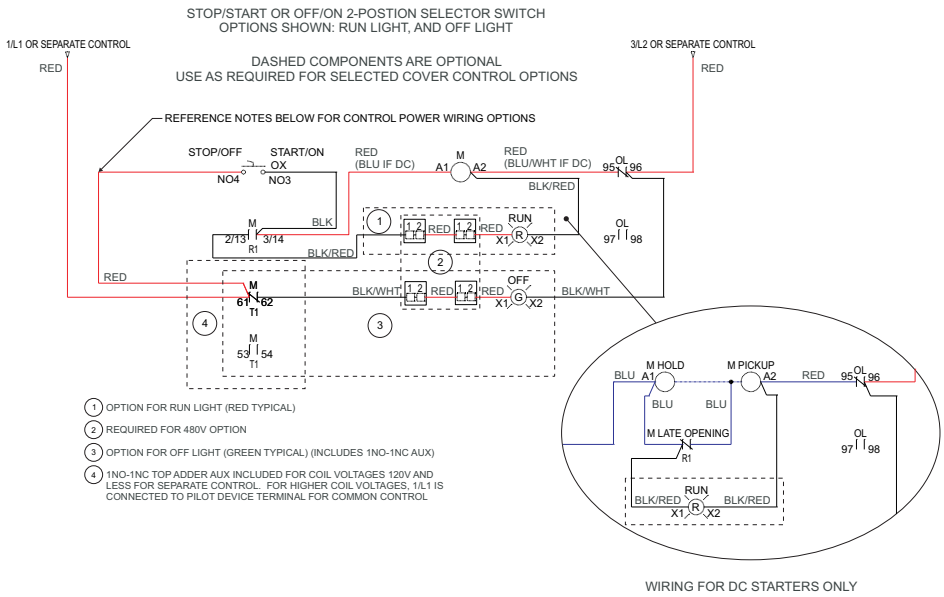
FOR COIL VOLTAGES 120V AND LESS: ADD WIRE "C2" IF NOT SUPPLIED. ADD CONNECTOR BETWEEN L1 TERMINAL AND THE NO. 61 TERMINAL ON THE TOP ADDER AUX. OR APPROPRIATE PILOT DEVICE TERMINAL PER DIAGRAM.

FOR COIL VOLTAGES GREATER THAN 120V: ADD WIRE "C1" AND "C2" IF NOT SUPPLIED.

C600M Wiring Kit Diagrams

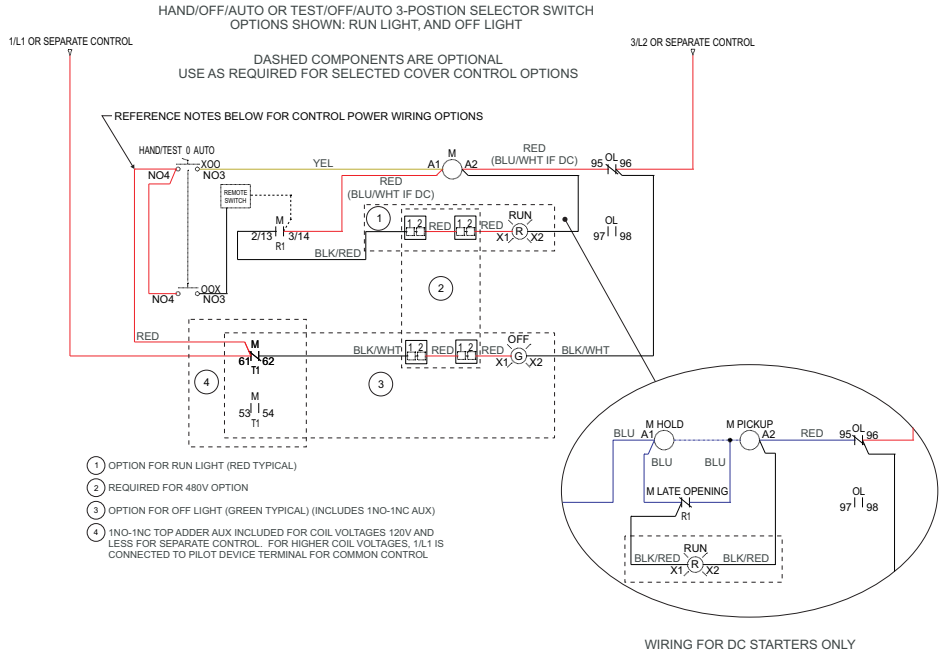


WIRING FOR DC STARTERS ONLY

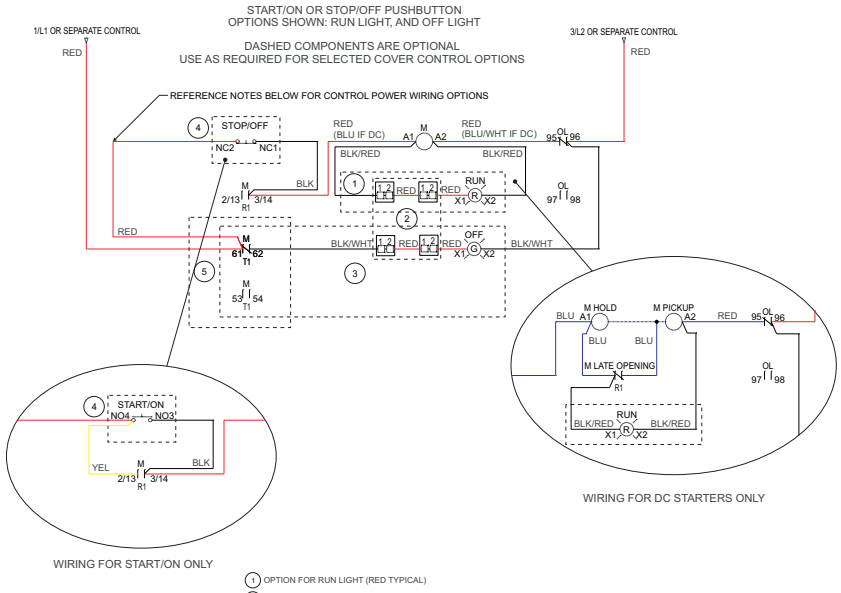


WIRING FOR DC STARTERS ONLY

C600M Wiring Kit Diagrams, continued



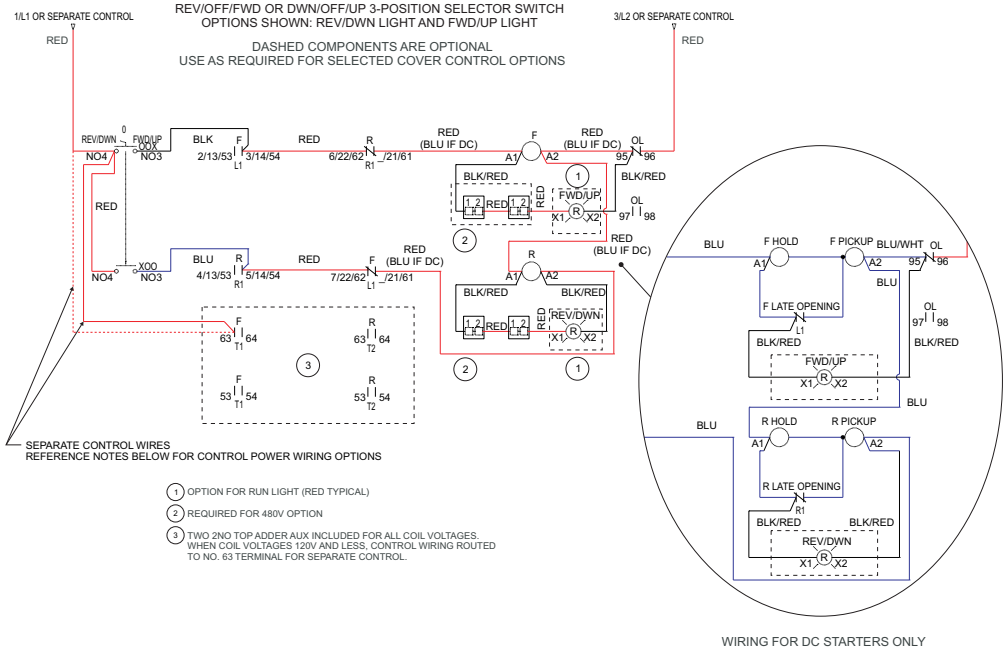
WIRING FOR DC STARTERS ONLY



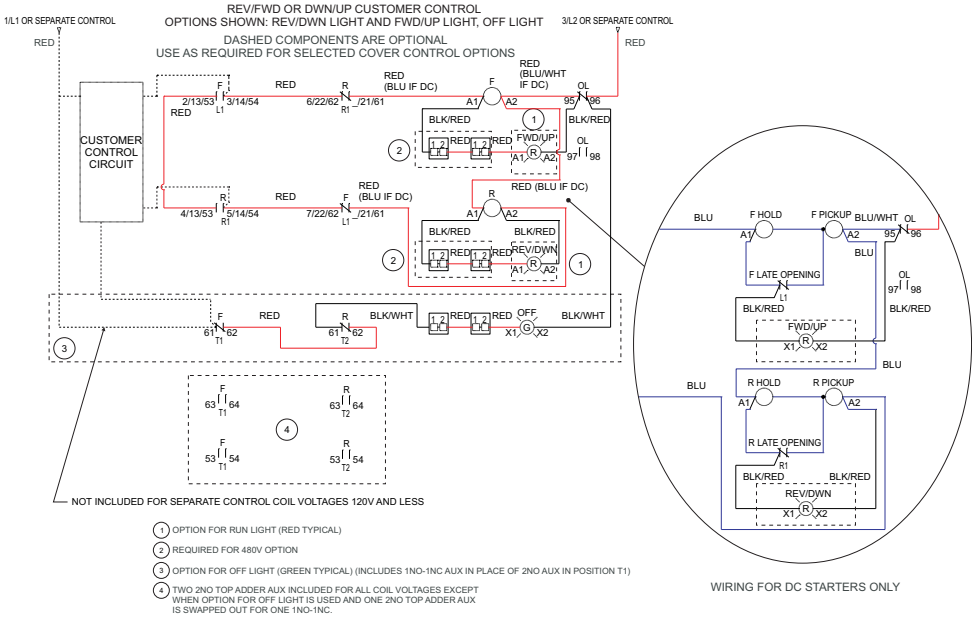
WIRING FOR DC STARTERS ONLY

WIRING FOR START/ON ONLY

C600M Wiring Kit Diagrams, continued



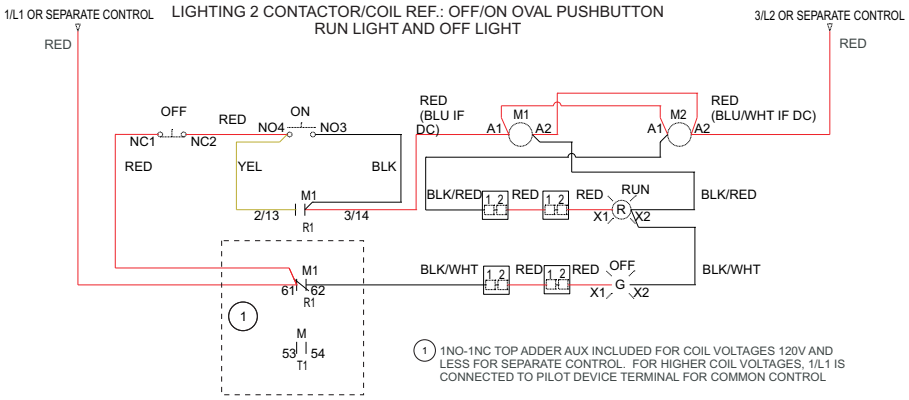
WIRING FOR DC STARTERS ONLY



WIRING FOR DC STARTERS ONLY

2

C600M Wiring Kit Diagrams, continued



Reversing Cover Control

Type 1 C400GR Control Options

Local Control Options (If used)
Refer to Diagram Inside Enclosure for Connections

Figure A
Pushbutton
FORWARD/STOP/REVERSE

Add Connector "F"
Between Aux. Contact
Terminals 2 and 4

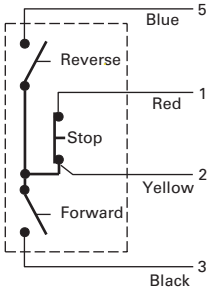


Figure B
Pilot Light (FORWARD)

Connect to Terminal A1 of the
Left Hand Coil and to Terminal
Number 95 of the Overload Relay

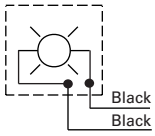
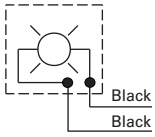


Figure C
Pilot Light (REVERSE)

Connect to Terminals A1 and A2
of the Right Hand Contactor



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C400T Control Options

Local Control Options (If used)
Refer to Diagram Inside Enclosure for Connections

Figure A
Pushbuttons

Connect Wire "F"
per Diagram

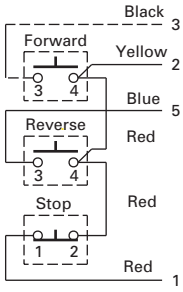


Figure B
Three-Position Selector Switch

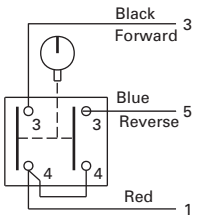


Figure C
Pilot Light (FORWARD)

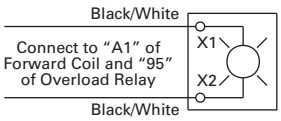
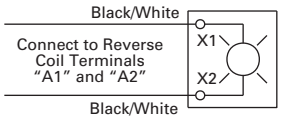


Figure D
Pilot Light (REVERSE)



260812 D1

A200 Full Voltage Controls

Contents

Product Description

Eaton's A200 Series panels feature A200 family magnetic starters which are 600 V rated devices available in Nema Sizes 00-6.

Features

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

- UL Listed
- cUL Listed (indicates appropriate CSA Standard investigation)
- OSHPD Certified (OSP-0015-10)

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

Additional Reference

Catalog Number Selection

NEMA A200 Line Enclosed Control

EC 2 22 2 1 A A F - ____

Design
2 = A200

Class		Page
01 =	Non-reversing contactor—three-pole	—
	Non-reversing contactor—two-pole	—
	Non-reversing contactor—four-pole	—
	Non-reversing contactor—five-pole	—
02 =	Reversing contactor—three-pole	—
05 =	Non-combination non-reversing starter	—
06 =	Non-combination reversing starter	—
07 =	Non-combination non-reversing starter with CPT	—
08 =	Non-combination single-phase non-reversing starter	—
22 =	Combination non-reversing starter—circuit breaker	**V10-T2-60**
	Special enclosure combination non-reversing starter—circuit breaker	**V10-T2-60**
23 =	Combination reversing starter—circuit breaker	—
24 =	Combination non-reversing starter—circuit breaker with CPT	**V10-T2-62**

NEMA Size

A =	Size 00	**3** =	Size 3
0 =	Size 0	**4** =	Size 4
1 =	Size 1	**5** =	Size 5
2 =	Size 2	**6** =	Size 6

Enclosure Type

1 =	Type 1—General purpose
2 =	Type 3R—Rainproof
3 =	Type 4—Watertight (painted steel)
4 =	Type 4X—Watertight (304-Grade stainless steel)
8 =	Type 12—Dust-tight
9 =	Type 4X—316-Grade stainless steel

Coil Voltage and/or Control Transformers
See code tables below

Cover Control
Type 1 non-comb., **Page V10-T2-7**
All others, **Page V10-T2-8**

Contactors
3 = Three poles

Circuit Breaker Ratings

A = None	**H** = 150 A	**R** = 3000 A
B = 3 A	**J** = 250 A	**T** = By description
C = 7 A	**K** = 400 A	**5** = 3 A ①
D = 15 A	**L** = 600 A	**6** = 7 A ①
E = 30 A	**M** = 800 A	**7** = 15 A ①
F = 50 A	**N** = 1000 A	**8** = 30 A ①
W = 70 A	**P** = 1200 A	**9** = 50 A ①
G = 100 A	**Q** = 2000 A	**I** = 100 A ①

Modification Codes
See **Tab 15**

Magnetic Coil Codes (System Voltage) ②

Code	Magnet Coil	Code	Magnet Coil	Code	Magnet Coil
A	120/601–10/50	**K**	240/50	**U**	24/50
B	240/602–20/50	**L**	380/50	**V**	32/50
C	460/604–40/50	**M**	415/50	**W**	48/60
D	575/605–50/50	**P**	12 Vdc	**X**	104–120/60
E	208/60	**Q**	24 Vdc	**Y**	48/50
G	550/50	**R**	48 Vdc	**Z**	By description
H	277/60	**S**	125 Vdc		
J	208–240/60	**T**	24/60		

Control Power Transformer Codes (System Voltage)

Code	Primary	Secondary
B	240/480–220/440 wired for 240 V	120/60–110/50
C	240/480–220/440 wired for 480 V	120/60–110/50
D	600/60–550/50	120/60–110/50
E	208/60	120/60
H	277/60	120/60
L	380/50	110/50
M	415/50	110/50
Q	208/60	24
R	240/480–220/440 wired for 240 V	24
S	240/480–220/440 wired for 480 V	24
T	600/60	24
U	277/60	24
V	380/50	24
W	415/50	24
X	240/480/600 wired for 480 V	120
Y	240/480/600 wired for 480 V	24
Z	By description	—

Notes

① Use for Sizes 0–3, HMCP 600 V applications only.

② When control power transformer modification codes (**C1**–**C11**) are used or when starter class includes CPT (that is EC207, 24) see the table at right for system voltage code.

Product Selection

Combination Non-Reversing Starters—Circuit Breaker

2

Class EC222—Combination Non-Reversing Starter—Circuit Breaker ①

NEMA Size	Motor Voltage	Maximum hp Rating Dual Element Fuses	Magnet Coil Voltage ②	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ③ Catalog Number	Type 12 Dust-Tight Industrial External Reset ④⑤ Catalog Number	Component Starter (Open) Catalog Number
00	200	1	120	7 A	**EC222A1AAC**	**EC222A2AAC**	**EC222A4AAC**	**EC222A8AAC**	**A200MACAC**
		1-1/2		15 A	**EC222A1AAD**	**EC222A2AAD**	**EC222A4AAD**	**EC222A8AAD**	
	230	1		7 A	**EC222A1AAC**	**EC222A2AAC**	**EC222A4AAC**	**EC222A8AAC**	
		1-1/2		15 A	**EC222A1AAD**	**EC222A2AAD**	**EC222A4AAD**	**EC222A8AAD**	
	460	1		3 A	**EC222A1AAB**	**EC222A2AAB**	**EC222A4AAB**	**EC222A8AAB**	
		2		7 A	**EC222A1AAC**	**EC222A2AAC**	**EC222A4AAC**	**EC222A8AAC**	
	575	1		3 A	**EC222A1AAB**	**EC222A2AAB**	**EC222A4AAB**	**EC222A8AAB**	
		2		7 A	**EC222A1AAC**	**EC222A2AAC**	**EC222A4AAC**	**EC222A8AAC**	
0	200	1	120	7 A	**EC22201AAC**	**EC22202AAC**	**EC22204AAC**	**EC22208AAC**	**A200M0CAC**
		3		15 A	**EC22201AAD**	**EC22202AAD**	**EC22204AAD**	**EC22208AAD**	
	230	1		7 A	**EC22201AAC**	**EC22202AAC**	**EC22204AAC**	**EC22208AAC**	
		3		15 A	**EC22201AAD**	**EC22202AAD**	**EC22204AAD**	**EC22208AAD**	
	460	1		3 A	**EC22201AAB**	**EC22202AAB**	**EC22204AAB**	**EC22208AAB**	
		3		7 A	**EC22201AAC**	**EC22202AAC**	**EC22204AAC**	**EC22208AAC**	
		5		15 A	**EC22201AAD**	**EC22202AAD**	**EC22204AAD**	**EC22208AAD**	
	575	1		3 A	**EC22201AAB**	**EC22202AAB**	**EC22204AAB**	**EC22208AAB**	
		3		15 A	**EC22201AAD**	**EC22202AAD**	**EC22204AAD**	**EC22208AAD**	
		5		7 A	**EC22201AAC**	**EC22202AAC**	**EC22204AAC**	**EC22208AAC**	
1	200	1	120	7 A	**EC22211AAC**	**EC22212AAC**	**EC22214AAC**	**EC22218AAC**	**A200M1CAC**
		3		15 A	**EC22211AAD**	**EC22212AAD**	**EC22214AAD**	**EC22218AAD**	
		5		30 A	**EC22211AAE**	**EC22212AAE**	**EC22214AAE**	**EC22218AAE**	
		7-1/2		50 A	**EC22211AAF**	**EC22212AAF**	**EC22214AAF**	**EC22218AAF**	
	230	1		7 A	**EC22211AAC**	**EC22212AAC**	**EC22214AAC**	**EC22218AAC**	
		3		15 A	**EC22211AAD**	**EC22212AAD**	**EC22214AAD**	**EC22218AAD**	
		5		30 A	**EC22211AAE**	**EC22212AAE**	**EC22214AAE**	**EC22218AAE**	
		7-1/2		50 A	**EC22211AAF**	**EC22212AAF**	**EC22214AAF**	**EC22218AAF**	
	460	1		3 A	**EC22211AAB**	**EC22212AAB**	**EC22214AAB**	**EC22218AAB**	
		3		7 A	**EC22211AAC**	**EC22212AAC**	**EC22214AAC**	**EC22218AAC**	
		5		15 A	**EC22211AAD**	**EC22212AAD**	**EC22214AAD**	**EC22218AAD**	
		10		30 A	**EC22211AAE**	**EC22212AAE**	**EC22214AAE**	**EC22218AAE**	
	575	1		3 A	**EC22211AAB**	**EC22212AAB**	**EC22214AAB**	**EC22218AAB**	
		3		7 A	**EC22211AAC**	**EC22212AAC**	**EC22214AAC**	**EC22218AAC**	
		5		15 A	**EC22211AAD**	**EC22212AAD**	**EC22214AAD**	**EC22218AAD**	
		10		30 A	**EC22211AAE**	**EC22212AAE**	**EC22214AAE**	**EC22218AAE**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

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

② For other magnet coil voltages substitute the eighth digit with appropriate digit based on modification table on **Page V10-T2-4**.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: EC222A**4**AAC. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

④ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

⑤ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

Class EC222—Combination Non-Reversing Starter—Circuit Breaker, continued ①

NEMA Size	Motor Voltage	Maximum hp Rating Dual Element Fuses	Magnet Coil Voltage ②	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ③ Catalog Number	Type 12 Dust-Tight Industrial External Reset ④⑤ Catalog Number	Component Starter (Open) Catalog Number
2	200	10	120	50 A	**EC22221AAF**	**EC22222AAF**	**EC22224AAF**	**EC22228AAF**	**A200M2CAC**
	230	10			**EC22221AAF**	**EC22222AAF**	**EC22224AAF**	**EC22228AAF**	
		15		70 A	**EC22221AAW**	**EC22222AAW**	**EC22224AAW**	**EC22228AAW**	
	460	25		50 A	**EC22221AAF**	**EC22222AAF**	**EC22224AAF**	**EC22228AAF**	
	575	15		30 A	**EC22221AAE**	**EC22222AAE**	**EC22224AAE**	**EC22228AAE**	
		25		50 A	**EC22221AAF**	**EC22222AAF**	**EC22224AAF**	**EC22228AAF**	
3	200	20	120	100 A	**EC22231AAG**	**EC22232AAG**	**EC22234AAG**	**EC22238AAG**	**A200M3CAC**
		25			**EC22231AAX**	**EC22232AAX**	**EC22234AAX**	**EC22238AAX**	
	230	25			**EC22231AAG**	**EC22232AAG**	**EC22234AAG**	**EC22238AAG**	
		30			**EC22231AAX**	**EC22232AAX**	**EC22234AAX**	**EC22238AAX**	
	460	50			**EC22231AAG**	**EC22232AAG**	**EC22234AAG**	**EC22238AAG**	
	575	30		50 A	**EC22231AAF**	**EC22232AAF**	**EC22234AAF**	**EC22238AAF**	
		50		100 A	**EC22231AAG**	**EC22232AAG**	**EC22234AAG**	**EC22238AAG**	
4	200	40	120	150 A	**EC22241AAH**	**EC22242AAH**	**EC22244AAH**	**EC22248AAH**	**A200M4CAC**
	230	50			**EC22241AAH**	**EC22242AAH**	**EC22244AAH**	**EC22248AAH**	
	460	100			**EC22241AAH**	**EC22242AAH**	**EC22244AAH**	**EC22248AAH**	
	575	100			**EC22241AAH**	**EC22242AAH**	**EC22244AAH**	**EC22248AAH**	
5	200	50	120	250 A	**EC22251AAJ**	**EC22252AAJ**	**EC22254AAJ**	**EC22258AAJ**	**A200M5CAC**
		75		400 A	**EC22251AAK**	**EC22252AAK**	**EC22254AAK**	**EC22258AAK**	
	230	60		250 A	**EC22251AAJ**	**EC22252AAJ**	**EC22254AAJ**	**EC22258AAJ**	
		100		400 A	**EC22251AAK**	**EC22252AAK**	**EC22254AAK**	**EC22258AAK**	
	460	125		250 A	**EC22251AAJ**	**EC22252AAJ**	**EC22254AAJ**	**EC22258AAJ**	
		200		400 A	**EC22251AAK**	**EC22252AAK**	**EC22254AAK**	**EC22258AAK**	
	575	150		250 A	**EC22251AAJ**	**EC22252AAJ**	**EC22254AAJ**	**EC22258AAJ**	
		200		400 A	**EC22251AAK**	**EC22252AAK**	**EC22254AAK**	**EC22258AAK**	
6	200	150	120	600 A	**EC22261AAL**	**EC22262AAL**	**EC22263AAL** ⑥	**EC22268AAL**	**A200M6CAC**
	230	200			**EC22261AAL**	**EC22262AAL**	**EC22263AAL** ⑥	**EC22268AAL**	
	460	350			**EC22261AAL**	**EC22262AAL**	**EC22263AAL** ⑥	**EC22268AAL**	
		400		1200 A	**EC22261AAP**	**EC22262AAP**	**EC22263AAP** ⑥	**EC22268AAP**	
	575	400		600 A	**EC22261AAL**	**EC22262AAL**	**EC22263AAL** ⑥	**EC22268AAL**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

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

② For other magnet coil voltages substitute the eighth digit with appropriate digit based on modification table on **Page V10-T2-4**.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: EC22224AAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

④ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

⑤ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

⑥ Type 4 (painted steel) sizes 6–9.

Combination Non-Reversing Starters—Circuit Breaker with CPT

Class EC224—Combination Non-Reversing Starter—Circuit Breaker with CPT ①

NEMA Size	Motor Voltage	Maximum hp Rating Dual Element Fuses	Magnet Coil Voltage ②	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ③ Catalog Number	Type 12 Dust-Tight Industrial External Reset ④⑤ Catalog Number	Component Starter (Open) Catalog Number
00	200	1	120	7 A	**EC224A1EAC**	**EC224A2EAC**	**EC224A4EAC**	**EC224A8EAC**	**A200MACAC**
		1-1/2		15 A	**EC224A1EAD**	**EC224A2EAD**	**EC224A4EAD**	**EC224A8EAD**	
	230	1		7 A	**EC224A1BAC**	**EC224A2BAC**	**EC224A4BAC**	**EC224A8BAC**	
		1-1/2		15 A	**EC224A1BAD**	**EC224A2BAD**	**EC224A4BAD**	**EC224A8BAD**	
	460	1		3 A	**EC224A1CAB**	**EC224A2CAB**	**EC224A4CAB**	**EC224A8CAB**	
		2		7 A	**EC224A1CAC**	**EC224A2CAC**	**EC224A4CAC**	**EC224A8CAC**	
	575	1		3 A	**EC224A1DAB**	**EC224A2DAB**	**EC224A4DAB**	**EC224A8DAB**	
		2		7 A	**EC224A1DAC**	**EC224A2DAC**	**EC224A4DAC**	**EC224A8DAC**	
0	200	1	120	7 A	**EC22401EAC**	**EC22402EAC**	**EC22404EAC**	**EC22408EAC**	**A200M0CAC**
		3		15 A	**EC22401EAD**	**EC22402EAD**	**EC22404EAD**	**EC22408EAD**	
	230	1		7 A	**EC22401BAC**	**EC22402BAC**	**EC22404BAC**	**EC22408BAC**	
		3		15 A	**EC22401BAD**	**EC22402BAD**	**EC22404BAD**	**EC22408BAD**	
	460	1		3 A	**EC22401CAB**	**EC22402CAB**	**EC22404CAB**	**EC22408CAB**	
		3		7 A	**EC22401CAC**	**EC22402CAC**	**EC22404CAC**	**EC22408CAC**	
		5		15 A	**EC22401CAD**	**EC22402CAD**	**EC22404CAD**	**EC22408CAD**	
	575	1		3 A	**EC22401DAB**	**EC22402DAB**	**EC22404DAB**	**EC22408DAB**	
		3		15 A	**EC22401DAD**	**EC22402DAD**	**EC22404DAD**	**EC22408DAD**	
		5		7 A	**EC22401DAC**	**EC22402DAC**	**EC22404DAC**	**EC22408DAC**	
1	200	1	120	7 A	**EC22411EAC**	**EC22412EAC**	**EC22414EAC**	**EC22418EAC**	**A200M1CAC**
		3		15 A	**EC22411EAD**	**EC22412EAD**	**EC22414EAD**	**EC22418EAD**	
		5		30 A	**EC22411EAE**	**EC22412EAE**	**EC22414EAE**	**EC22418EAE**	
		7-1/2		50 A	**EC22411EAF**	**EC22412EAF**	**EC22414EAF**	**EC22418EAF**	
	230	1		7 A	**EC22411BAC**	**EC22412BAC**	**EC22414BAC**	**EC22418BAC**	
		3		15 A	**EC22411BAD**	**EC22412BAD**	**EC22414BAD**	**EC22418BAD**	
		5		30 A	**EC22411BAE**	**EC22412BAE**	**EC22414BAE**	**EC22418BAE**	
		7-1/2		50 A	**EC22411BAF**	**EC22412BAF**	**EC22414BAF**	**EC22418BAF**	
	460	1		3 A	**EC22411CAB**	**EC22412CAB**	**EC22414CAB**	**EC22418CAB**	
		3		7 A	**EC22411CAC**	**EC22412CAC**	**EC22414CAC**	**EC22418CAC**	
		5		15 A	**EC22411CAD**	**EC22412CAD**	**EC22414CAD**	**EC22418CAD**	
		10		30 A	**EC22411CAE**	**EC22412CAE**	**EC22414CAE**	**EC22418CAE**	
	575	1		3 A	**EC22411DAB**	**EC22412DAB**	**EC22414DAB**	**EC22418DAB**	
		3		7 A	**EC22411DAC**	**EC22412DAC**	**EC22414DAC**	**EC22418DAC**	
		5		15 A	**EC22411DAD**	**EC22412DAD**	**EC22414DAD**	**EC22418DAD**	
		10		30 A	**EC22411DAE**	**EC22412DAE**	**EC22414DAE**	**EC22418DAE**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

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

② For other magnet coil voltages substitute the eighth digit with appropriate digit based on modification table on **Page V10-T2-4**.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: EC224A**4**EAC. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

④ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

⑤ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

Class EC224—Combination Non-Reversing Starter—Circuit Breaker with CPT, continued ①

NEMA Size	Motor Voltage	Maximum hp Rating Dual Element Fuses	Magnet Coil Voltage ②	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ③ Catalog Number	Type 12 Dust-Tight Industrial External Reset ④⑤ Catalog Number	Component Starter (Open) Catalog Number
2	200	10	120	50 A	**EC22421EAF**	**EC22422EAF**	**EC22424EAF**	**EC22428EAF**	**A200M2CAC**
	230	10			**EC22421BAF**	**EC22422BAF**	**EC22424BAF**	**EC22428BAF**	
		15		70 A	**EC22421BAW**	**EC22422BAW**	**EC22424BAW**	**EC22428BAW**	
	460	25		50 A	**EC22421CAF**	**EC22422CAF**	**EC22424CAF**	**EC22428CAF**	
	575	15		30 A	**EC22421CAE**	**EC22422CAE**	**EC22424CAE**	**EC22428CAE**	
		25		50 A	**EC22421DAF**	**EC22422DAF**	**EC22424DAF**	**EC22428DAF**	
3	200	20	120	100 A	**EC22431EAG**	**EC22432EAG**	**EC22434EAG**	**EC22438EAG**	**A200M3CAC**
		25			**EC22431EAX**	**EC22432EAX**	**EC22434EAX**	**EC22438EAX**	
	230	25			**EC22431BAG**	**EC22432BAG**	**EC22434BAG**	**EC22438BAG**	
		30			**EC22431BAX**	**EC22432BAX**	**EC22434BAX**	**EC22438BAX**	
	460	50			**EC22431CAG**	**EC22432CAG**	**EC22434CAG**	**EC22438CAG**	
	575	30		50 A	**EC22431DAF**	**EC22432DAF**	**EC22434DAF**	**EC22438DAF**	
		50		100 A	**EC22431DAG**	**EC22432DAG**	**EC22434DAG**	**EC22438DAG**	
4	200	40	120	150 A	**EC22441EAH**	**EC22442EAH**	**EC22444EAH**	**EC22448EAH**	**A200M4CAC**
	230	50			**EC22441BAH**	**EC22442BAH**	**EC22444BAH**	**EC22448BAH**	
	460	100			**EC22441CAH**	**EC22442CAH**	**EC22444CAH**	**EC22448CAH**	
	575	100			**EC22441DAH**	**EC22442DAH**	**EC22444DAH**	**EC22448DAH**	
5	200	50	120	250 A	**EC22451EAJ**	**EC22452EAJ**	**EC22454EAJ**	**EC22458EAJ**	**A200M5CAC**
		75		400 A	**EC22451EAK**	**EC22452EAK**	**EC22454EAK**	**EC22458EAK**	
	230	60		250 A	**EC22451BAJ**	**EC22452BAJ**	**EC22454BAJ**	**EC22458BAJ**	
		100		400 A	**EC22451BAK**	**EC22452BAK**	**EC22454BAK**	**EC22458BAK**	
	460	125		250 A	**EC22451CAJ**	**EC22452CAJ**	**EC22454CAJ**	**EC22458CAJ**	
		200		400 A	**EC22451CAK**	**EC22452CAK**	**EC22454CAK**	**EC22458CAK**	
	575	150		250 A	**EC22451DAJ**	**EC22452DAJ**	**EC22454DAJ**	**EC22458DAJ**	
		200		400 A	**EC22451DAK**	**EC22452DAK**	**EC22454DAK**	**EC22458DAK**	
6	200	150	120	600 A	**EC22461EAL**	**EC22462EAL**	**EC22463EAL** ⑥	**EC22468EAL**	**A200M6CAC**
	230	200			**EC22461BAL**	**EC22462BAL**	**EC22463BAL** ⑥	**EC22468BAL**	
	460	350			**EC22461CAL**	**EC22462CAL**	**EC22463CAL** ⑥	**EC22468CAL**	
		400		1200 A	**EC22461CAP**	**EC22462CAP**	**EC22463CAP** ⑥	**EC22468CAP**	
	575	400		600 A	**EC22461DAL**	**EC22462DAL**	**EC22463DAL** ⑥	**EC22468DAL**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

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

② For other magnet coil voltages substitute the eighth digit with appropriate digit based on modification table on **Page V10-T2-4**.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: EC22424EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

④ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

⑤ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification **E11**.

⑥ Type 4 (painted steel) sizes 6–9.

Freedom Multispeed Starters

Contents

Product Description

Eaton's multispeed panels feature Eaton's Freedom Series starters and contactors with a compact, space-saving design, high strength, impact and temperature resistant insulating materials.

Features

Two-speed starters are designed for starting and controlling both separate (two-winding) and reconnectable (one-winding) motors. Separate winding, wye-wye motors have a separate winding for each speed. Reconnectable, consequent pole motors use the same winding for both speeds. All standard starters are wired for selective control.

Standards and Certifications

- UL Listed
- cUL Listed (indicates appropriate CSA Standard investigation)
- OSHPD Certified (OSP-0015-10)

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

Additional Reference

Other Magnet Coils	**V10-T2-4**
Cover Control	**V10-T2-66**
Dimensions	**Tab 14**
Accessories and Modifications	**Tab 15**
Renewal Parts	**Tab 16**
Technical Data and Specifications	**Tab 17**

Catalog Number Selection

NEMA Freedom Multispeed Enclosed Control

EC N 33 2 1 A A F - ____

Design
N = Freedom NEMA

Modification Codes
See **Tab 15**

Class		Page
33 =	Non-combination two-speed two-winding starter	**V10-T2-67**
34 =	Non-combination two-speed one-winding starter (CT or VT)	**V10-T2-69**
35 =	Non-combination two-speed one-winding starter (constant horsepower)	**V10-T2-70**
36 =	Combination two-speed two-winding starter—fusible disconnect	**V10-T2-71**
	Combination two-speed two-winding starter—non-fusible disconnect	**V10-T2-73**
37 =	Combination two-speed one-winding starter—fusible disconnect (CT or VT)	**V10-T2-74**
	Combination two-speed one-winding starter—non-fusible disconnect (CT or VT)	**V10-T2-75**
38 =	Combination two-speed one-winding starter—fusible disconnect (constant horsepower)	**V10-T2-76**
	Combination two-speed one-winding starter—non-fusible disconnect (constant horsepower)	**V10-T2-77**
39 =	Combination two-speed two-winding starter—circuit breaker disconnect	**V10-T2-78**
40 =	Combination two-speed one-winding starter—circuit breaker disconnect (CT or VT)	**V10-T2-80**
41 =	Combination two-speed one-winding starter—circuit breaker disconnect (constant horsepower)	**V10-T2-82**

Disconnect Fuse Clip Ratings

A = None	**G** = 100 A/600 V R	**N** = 600 A/600 V R
B = 30 A/250 V R	**H** = 200 A/250 V R	**P** = 800 A/600 V L
C = 30 A/600 V R	**J** = 200 A/600 V R	**Q** = 1200 A/600 V L
D = 60 A/250 V R	**K** = 400 A/250 V R	**R** = 1600 A/600 V L
E = 60 A/600 V R	**L** = 400 A/600 V R	**S** = 2000 A/600 V L
F = 100 A/250 V R	**M** = 600 A/250 V R	**T** = By description

Circuit Breaker Ratings

A = None	**H** = 150 A	**R** = 3000 A
B = 3 A	**J** = 250 A	**T** = By description
C = 7 A	**K** = 400 A	**5** = 3 A ①
D = 15 A	**L** = 600 A	**6** = 7 A ①
E = 30 A	**M** = 800 A	**7** = 15 A ①
F = 50 A	**N** = 1000 A	**8** = 30 A ①
W = 70 A	**P** = 1200 A	**9** = 50 A ①
G = 100 A	**Q** = 2000 A	**I** = 100 A ①

Cover Control
Cover control multispeed,
Page V10-T2-66

Coil Voltage and/or Control Transformers
See code tables below

Enclosure Type

1 =	Type 1—General purpose
2 =	Type 3R—Rainproof
3 =	Type 4—Watertight (painted steel)
4 =	Type 4X—Watertight (304-Grade stainless steel)
8 =	Type 12—Dust-tight
9 =	Type 4X—316-Grade stainless steel

NEMA Size

A =	Size 00	**3** =	Size 3
0 =	Size 0	**4** =	Size 4
1 =	Size 1	**5** =	Size 5
2 =	Size 2	**6** =	Size 6

Magnetic Coil Codes (System Voltage) ②

Code	Magnet Coil	Code	Magnet Coil	Code	Magnet Coil
A	120/601–10/50	**K**	240/50	**U**	24/50
B	240/602–20/50	**L**	380/50	**V**	32/50
C	460/604–40/50	**M**	415/50	**W**	48/60
D	575/605–50/50	**P**	12 Vdc	**X**	104–120/60
E	208/60	**Q**	24 Vdc	**Y**	48/50
G	550/50	**R**	48 Vdc	**Z**	By description
H	277/60	**S**	125 Vdc		
J	208–240/60	**T**	24/60		

Control Power Transformer Codes (System Voltage)

Code	Primary	Secondary
B	240/480–220/440 wired for 240 V	120/60–110/50
C	240/480–220/440 wired for 480 V	120/60–110/50
D	600/60–550/50	120/60–110/50
E	208/60	120/60
H	277/60	120/60
L	380/50	110/50
M	415/50	110/50
Q	208/60	24
R	240/480–220/440 wired for 240 V	24
S	240/480–220/440 wired for 480 V	24
T	600/60	24
U	277/60	24
V	380/50	24
W	415/50	24
X	240/480/600 wired for 480 V	120
Y	240/480/600 wired for 480 V	24
Z	By description	—

Notes

① Use for Sizes 0–3, HMCP 600 V applications only.

② When control power transformer modification codes (**C1**–**C11**) are used or when starter class includes CPT, see the table at right for system voltage code.

Cover Control

Flange Control Kits

For on-the-job conversion of Type 1, 3R, 4X and 12 enclosed starters. Knockouts are provided on the Type 1 flange. Type 3R, 4X and 12 have prepunched holes with removable hole plugs.

Factory Installed

To order factory installed pilot devices, change the ninth character of the catalog number to the alpha shown in the table below. Example: to order an **ECN3414CAA** with FAST/OFF/SLOW selector switch and two red pilot lights, change the **A** to **J**, that is, ECN3414C**J**A.

Product Selection

Multispeed Pilot Devices

Multispeed Pilot Devices

Description	Factory Installed Flange Control: Position 9 Alpha	Factory Installed Flange Control: Type 1 Non-Combination ①	Factory Installed Flange Control: All Others ②	Field Installation Kits: Type 1 Non-Combination ① Catalog Number	Field Installation Kits: All Others ② Catalog Number
No cover mounted pilot devices	**A**	■	■	**C400GK0**	—
FAST/SLOW/STOP pushbuttons	**B**	■	■	**C400GK9** ③	**C400T7**
With two red pilot lights	**C**	■	■	**C400GK94** ④	—
With two red/one green pilot lights	**D**	—	■	—	—
HIGH/LOW/STOP pushbuttons	**E**	—	■	—	**C400T8**
With two red pilot lights	**F**	—	■	—	—
With two red/one green pilot lights	**G**	—	■	—	—
FAST/OFF/SLOW selector switch	**H**	—	■	—	**C400T17**
With two red pilot lights	**J**	—	■	—	—
With two red/one green pilot lights	**K**	—	■	—	—
Two red pilot lights	**P**	■	■	**C400GK44** ④	⑤
One green pilot light	**Q**	■	■	**C400GK41** ④	**C400T10** ④
Two red/one green pilot lights	**R**	■	■	—	—
HIGH/OFF/LOW selector switch	**V**	—	■	—	**C400T18**
With two red pilot lights	**W**	—	■	—	—
With two red/one green pilot lights	**X**	—	■	—	—

Notes

① Type 1, NEMA Sizes 00–2 non-combination ONLY.
② Type 1, NEMA Sizes 3–7 non-combination PLUS all Type 3R, 4X, 12 non-combination PLUS all combination.
③ Uses a FAST/SLOW/OFF pushbutton.
④ Add code letter from table below to catalog number for voltage—kits only. Example: C400GK94**B**

Rating	Code Letter	Rating	Code Letter	Rating	Code Letter
120 V 60 Hz	**A**	240 V 60 Hz	**B**	480 V 60 Hz	**C**
208V 60 Hz	**E**	380 V 50 Hz	**L**	600 V 60 Hz	**D**

⑤ Order quantity two of C400T9 ④.

Non-Combination Starters

Features

- Three-phase magnetic, three-pole
- Interchangeable heater OLR
- 600 V maximum

Product Selection

Class ECN33—Non-Combination Two-Speed Two-Winding Starter

NEMA Size	Motor Voltage ①	Maximum hp Rating: Constant or Variable Torque	Maximum hp Rating: Constant Horsepower	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
0	—	—	—	120	**ECN3301AAA**	**ECN3302AAA**	**ECN3304AAA**	**ECN3308AAA**	**AN700BN022A**
	200	3	2	208	**ECN3301EAA**	**ECN3302EAA**	**ECN3304EAA**	**ECN3308EAA**	**AN700BN022E**
	230	3	2	240	**ECN3301BAA**	**ECN3302BAA**	**ECN3304BAA**	**ECN3308BAA**	**AN700BN022B**
	460	5	3	480	**ECN3301CAA**	**ECN3302CAA**	**ECN3304CAA**	**ECN3308CAA**	**AN700BN022C**
	575	5	3	600	**ECN3301DAA**	**ECN3302DAA**	**ECN3304DAA**	**ECN3308DAA**	**AN700BN022D**
1	—	—	—	120	**ECN3311AAA**	**ECN3312AAA**	**ECN3314AAA**	**ECN3318AAA**	**AN700DN022A**
	200	7-1/2	5	208	**ECN3311EAA**	**ECN3312EAA**	**ECN3314EAA**	**ECN3318EAA**	**AN700DN022E**
	230	7-1/2	5	240	**ECN3311BAA**	**ECN3312BAA**	**ECN3314BAA**	**ECN3318BAA**	**AN700DN022B**
	460	10	7-1/2	480	**ECN3311CAA**	**ECN3312CAA**	**ECN3314CAA**	**ECN3318CAA**	**AN700DN022C**
	575	10	7-1/2	600	**ECN3311DAA**	**ECN3312DAA**	**ECN3314DAA**	**ECN3318DAA**	**AN700DN022D**
2	—	—	—	120	**ECN3321AAA**	**ECN3322AAA**	**ECN3324AAA**	**ECN3328AAA**	**AN700GN022A**
	200	10	7-1/2	208	**ECN3321EAA**	**ECN3322EAA**	**ECN3324EAA**	**ECN3328EAA**	**AN700GN022E**
	230	15	10	240	**ECN3321BAA**	**ECN3322BAA**	**ECN3324BAA**	**ECN3328BAA**	**AN700GN022B**
	460	25	20	480	**ECN3321CAA**	**ECN3322CAA**	**ECN3324CAA**	**ECN3328CAA**	**AN700GN022C**
	575	25	20	600	**ECN3321DAA**	**ECN3322DAA**	**ECN3324DAA**	**ECN3328DAA**	**AN700GN022D**
3	—	—	—	120	**ECN3331AAA**	**ECN3332AAA**	**ECN3334AAA**	**ECN3338AAA**	**AN700KN022A**
	200	25	20	208	**ECN3331EAA**	**ECN3332EAA**	**ECN3334EAA**	**ECN3338EAA**	**AN700KN022E**
	230	30	25	240	**ECN3331BAA**	**ECN3332BAA**	**ECN3334BAA**	**ECN3338BAA**	**AN700KN022B**
	460	50	40	480	**ECN3331CAA**	**ECN3332CAA**	**ECN3334CAA**	**ECN3338CAA**	**AN700KN022C**
	575	50	40	600	**ECN3331DAA**	**ECN3332DAA**	**ECN3334DAA**	**ECN3338DAA**	**AN700KN022D**
4	—	—	—	120	**ECN3341AAA**	**ECN3342AAA**	**ECN3344AAA**	**ECN3348AAA**	**AN700NN022A**
	200	40	30	208	**ECN3341EAA**	**ECN3342EAA**	**ECN3344EAA**	**ECN3348EAA**	**AN700NN022E**
	230	50	40	240	**ECN3341BAA**	**ECN3342BAA**	**ECN3344BAA**	**ECN3348BAA**	**AN700NN022B**
	460	100	75	480	**ECN3341CAA**	**ECN3342CAA**	**ECN3344CAA**	**ECN3348CAA**	**AN700NN022C**
	575	100	75	600	**ECN3341DAA**	**ECN3342DAA**	**ECN3344DAA**	**ECN3348DAA**	**AN700NN022D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Maximum horsepower rating of starters for 380 V 50 Hz applications.

NEMA Size	0	1	2	3	4	5	6
Constant or variable torque	5	10	25	50	75	150	300
Constant horsepower	3	7-1/2	20	40	60	100	200

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN3304AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECN33—Non-Combination Two-Speed Two-Winding Starter, continued

NEMA Size	Motor Voltage ①	Maximum hp Rating: Constant or Variable Torque	Maximum hp Rating: Constant Horsepower	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
5	—	—	—	120	**ECN3351AAA**	**ECN3352AAA**	**ECN3354AAA**	**ECN3358AAA**	**AN700SN022A**
	200	75	60	208	**ECN3351EAA**	**ECN3352EAA**	**ECN3354EAA**	**ECN3358EAA**	**AN700SN022E**
	230	100	75	240	**ECN3351BAA**	**ECN3352BAA**	**ECN3354BAA**	**ECN3358BAA**	**AN700SN022B**
	460	200	150	480	**ECN3351CAA**	**ECN3352CAA**	**ECN3354CAA**	**ECN3358CAA**	**AN700SN022C**
	575	200	150	600	**ECN3351DAA**	**ECN3352DAA**	**ECN3354DAA**	**ECN3358DAA**	**AN700SN022D**
6	200	150	100	208	**ECN3361EAA**	**ECN3362EAA**	**ECN3363EAA** ③	**ECN3368EAA**	**AN700TN022E**
	230	200	150	240	**ECN3361BAA**	**ECN3362BAA**	**ECN3363BAA** ③	**ECN3368BAA**	**AN700TN022B**
	460	400	300	480	**ECN3361CAA**	**ECN3362CAA**	**ECN3363CAA** ③	**ECN3368CAA**	**AN700TN022C**
	575	400	300	600	**ECN3361DAA**	**ECN3362DAA**	**ECN3363DAA** ③	**ECN3368DAA**	**AN700TN022D**
7	230	300	225	240	**ECN3371BAA**	**ECN3372BAA**	**ECN3373BAA** ③	**ECN3378BAA**	**AN700UN022B**
	460	600	450	480	**ECN3371CAA**	**ECN3372CAA**	**ECN3373CAA** ③	**ECN3378CAA**	**AN700UN022C**
	575	600	450	600	**ECN3371DAA**	**ECN3372DAA**	**ECN3373DAA** ③	**ECN3378DAA**	**AN700UN022D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Maximum horsepower rating of starters for 380 V 50 Hz applications.

NEMA Size	0	1	2	3	4	5	6
Constant or variable torque	5	10	25	50	75	150	300
Constant horsepower	3	7-1/2	20	40	60	100	200

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN3354AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Type 4 (painted steel) sizes 6 and 7.

Class ECN34—Non-Combination Two-Speed One-Winding Starter (CT or VT)

NEMA Size	Motor Voltage ①	Maximum hp Rating	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
0	—	—	120	**ECN3401AAA**	**ECN3402AAA**	**ECN3404AAA**	**ECN3408AAA**	**AN700BN0218A**
	200	3	208	**ECN3401EAA**	**ECN3402EAA**	**ECN3404EAA**	**ECN3408EAA**	**AN700BN0218E**
	230	3	240	**ECN3401BAA**	**ECN3402BAA**	**ECN3404BAA**	**ECN3408BAA**	**AN700BN0218B**
	460	5	480	**ECN3401CAA**	**ECN3402CAA**	**ECN3404CAA**	**ECN3408CAA**	**AN700BN0218C**
	575	5	600	**ECN3401DAA**	**ECN3402DAA**	**ECN3404DAA**	**ECN3408DAA**	**AN700BN0218D**
1	—	—	120	**ECN3411AAA**	**ECN3412AAA**	**ECN3414AAA**	**ECN3418AAA**	**AN700DN0218A**
	200	7-1/2	208	**ECN3411EAA**	**ECN3412EAA**	**ECN3414EAA**	**ECN3418EAA**	**AN700DN0218E**
	230	7-1/2	240	**ECN3411BAA**	**ECN3412BAA**	**ECN3414BAA**	**ECN3418BAA**	**AN700DN0218B**
	460	10	480	**ECN3411CAA**	**ECN3412CAA**	**ECN3414CAA**	**ECN3418CAA**	**AN700DN0218C**
	575	10	600	**ECN3411DAA**	**ECN3412DAA**	**ECN3414DAA**	**ECN3418DAA**	**AN700DN0218D**
2	—	—	120	**ECN3421AAA**	**ECN3422AAA**	**ECN3424AAA**	**ECN3428AAA**	**AN700GN0218A**
	200	10	208	**ECN3421EAA**	**ECN3422EAA**	**ECN3424EAA**	**ECN3428EAA**	**AN700GN0218E**
	230	15	240	**ECN3421BAA**	**ECN3422BAA**	**ECN3424BAA**	**ECN3428BAA**	**AN700GN0218B**
	460	25	480	**ECN3421CAA**	**ECN3422CAA**	**ECN3424CAA**	**ECN3428CAA**	**AN700GN0218C**
	575	25	600	**ECN3421DAA**	**ECN3422DAA**	**ECN3424DAA**	**ECN3428DAA**	**AN700GN0218D**
3	—	—	120	**ECN3431AAA**	**ECN3432AAA**	**ECN3434AAA**	**ECN3438AAA**	**AN700KN0218A**
	200	25	208	**ECN3431EAA**	**ECN3432EAA**	**ECN3434EAA**	**ECN3438EAA**	**AN700KN0218E**
	230	30	240	**ECN3431BAA**	**ECN3432BAA**	**ECN3434BAA**	**ECN3438BAA**	**AN700KN0218B**
	460	50	480	**ECN3431CAA**	**ECN3432CAA**	**ECN3434CAA**	**ECN3438CAA**	**AN700KN0218C**
	575	50	600	**ECN3431DAA**	**ECN3432DAA**	**ECN3434DAA**	**ECN3438DAA**	**AN700KN0218D**
4	—	—	120	**ECN3441AAA**	**ECN3442AAA**	**ECN3444AAA**	**ECN3448AAA**	**AN700NN0218A**
	200	40	208	**ECN3441EAA**	**ECN3442EAA**	**ECN3444EAA**	**ECN3448EAA**	**AN700NN0218E**
	230	50	240	**ECN3441BAA**	**ECN3442BAA**	**ECN3444BAA**	**ECN3448BAA**	**AN700NN0218B**
	460	100	480	**ECN3441CAA**	**ECN3442CAA**	**ECN3444CAA**	**ECN3448CAA**	**AN700NN0218C**
	575	100	600	**ECN3441DAA**	**ECN3442DAA**	**ECN3444DAA**	**ECN3448DAA**	**AN700NN0218D**
5	—	—	120	**ECN3451AAA**	**ECN3452AAA**	**ECN3454AAA**	**ECN3458AAA**	**AN700SN0218A**
	200	75	208	**ECN3451EAA**	**ECN3452EAA**	**ECN3454EAA**	**ECN3458EAA**	**AN700SN0218E**
	230	100	240	**ECN3451BAA**	**ECN3452BAA**	**ECN3454BAA**	**ECN3458BAA**	**AN700SN0218B**
	460	200	480	**ECN3451CAA**	**ECN3452CAA**	**ECN3454CAA**	**ECN3458CAA**	**AN700SN0218C**
	575	200	600	**ECN3451DAA**	**ECN3452DAA**	**ECN3454DAA**	**ECN3458DAA**	**AN700SN0218D**
6	200	150	208	**ECN3461EAA**	**ECN3462EAA**	**ECN3463EAA** ③	**ECN3468EAA**	**AN700TN0218E**
	230	200	240	**ECN3461BAA**	**ECN3462BAA**	**ECN3463BAA** ③	**ECN3468BAA**	**AN700TN0218B**
	460	400	480	**ECN3461CAA**	**ECN3462CAA**	**ECN3463CAA** ③	**ECN3468CAA**	**AN700TN0218C**
	575	400	600	**ECN3461DAA**	**ECN3462DAA**	**ECN3463DAA** ③	**ECN3468DAA**	**AN700TN0218D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Maximum horsepower rating of starters for 380 V 50 Hz applications.

NEMA Size	0	1	2	3	4	5	6
Horsepower	5	10	25	50	75	150	300

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN340**4**AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Type 4 (painted steel) sizes 6.

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Class ECN35—Non-Combination Two-Speed One-Winding Starter (Constant Horsepower)

NEMA Size	Motor Voltage ①	Maximum hp Rating	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
0	—	—	120	ECN3501AAA	ECN3502AAA	ECN3504AAA	ECN3508AAA	AN700BN0218A
	200	2	208	ECN3501EAA	ECN3502EAA	ECN3504EAA	ECN3508EAA	AN700BN0218E
	230	2	240	ECN3501BAA	ECN3502BAA	ECN3504BAA	ECN3508BAA	AN700BN0218B
	460	3	480	ECN3501CAA	ECN3502CAA	ECN3504CAA	ECN3508CAA	AN700BN0218C
	575	3	600	ECN3501DAA	ECN3502DAA	ECN3504DAA	ECN3508DAA	AN700BN0218D
1	—	—	120	ECN3511AAA	ECN3512AAA	ECN3514AAA	ECN3518AAA	AN700DN0218A
	200	5	208	ECN3511EAA	ECN3512EAA	ECN3514EAA	ECN3518EAA	AN700DN0218E
	230	5	240	ECN3511BAA	ECN3512BAA	ECN3514BAA	ECN3518BAA	AN700DN0218B
	460	7-1/2	480	ECN3511CAA	ECN3512CAA	ECN3514CAA	ECN3518CAA	AN700DN0218C
	575	7-1/2	600	ECN3511DAA	ECN3512DAA	ECN3514DAA	ECN3518DAA	AN700DN0218D
2	—	—	120	ECN3521AAA	ECN3522AAA	ECN3524AAA	ECN3528AAA	AN700GN0218A
	200	7-1/2	208	ECN3521EAA	ECN3522EAA	ECN3524EAA	ECN3528EAA	AN700GN0218E
	230	10	240	ECN3521BAA	ECN3522BAA	ECN3524BAA	ECN3528BAA	AN700GN0218B
	460	20	480	ECN3521CAA	ECN3522CAA	ECN3524CAA	ECN3528CAA	AN700GN0218C
	575	20	600	ECN3521DAA	ECN3522DAA	ECN3524DAA	ECN3528DAA	AN700GN0218D
3	—	—	120	ECN3531AAA	ECN3532AAA	ECN3534AAA	ECN3538AAA	AN700KN0218A
	200	20	208	ECN3531EAA	ECN3532EAA	ECN3534EAA	ECN3538EAA	AN700KN0218E
	230	25	240	ECN3531BAA	ECN3532BAA	ECN3534BAA	ECN3538BAA	AN700KN0218B
	460	40	480	ECN3531CAA	ECN3532CAA	ECN3534CAA	ECN3538CAA	AN700KN0218C
	575	40	600	ECN3531DAA	ECN3532DAA	ECN3534DAA	ECN3538DAA	AN700KN0218D
4	—	—	120	ECN3541AAA	ECN3542AAA	ECN3544AAA	ECN3548AAA	AN700NN0218A
	200	30	208	ECN3541EAA	ECN3542EAA	ECN3544EAA	ECN3548EAA	AN700NN0218E
	230	40	240	ECN3541BAA	ECN3542BAA	ECN3544BAA	ECN3548BAA	AN700NN0218B
	460	75	480	ECN3541CAA	ECN3542CAA	ECN3544CAA	ECN3548CAA	AN700NN0218C
	575	75	600	ECN3541DAA	ECN3542DAA	ECN3544DAA	ECN3548DAA	AN700NN0218D
5	—	—	120	ECN3551AAA	ECN3552AAA	ECN3554AAA	ECN3558AAA	AN700SN0218A
	200	60	208	ECN3551EAA	ECN3552EAA	ECN3554EAA	ECN3558EAA	AN700SN0218E
	230	75	240	ECN3551BAA	ECN3552BAA	ECN3554BAA	ECN3558BAA	AN700SN0218B
	460	150	480	ECN3551CAA	ECN3552CAA	ECN3554CAA	ECN3558CAA	AN700SN0218C
	575	150	600	ECN3551DAA	ECN3552DAA	ECN3554DAA	ECN3558DAA	AN700SN0218D
6	200	100	208	ECN3561EAA	ECN3562EAA	ECN3563EAA ③	ECN3568EAA	AN700TN0218E
	230	150	240	ECN3561BAA	ECN3562BAA	ECN3563BAA ③	ECN3568BAA	AN700TN0218B
	460	300	480	ECN3561CAA	ECN3562CAA	ECN3563CAA ③	ECN3568CAA	AN700TN0218C
	575	300	600	ECN3561DAA	ECN3562DAA	ECN3563DAA ③	ECN3568DAA	AN700TN0218D

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Maximum horsepower rating of starters for 380 V 50 Hz applications.

NEMA Size	0	1	2	3	4	5	6
Horsepower	3	7-1/2	20	40	60	100	200

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN350**4**AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Type 4 (painted steel) sizes 6.

Combination Starters

Features

- Choice of fusible/non-fusible combination with disconnect switch or combination HMCP or magnetic trip circuit breaker
- Three-phase magnetic, three-pole
- Interchangeable heater OLR
- 600 V maximum

Product Selection

Class ECN36—Combination Two-Speed Two-Winding Starter—Fusible Disconnect

NEMA Size	Motor Voltage ①	Maximum hp Rating Constant or Variable Torque	Maximum hp Rating Constant Horsepower	Magnet Coil Voltage	Fuse Clip Amperes	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
0	—	—	—	120	30 A	**ECN3601AAB**	**ECN3602AAB**	**ECN3604AAB**	**ECN3608AAB**	**AN700BN022A**
	200	3	2	208		**ECN3601EAB**	**ECN3602EAB**	**ECN3604EAB**	**ECN3608EAB**	**AN700BN022E**
	230			240		**ECN3601BAB**	**ECN3602BAB**	**ECN3604BAB**	**ECN3608BAB**	**AN700BN022B**
	460	5	3	480		**ECN3601CAC**	**ECN3602CAC**	**ECN3604CAC**	**ECN3608CAC**	**AN700BN022C**
	575			600		**ECN3601DAC**	**ECN3602DAC**	**ECN3604DAC**	**ECN3608DAC**	**AN700BN022D**
1	—	—	—	120	30 A	**ECN3611AAB**	**ECN3612AAB**	**ECN3614AAB**	**ECN3618AAB**	**AN700DN022A**
	200	7-1/2	5	208		**ECN3611EAB**	**ECN3612EAB**	**ECN3614EAB**	**ECN3618EAB**	**AN700DN022E**
	230			240		**ECN3611BAB**	**ECN3612BAB**	**ECN3614BAB**	**ECN3618BAB**	**AN700DN022B**
	460	10	7-1/2	480		**ECN3611CAC**	**ECN3612CAC**	**ECN3614CAC**	**ECN3618CAC**	**AN700DN022C**
	575			600		**ECN3611DAC**	**ECN3612DAC**	**ECN3614DAC**	**ECN3618DAC**	**AN700DN022D**
2	—	—	—	120	60 A	**ECN3621AAD**	**ECN3622AAD**	**ECN3624AAD**	**ECN3628AAD**	**AN700GN022A**
	200	10	7-1/2	208		**ECN3621EAD**	**ECN3622EAD**	**ECN3624EAD**	**ECN3628EAD**	**AN700GN022E**
	230	15	10	240		**ECN3621BAD**	**ECN3622BAD**	**ECN3624BAD**	**ECN3628BAD**	**AN700GN022B**
	460	25	20	480		**ECN3621CAE**	**ECN3622CAE**	**ECN3624CAE**	**ECN3628CAE**	**AN700GN022C**
	575			600		**ECN3621DAE**	**ECN3622DAE**	**ECN3624DAE**	**ECN3628DAE**	**AN700GN022D**
3	—	—	—	120	100 A	**ECN3631AAF**	**ECN3632AAF**	**ECN3634AAF**	**ECN3638AAF**	**AN700KN022A**
	200	25	20	208		**ECN3631EAF**	**ECN3632EAF**	**ECN3634EAF**	**ECN3638EAF**	**AN700KN022E**
	230	30	25	240		**ECN3631BAF**	**ECN3632BAF**	**ECN3634BAF**	**ECN3638BAF**	**AN700KN022B**
	460	50	40	480		**ECN3631CAG**	**ECN3632CAG**	**ECN3634CAG**	**ECN3638CAG**	**AN700KN022C**
	575			600		**ECN3631DAG**	**ECN3632DAG**	**ECN3634DAG**	**ECN3638DAG**	**AN700KN022D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Maximum horsepower rating of starters for 380 V 50 Hz applications.

NEMA Size	0	1	2	3	4	5	6
Constant or variable torque	5	10	25	50	75	150	300
Constant horsepower	3	7-1/2	20	40	60	100	200

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN3604AAB. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

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Class ECN36—Combination Two-Speed Two-Winding Starter—Fusible Disconnect

NEMA Size	Motor Voltage ①	Maximum hp Rating Constant or Variable Torque	Maximum hp Rating Constant Horsepower	Magnet Coil Voltage	Fuse Clip Amperes	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
4	—	—	—	120	200 A	**ECN3641AAH**	**ECN3642AAH**	**ECN3644AAH**	**ECN3648AAH**	**AN700NN022A**
	200	40	30	208		**ECN3641EAH**	**ECN3642EAH**	**ECN3644EAH**	**ECN3648EAH**	**AN700NN022E**
	230	50	40	240		**ECN3641BAH**	**ECN3642BAH**	**ECN3644BAH**	**ECN3648BAH**	**AN700NN022B**
	460	100	75	480		**ECN3641CAJ**	**ECN3642CAJ**	**ECN3644CAJ**	**ECN3648CAJ**	**AN700NN022C**
	575	100	75	600		**ECN3641DAJ**	**ECN3642DAJ**	**ECN3644DAJ**	**ECN3648DAJ**	**AN700NN022D**
5	—	—	—	120	400 A	**ECN3651AAK**	**ECN3652AAK**	**ECN3654AAK**	**ECN3658AAK**	**AN700SN022A**
	200	75	60	208		**ECN3651EAK**	**ECN3652EAK**	**ECN3654EAK**	**ECN3658EAK**	**AN700SN022E**
	230	100	75	240		**ECN3651BAK**	**ECN3652BAK**	**ECN3654BAK**	**ECN3658BAK**	**AN700SN022B**
	460	200	150	480		**ECN3651CAL**	**ECN3652CAL**	**ECN3654CAL**	**ECN3658CAL**	**AN700SN022C**
	575	200	150	600		**ECN3651DAL**	**ECN3652DAL**	**ECN3654DAL**	**ECN3658DAL**	**AN700SN022D**
6	200	150	100	208	600 A	**ECN3661EAM**	**ECN3662EAM**	**ECN3663EAM** ③	**ECN3668EAM**	**AN700TN022E**
	230	200	150	240		**ECN3661BAM**	**ECN3662BAM**	**ECN3663BAM** ③	**ECN3668BAM**	**AN700TN022B**
	460	400	300	480		**ECN3661CAN**	**ECN3662CAN**	**ECN3663CAN** ③	**ECN3668CAN**	**AN700TN022C**
	575	400	300	600		**ECN3661DAN**	**ECN3662DAN**	**ECN3663DAN** ③	**ECN3668DAN**	**AN700TN022D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Maximum horsepower rating of starters for 380 V 50 Hz applications.

NEMA Size	0	1	2	3	4	5	6
Constant or variable torque	5	10	25	50	75	150	300
Constant horsepower	3	7-1/2	20	40	60	100	200

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN364**4**AAH. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Type 4 (painted steel) sizes 6.

Class ECN36—Combination Two-Speed Two-Winding Starter—Non-Fusible Disconnect

NEMA Size	Motor Voltage ①	Maximum hp Rating: Constant or Variable Torque	Maximum hp Rating: Constant Horsepower	Magnet Coil Voltage	Fuse Clip Amperes	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
0	—	—	—	120	30 A	**ECN3601AAA**	**ECN3602AAA**	**ECN3604AAA**	**ECN3608AAA**	**AN700BN022A**
	200	3	2	208		**ECN3601EAA**	**ECN3602EAA**	**ECN3604EAA**	**ECN3608EAA**	**AN700BN022E**
	230	3	2	240		**ECN3601BAA**	**ECN3602BAA**	**ECN3604BAA**	**ECN3608BAA**	**AN700BN022B**
	460	5	3	480		**ECN3601CAA**	**ECN3602CAA**	**ECN3604CAA**	**ECN3608CAA**	**AN700BN022C**
	575	5	3	600		**ECN3601DAA**	**ECN3602DAA**	**ECN3604DAA**	**ECN3608DAA**	**AN700BN022D**
1	—	—	—	120	30 A	**ECN3611AAA**	**ECN3612AAA**	**ECN3614AAA**	**ECN3618AAA**	**AN700DN022A**
	200	7-1/2	5	208		**ECN3611EAA**	**ECN3612EAA**	**ECN3614EAA**	**ECN3618EAA**	**AN700DN022E**
	230	7-1/2	5	240		**ECN3611BAA**	**ECN3612BAA**	**ECN3614BAA**	**ECN3618BAA**	**AN700DN022B**
	460	10	7-1/2	480		**ECN3611CAA**	**ECN3612CAA**	**ECN3614CAA**	**ECN3618CAA**	**AN700DN022C**
	575	10	7-1/2	600		**ECN3611DAA**	**ECN3612DAA**	**ECN3614DAA**	**ECN3618DAA**	**AN700DN022D**
2	—	—	—	120	60 A	**ECN3621AAA**	**ECN3622AAA**	**ECN3624AAA**	**ECN3628AAA**	**AN700GN022A**
	200	10	7-1/2	208		**ECN3621EAA**	**ECN3622EAA**	**ECN3624EAA**	**ECN3628EAA**	**AN700GN022E**
	230	15	10	240		**ECN3621BAA**	**ECN3622BAA**	**ECN3624BAA**	**ECN3628BAA**	**AN700GN022B**
	460	25	20	480		**ECN3621CAA**	**ECN3622CAA**	**ECN3624CAA**	**ECN3628CAA**	**AN700GN022C**
	575	25	20	600		**ECN3621DAA**	**ECN3622DAA**	**ECN3624DAA**	**ECN3628DAA**	**AN700GN022D**
3	—	—	—	120	100 A	**ECN3631AAA**	**ECN3632AAA**	**ECN3634AAA**	**ECN3638AAA**	**AN700KN022A**
	200	25	20	208		**ECN3631EAA**	**ECN3632EAA**	**ECN3634EAA**	**ECN3638EAA**	**AN700KN022E**
	230	30	25	240		**ECN3631BAA**	**ECN3632BAA**	**ECN3634BAA**	**ECN3638BAA**	**AN700KN022B**
	460	50	40	480		**ECN3631CAA**	**ECN3632CAA**	**ECN3634CAA**	**ECN3638CAA**	**AN700KN022C**
	575	50	40	600		**ECN3631DAA**	**ECN3632DAA**	**ECN3634DAA**	**ECN3638DAA**	**AN700KN022D**
4	—	—	—	120	200 A	**ECN3641AAA**	**ECN3642AAA**	**ECN3644AAA**	**ECN3648AAA**	**AN700NN022A**
	200	40	30	208		**ECN3641EAA**	**ECN3642EAA**	**ECN3644EAA**	**ECN3648EAA**	**AN700NN022E**
	230	50	40	240		**ECN3641BAA**	**ECN3642BAA**	**ECN3644BAA**	**ECN3648BAA**	**AN700NN022B**
	460	100	75	480		**ECN3641CAA**	**ECN3642CAA**	**ECN3644CAA**	**ECN3648CAA**	**AN700NN022C**
	575	100	75	600		**ECN3641DAA**	**ECN3642DAA**	**ECN3644DAA**	**ECN3648DAA**	**AN700NN022D**
5	—	—	—	120	400 A	**ECN3651AAA**	**ECN3652AAA**	**ECN3654AAA**	**ECN3658AAA**	**AN700SN022A**
	200	75	60	208		**ECN3651EAA**	**ECN3652EAA**	**ECN3654EAA**	**ECN3658EAA**	**AN700SN022E**
	230	100	75	240		**ECN3651BAA**	**ECN3652BAA**	**ECN3654BAA**	**ECN3658BAA**	**AN700SN022B**
	460	200	150	480		**ECN3651CAA**	**ECN3652CAA**	**ECN3654CAA**	**ECN3658CAA**	**AN700SN022C**
	575	200	150	600		**ECN3651DAA**	**ECN3652DAA**	**ECN3654DAA**	**ECN3658DAA**	**AN700SN022D**
6	200	150	100	208	600 A	**ECN3661EAA**	**ECN3662EAA**	**ECN3663EAA** ③	**ECN3668EAA**	**AN700TN022E**
	230	200	150	240		**ECN3661BAA**	**ECN3662BAA**	**ECN3663BAA** ③	**ECN3668BAA**	**AN700TN022B**
	460	400	300	480		**ECN3661CAA**	**ECN3662CAA**	**ECN3663CAA** ③	**ECN3668CAA**	**AN700TN022C**
	575	400	300	600		**ECN3661DAA**	**ECN3662DAA**	**ECN3663DAA** ③	**ECN3668DAA**	**AN700TN022D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Maximum horsepower rating of starters for 380 V 50 Hz applications.

NEMA Size	0	1	2	3	4	5	6
Constant or variable torque	5	10	25	50	75	150	300
Constant horsepower	3	7-1/2	20	40	60	100	200

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN3604AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Type 4 (painted steel) sizes 6.

Class ECN37—Combination Two-Speed One-Winding Starter (CT or VT)—Fusible Disconnect

NEMA Size	Motor Voltage ①	Maximum hp Rating	Magnet Coil Voltage	Fuse Clip Amperes	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
0	—	—	120	30 A	ECN3701AAB	ECN3702AAB	ECN3704AAB	ECN3708AAB	AN700BN0218A
	200	3	208		ECN3701EAB	ECN3702EAB	ECN3704EAB	ECN3708EAB	AN700BN0218E
	230	3	240		ECN3701BAB	ECN3702BAB	ECN3704BAB	ECN3708BAB	AN700BN0218B
	460	5	480		ECN3701CAC	ECN3702CAC	ECN3704CAC	ECN3708CAC	AN700BN0218C
	575	5	600		ECN3701DAC	ECN3702DAC	ECN3704DAC	ECN3708DAC	AN700BN0218D
1	—	—	120	30 A	ECN3711AAB	ECN3712AAB	ECN3714AAB	ECN3718AAB	AN700DN0218A
	200	7-1/2	208		ECN3711EAB	ECN3712EAB	ECN3714EAB	ECN3718EAB	AN700DN0218E
	230	7-1/2	240		ECN3711BAB	ECN3712BAB	ECN3714BAB	ECN3718BAB	AN700DN0218B
	460	10	480		ECN3711CAC	ECN3712CAC	ECN3714CAC	ECN3718CAC	AN700DN0218C
	575	10	600		ECN3711DAC	ECN3712DAC	ECN3714DAC	ECN3718DAC	AN700DN0218D
2	—	—	120	60 A	ECN3721AAD	ECN3722AAD	ECN3724AAD	ECN3728AAD	AN700GN0218A
	200	10	208		ECN3721EAD	ECN3722EAD	ECN3724EAD	ECN3728EAD	AN700GN0218E
	230	15	240		ECN3721BAD	ECN3722BAD	ECN3724BAD	ECN3728BAD	AN700GN0218B
	460	25	480		ECN3721CAE	ECN3722CAE	ECN3724CAE	ECN3728CAE	AN700GN0218C
	575	25	600		ECN3721DAE	ECN3722DAE	ECN3724DAE	ECN3728DAE	AN700GN0218D
3	—	—	120	100 A	ECN3731AAF	ECN3732AAF	ECN3734AAF	ECN3738AAF	AN700KN0218A
	200	25	208		ECN3731EAF	ECN3732EAF	ECN3734EAF	ECN3738EAF	AN700KN0218E
	230	30	240		ECN3731BAF	ECN3732BAF	ECN3734BAF	ECN3738BAF	AN700KN0218B
	460	50	480		ECN3731CAG	ECN3732CAG	ECN3734CAG	ECN3738CAG	AN700KN0218C
	575	50	600		ECN3731DAG	ECN3732DAG	ECN3734DAG	ECN3738DAG	AN700KN0218D
4	—	—	120	200 A	ECN3741AAH	ECN3742AAH	ECN3744AAH	ECN3748AAH	AN700NN0218A
	200	40	208		ECN3741EAH	ECN3742EAH	ECN3744EAH	ECN3748EAH	AN700NN0218E
	230	50	240		ECN3741BAH	ECN3742BAH	ECN3744BAH	ECN3748BAH	AN700NN0218B
	460	100	480		ECN3741CAJ	ECN3742CAJ	ECN3744CAJ	ECN3748CAJ	AN700NN0218C
	575	100	600		ECN3741DAJ	ECN3742DAJ	ECN3744DAJ	ECN3748DAJ	AN700NN0218D
5	—	—	120	400 A	ECN3751AAK	ECN3752AAK	ECN3754AAK	ECN3758AAK	AN700SN0218A
	200	75	208		ECN3751EAK	ECN3752EAK	ECN3754EAK	ECN3758EAK	AN700SN0218E
	230	100	240		ECN3751BAK	ECN3752BAK	ECN3754BAK	ECN3758BAK	AN700SN0218B
	460	200	480		ECN3751CAL	ECN3752CAL	ECN3754CAL	ECN3758CAL	AN700SN0218C
	575	200	600		ECN3751DAL	ECN3752DAL	ECN3754DAL	ECN3758DAL	AN700SN0218D
6	200	150	208	600 A	ECN3761EAM	ECN3762EAM	ECN3763EAM ③	ECN3768EAM	AN700TN0218E
	230	200	240		ECN3761BAM	ECN3762BAM	ECN3763BAM ③	ECN3768BAM	AN700TN0218B
	460	400	480		ECN3761CAN	ECN3762CAN	ECN3763CAN ③	ECN3768CAN	AN700TN0218C
	575	400	600		ECN3761DAN	ECN3762DAN	ECN3763DAN ③	ECN3768DAN	AN700TN0218D

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Maximum horsepower rating of starters for 380 V 50 Hz applications.

NEMA Size	0	1	2	3	4	5	6
Horsepower	5	10	25	50	75	150	300

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN3704AAB. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Type 4 (painted steel) sizes 6.

Class ECN37—Combination Two-Speed One-Winding Starter (CT or VT)—Non-Fusible Disconnect

NEMA Size	Motor Voltage ①	Maximum hp Rating	Magnet Coil Voltage	Disconnect Amperes	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
0	—	—	120	30 A	**ECN3701AAA**	**ECN3702AAA**	**ECN3704AAA**	**ECN3708AAA**	**AN700BN0218A**
	200	3	208		**ECN3701EAA**	**ECN3702EAA**	**ECN3704EAA**	**ECN3708EAA**	**AN700BN0218E**
	230	3	240		**ECN3701BAA**	**ECN3702BAA**	**ECN3704BAA**	**ECN3708BAA**	**AN700BN0218B**
	460	5	480		**ECN3701CAA**	**ECN3702CAA**	**ECN3704CAA**	**ECN3708CAA**	**AN700BN0218C**
	575	5	600		**ECN3701DAA**	**ECN3702DAA**	**ECN3704DAA**	**ECN3708DAA**	**AN700BN0218D**
1	—	—	120	30 A	**ECN3711AAA**	**ECN3712AAA**	**ECN3714AAA**	**ECN3718AAA**	**AN700DN0218A**
	200	7-1/2	208		**ECN3711EAA**	**ECN3712EAA**	**ECN3714EAA**	**ECN3718EAA**	**AN700DN0218E**
	230	7-1/2	240		**ECN3711BAA**	**ECN3712BAA**	**ECN3714BAA**	**ECN3718BAA**	**AN700DN0218B**
	460	10	480		**ECN3711CAA**	**ECN3712CAA**	**ECN3714CAA**	**ECN3718CAA**	**AN700DN0218C**
	575	10	600		**ECN3711DAA**	**ECN3712DAA**	**ECN3714DAA**	**ECN3718DAA**	**AN700DN0218D**
2	—	—	120	60 A	**ECN3721AAA**	**ECN3722AAA**	**ECN3724AAA**	**ECN3728AAA**	**AN700GN0218A**
	200	10	208		**ECN3721EAA**	**ECN3722EAA**	**ECN3724EAA**	**ECN3728EAA**	**AN700GN0218E**
	230	15	240		**ECN3721BAA**	**ECN3722BAA**	**ECN3724BAA**	**ECN3728BAA**	**AN700GN0218B**
	460	25	480		**ECN3721CAA**	**ECN3722CAA**	**ECN3724CAA**	**ECN3728CAA**	**AN700GN0218C**
	575	25	600		**ECN3721DAA**	**ECN3722DAA**	**ECN3724DAA**	**ECN3728DAA**	**AN700GN0218D**
3	—	—	120	100 A	**ECN3731AAA**	**ECN3732AAA**	**ECN3734AAA**	**ECN3738AAA**	**AN700KN0218A**
	200	25	208		**ECN3731EAA**	**ECN3732EAA**	**ECN3734EAA**	**ECN3738EAA**	**AN700KN0218E**
	230	30	240		**ECN3731BAA**	**ECN3732BAA**	**ECN3734BAA**	**ECN3738BAA**	**AN700KN0218B**
	460	50	480		**ECN3731CAA**	**ECN3732CAA**	**ECN3734CAA**	**ECN3738CAA**	**AN700KN0218C**
	575	50	600		**ECN3731DAA**	**ECN3732DAA**	**ECN3734DAA**	**ECN3738DAA**	**AN700KN0218D**
4	—	—	120	200 A	**ECN3741AAA**	**ECN3742AAA**	**ECN3744AAA**	**ECN3748AAA**	**AN700NN0218A**
	200	40	208		**ECN3741EAA**	**ECN3742EAA**	**ECN3744EAA**	**ECN3748EAA**	**AN700NN0218E**
	230	50	240		**ECN3741BAA**	**ECN3742BAA**	**ECN3744BAA**	**ECN3748BAA**	**AN700NN0218B**
	460	100	480		**ECN3741CAA**	**ECN3742CAA**	**ECN3744CAA**	**ECN3748CAA**	**AN700NN0218C**
	575	100	600		**ECN3741DAA**	**ECN3742DAA**	**ECN3744DAA**	**ECN3748DAA**	**AN700NN0218D**
5	—	—	120	400 A	**ECN3751AAA**	**ECN3752AAA**	**ECN3754AAA**	**ECN3758AAA**	**AN700SN0218A**
	200	75	208		**ECN3751EAA**	**ECN3752EAA**	**ECN3754EAA**	**ECN3758EAA**	**AN700SN0218E**
	230	100	240		**ECN3751BAA**	**ECN3752BAA**	**ECN3754BAA**	**ECN3758BAA**	**AN700SN0218B**
	460	200	480		**ECN3751CAA**	**ECN3752CAA**	**ECN3754CAA**	**ECN3758CAA**	**AN700SN0218C**
	575	200	600		**ECN3751DAA**	**ECN3752DAA**	**ECN3754DAA**	**ECN3758DAA**	**AN700SN0218D**
6	200	150	208	600 A	**ECN3761EAA**	**ECN3762EAA**	**ECN3763EAA** ③	**ECN3768EAA**	**AN700TN0218E**
	230	200	240		**ECN3761BAA**	**ECN3762BAA**	**ENC3763BAA** ③	**ECN3768BAA**	**AN700TN0218B**
	460	400	480		**ECN3761CAA**	**ECN3762CAA**	**ENC3763CAA** ③	**ECN3768CAA**	**AN700TN0218C**
	575	400	600		**ECN3761DAA**	**ECN3762DAA**	**ENC3763DAA** ③	**ECN3768DAA**	**AN700TN0218D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Maximum horsepower rating of starters for 380 V 50 Hz applications.

NEMA Size	0	1	2	3	4	5	6
Horsepower	5	10	25	50	75	150	300

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN3704AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Type 4 (painted steel) sizes 6.

2

Class ECN38—Combination Two-Speed One-Winding Starter (Constant Horsepower)—Fusible Disconnect

NEMA Size	Motor Voltage ①	Maximum hp Rating	Magnet Coil Voltage	Fuse Clip Amperes	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
0	—	—	120	30 A	ECN3801AAB	ECN3802AAB	ECN3804AAB	ECN3808AAB	AN700BN0218A
	200	2	208		ECN3801EAB	ECN3802EAB	ECN3804EAB	ECN3808EAB	AN700BN0218E
	230	2	240		ECN3801BAB	ECN3802BAB	ECN3804BAB	ECN3808BAB	AN700BN0218B
	460	3	480		ECN3801CAC	ECN3802CAC	ECN3804CAC	ECN3808CAC	AN700BN0218C
	575	3	600		ECN3801DAC	ECN3802DAC	ECN3804DAC	ECN3808DAC	AN700BN0218D
1	—	—	120	30 A	ECN3811AAB	ECN3812AAB	ECN3814AAB	ECN3818AAB	AN700DN0218A
	200	5	208		ECN3811EAB	ECN3812EAB	ECN3814EAB	ECN3818EAB	AN700DN0218E
	230	5	240		ECN3811BAB	ECN3812BAB	ECN3814BAB	ECN3818BAB	AN700DN0218B
	460	7-1/2	480		ECN3811CAC	ECN3812CAC	ECN3814CAC	ECN3818CAC	AN700DN0218C
	575	7-1/2	600		ECN3811DAC	ECN3812DAC	ECN3814DAC	ECN3818DAC	AN700DN0218D
2	—	—	120	60 A	ECN3821AAD	ECN3822AAD	ECN3824AAD	ECN3828AAD	AN700GN0218A
	200	7-1/2	208		ECN3821EAD	ECN3822EAD	ECN3824EAD	ECN3828EAD	AN700GN0218E
	230	10	240		ECN3821BAD	ECN3822BAD	ECN3824BAD	ECN3828BAD	AN700GN0218B
	460	20	480		ECN3821CAE	ECN3822CAE	ECN3824CAE	ECN3828CAE	AN700GN0218C
	575	20	600		ECN3821DAE	ECN3822DAE	ECN3824DAE	ECN3828DAE	AN700GN0218D
3	—	—	120	100 A	ECN3831AAF	ECN3832AAF	ECN3834AAF	ECN3838AAF	AN700KN0218A
	200	20	208		ECN3831EAF	ECN3832EAF	ECN3834EAF	ECN3838EAF	AN700KN0218E
	230	25	240		ECN3831BAF	ECN3832BAF	ECN3834BAF	ECN3838BAF	AN700KN0218B
	460	40	480		ECN3831CAG	ECN3832CAG	ECN3834CAG	ECN3838CAG	AN700KN0218C
	575	40	600		ECN3831DAG	ECN3832DAG	ECN3834DAG	ECN3838DAG	AN700KN0218D
4	—	—	120	200 A	ECN3841AAH	ECN3842AAH	ECN3844AAH	ECN3848AAH	AN700NN0218A
	200	30	208		ECN3841EAH	ECN3842EAH	ECN3844EAH	ECN3848EAH	AN700NN0218E
	230	40	240		ECN3841BAH	ECN3842BAH	ECN3844BAH	ECN3848BAH	AN700NN0218B
	460	75	480		ECN3841CAJ	ECN3842CAJ	ECN3844CAJ	ECN3848CAJ	AN700NN0218C
	575	75	600		ECN3841DAJ	ECN3842DAJ	ECN3844DAJ	ECN3848DAJ	AN700NN0218D
5	—	—	120	400 A	ECN3851AAK	ECN3852AAK	ECN3854AAK	ECN3858AAK	AN700SN0218A
	200	60	208		ECN3851EAK	ECN3852EAK	ECN3854EAK	ECN3858EAK	AN700SN0218E
	230	75	240		ECN3851BAK	ECN3852BAK	ECN3854BAK	ECN3858BAK	AN700SN0218B
	460	150	480		ECN3851CAL	ECN3852CAL	ECN3854CAL	ECN3858CAL	AN700SN0218C
	575	150	600		ECN3851DAL	ECN3852DAL	ECN3854DAL	ECN3858DAL	AN700SN0218D
6	200	100	208	600 A	ECN3861EAM	ECN3862EAM	ECN3863EAM ③	ECN3868EAM	AN700TN0218E
	230	150	240		ECN3861BAM	ECN3862BAM	ECN3863BAM ③	ECN3868BAM	AN700TN0218B
	460	300	480		ECN3861CAN	ECN3862CAL	ECN3863CAN ③	ECN3868CAN	AN700TN0218C
	575	300	600		ECN3861DAN	ECN3862DAL	ECN3863DAN ③	ECN3868DAN	AN700TN0218D

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Maximum horsepower rating of starters for 380 V 50 Hz applications.

NEMA Size	0	1	2	3	4	5	6
Horsepower	3	7-1/2	20	40	60	100	200

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN3804AAB. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Type 4 (painted steel) sizes 6.

Class ECN38—Combination Two-Speed One-Winding Starter (Constant Horsepower)—Non-Fusible Disconnect

NEMA Size	Motor Voltage ①	Maximum hp Rating	Magnet Coil Voltage	Disconnect Amperes	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset Catalog Number	Component Starter (Open) Catalog Number
0	—	—	120	30 A	**ECN3801AAA**	**ECN3802AAA**	**ECN3804AAA**	**ECN3808AAA**	**AN700BN0218A**
	200	2	208		**ECN3801EAA**	**ECN3802EAA**	**ECN3804EAA**	**ECN3808EAA**	**AN700BN0218E**
	230	2	240		**ECN3801BAA**	**ECN3802BAA**	**ECN3804BAA**	**ECN3808BAA**	**AN700BN0218B**
	460	3	480		**ECN3801CAA**	**ECN3802CAA**	**ECN3804CAA**	**ECN3808CAA**	**AN700BN0218C**
	575	3	600		**ECN3801DAA**	**ECN3802DAA**	**ECN3804DAA**	**ECN3808DAA**	**AN700BN0218D**
1	—	—	120	30 A	**ECN3811AAA**	**ECN3812AAA**	**ECN3814AAA**	**ECN3818AAA**	**AN700DN0218A**
	200	5	208		**ECN3811EAA**	**ECN3812EAA**	**ECN3814EAA**	**ECN3818EAA**	**AN700DN0218E**
	230	5	240		**ECN3811BAA**	**ECN3812BAA**	**ECN3814BAA**	**ECN3818BAA**	**AN700DN0218B**
	460	7-1/2	480		**ECN3811CAA**	**ECN3812CAA**	**ECN3814CAA**	**ECN3818CAA**	**AN700DN0218C**
	575	7-1/2	600		**ECN3811DAA**	**ECN3812DAA**	**ECN3814DAA**	**ECN3818DAA**	**AN700DN0218D**
2	—	—	120	60 A	**ECN3821AAA**	**ECN3822AAA**	**ECN3824AAA**	**ECN3828AAA**	**AN700GN0218A**
	200	7-1/2	208		**ECN3821EAA**	**ECN3822EAA**	**ECN3824EAA**	**ECN3828EAA**	**AN700GN0218E**
	230	10	240		**ECN3821BAA**	**ECN3822BAA**	**ECN3824BAA**	**ECN3828BAA**	**AN700GN0218B**
	460	20	480		**ECN3821CAA**	**ECN3822CAA**	**ECN3824CAA**	**ECN3828CAA**	**AN700GN0218C**
	575	20	600		**ECN3821DAA**	**ECN3822DAA**	**ECN3824DAA**	**ECN3828DAA**	**AN700GN0218D**
3	—	—	120	100 A	**ECN3831AAA**	**ECN3832AAA**	**ECN3834AAA**	**ECN3838AAA**	**AN700KN0218A**
	200	20	208		**ECN3831EAA**	**ECN3832EAA**	**ECN3834EAA**	**ECN3838EAA**	**AN700KN0218E**
	230	25	240		**ECN3831BAA**	**ECN3832BAA**	**ECN3834BAA**	**ECN3838BAA**	**AN700KN0218B**
	460	40	480		**ECN3831CAA**	**ECN3832CAA**	**ECN3834CAA**	**ECN3838CAA**	**AN700KN0218C**
	575	40	600		**ECN3831DAA**	**ECN3832DAA**	**ECN3834DAA**	**ECN3838DAA**	**AN700KN0218D**
4	—	—	120	200 A	**ECN3841AAA**	**ECN3842AAA**	**ECN3844AAA**	**ECN3848AAA**	**AN700NN0218A**
	200	30	208		**ECN3841EAA**	**ECN3842EAA**	**ECN3844EAA**	**ECN3848EAA**	**AN700NN0218E**
	230	40	240		**ECN3841BAA**	**ECN3842BAA**	**ECN3844BAA**	**ECN3848BAA**	**AN700NN0218B**
	460	75	480		**ECN3841CAA**	**ECN3842CAA**	**ECN3844CAA**	**ECN3848CAA**	**AN700NN0218C**
	575	75	600		**ECN3841DAA**	**ECN3842DAA**	**ECN3844DAA**	**ECN3848DAA**	**AN700NN0218D**
5	—	—	120	400 A	**ECN3851AAA**	**ECN3852AAA**	**ECN3854AAA**	**ECN3858AAA**	**AN700SN0218A**
	200	60	208		**ECN3851EAA**	**ECN3852EAA**	**ECN3854EAA**	**ECN3858EAA**	**AN700SN0218E**
	230	75	240		**ECN3851BAA**	**ECN3852BAA**	**ECN3854BAA**	**ECN3858BAA**	**AN700SN0218B**
	460	150	480		**ECN3851CAA**	**ECN3852CAA**	**ECN3854CAA**	**ECN3858CAA**	**AN700SN0218C**
	575	150	600		**ECN3851DAA**	**ECN3852DAA**	**ECN3854DAA**	**ECN3858DAA**	**AN700SN0218D**
6	200	100	208	600 A	**ECN3861EAA**	**ECN3862EAA**	**ECN3863EAA** ③	**ECN3868EAA**	**AN700TN0218E**
	230	150	240		**ECN3861BAA**	**ECN3862BAA**	**ECN3863BAA** ③	**ECN3868BAA**	**AN700TN0218B**
	460	300	480		**ECN3861CAA**	**ECN3862CAA**	**ECN3863CAA** ③	**ECN3868CAA**	**AN700TN0218C**
	575	300	600		**ECN3861DAA**	**ECN3862DAA**	**ECN3863DAA** ③	**ECN3868DAA**	**AN700TN0218D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Maximum horsepower rating of starters for 380 V 50 Hz applications.

NEMA Size	0	1	2	3	4	5	6
Horsepower	3	7-1/2	20	40	60	100	200

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN3804AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Type 4 (painted steel) sizes 6.

Class ECN39—Combination Two-Speed Two-Winding Starter—Circuit Breaker

NEMA Size	Motor Voltage	Maximum hp Rating: Constant or Variable Torque	Maximum hp Rating: Constant Horsepower	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
0	200	1	1	208	7 A	**ECN3901EAC**	**ECN3902EAC**	**ECN3904EAC**	**ECN3908EAC**	**AN700BN022E**
		3	2		15 A	**ECN3901EAD**	**ECN3902EAD**	**ECN3904EAD**	**ECN3908EAD**	
	230	1	1	240	7 A	**ECN3901BAC**	**ECN3902BAC**	**ECN3904BAC**	**ECN3908BAC**	**AN700BN022B**
		3	2		15 A	**ECN3901BAD**	**ECN3902BAD**	**ECN3904BAD**	**ECN3908BAD**	
	460	3/4	3/4	480	3 A	**ECN3901CAB**	**ECN3902CAB**	**ECN3904CAB**	**ECN3908CAB**	**AN700BN022C**
		2	2		7 A	**ECN3901CAC**	**ECN3902CAC**	**ECN3904CAC**	**ECN3908CAC**	
		5	3		15 A	**ECN3901CAD**	**ECN3902CAD**	**ECN3904CAD**	**ECN3908CAD**	
	575	1	1	600	3 A	**ECN3901DA5**	**ECN3902DA5**	**ECN3904DA5**	**ECN3908DA5**	**AN700BN022D**
		3	3		7 A	**ECN3901DA6**	**ECN3902DA6**	**ECN3904DA6**	**ECN3908DA6**	
		5	—		15 A	**ECN3901DA7**	**ECN3902DA7**	**ECN3904DA7**	**ECN3908DA7**	
1	200	1	1	208	7 A	**ECN3911EAC**	**ECN3912EAC**	**ECN3914EAC**	**ECN3918EAC**	**AN700DN022E**
		2	2		15 A	**ECN3911EAD**	**ECN3912EAD**	**ECN3914EAD**	**ECN3918EAD**	
		7-1/2	5		30 A	**ECN3911EAE**	**ECN3912EAE**	**ECN3914EAE**	**ECN3918EAE**	
	230	1	1	240	7 A	**ECN3911BAC**	**ECN3912BAC**	**ECN3914BAC**	**ECN3918BAC**	**AN700DN022B**
		2	2		15 A	**ECN3911BAD**	**ECN3912BAD**	**ECN3914BAD**	**ECN3918BAD**	
		7-1/2	5		30 A	**ECN3911BAE**	**ECN3912BAE**	**ECN3914BAE**	**ECN3918BAE**	
	460	3/4	3/4	480	3 A	**ECN3911CAB**	**ECN3912CAB**	**ECN3914CAB**	**ECN3918CAB**	**AN700DN022C**
		2	2		7 A	**ECN3911CAC**	**ECN3912CAC**	**ECN3914CAC**	**ECN3918CAC**	
		5	5		15 A	**ECN3911CAD**	**ECN3912CAD**	**ECN3914CAD**	**ECN3918CAD**	
		10	7-1/2		30 A	**ECN3911CAE**	**ECN3912CAE**	**ECN3914CAE**	**ECN3918CAE**	
	575	1	1	600	3 A	**ECN3911DA5**	**ECN3912DA5**	**ECN3914DA5**	**ECN3918DA5**	**AN700DN022D**
		3	3		7 A	**ECN3911DA6**	**ECN3912DA6**	**ECN3914DA6**	**ECN3918DA6**	
		7-1/2	7-1/2		1 5A	**ECN3911DA7**	**ECN3912DA7**	**ECN3914DA7**	**ECN3918DA7**	
		10	—		30 A	**ECN3911DA8**	**ECN3912DA8**	**ECN3914DA8**	**ECN3918DA8**	
2	200	10	7-1/2	208	50 A	**ECN3921EAF**	**ECN3922EAF**	**ECN3924EAF**	**ECN3928EAF**	**AN700GN022E**
	230	15	10	240		**ECN3921BAF**	**ECN3922BAF**	**ECN3924BAF**	**ECN3928BAF**	**AN700GN022B**
	460	25	20	480		**ECN3921CAF**	**ECN3922CAF**	**ECN3924CAF**	**ECN3928CAF**	**AN700GN022C**
	575	25	20	600		**ECN3921DA9**	**ECN3922DA9**	**ECN3924DA9**	**ECN3928DA9**	**AN700GN022D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Starters with 120 V coil (for separate control) are available. To order, substitute the letter **A** for the eighth character of the listed catalog number.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN3904EAC. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order mod code **R5**.

④ Type 12 enclosure is without safety door interlock.

Class ECN39—Combination Two-Speed Two-Winding Starter—Circuit Breaker, continued

		Maximum hp Rating				Type 1 General Purpose	Type 3R Rainproof	Type 4X Watertight and Dust-Tight Stainless Steel ②	Type 12 Dust-Tight Industrial External Reset ③④	Component Starter (Open)
NEMA Size	Motor Voltage	Constant or Variable Torque	Constant Horsepower	Magnet Coil Voltage ①	Circuit Breaker Size	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
3	200	25	20	208	100 A	**ECN3931EAG**	**ECN3932EAG**	**ECN3934EAG**	**ECN3938EAG**	**AN700KN022E**
	230	30	25	240		**ECN3931BAG**	**ECN3932BAG**	**ECN3934BAG**	**ECN3938BAG**	**AN700KN022B**
	460	50	40	480		**ECN3931CAG**	**ECN3932CAG**	**ECN3934CAG**	**ECN3938CAG**	**AN700KN022C**
	575	50	40	600		**ECN3931DAI**	**ECN3932DAI**	**ECN3934DAI**	**ECN3938DAI**	**AN700KN022D**
4	200	40	30	208	150 A	**ECN3941EAH**	**ECN3942EAH**	**ECN3944EAH**	**ECN3948EAH**	**AN700NN022E**
	230	50	40	240		**ECN3941BAH**	**ECN3942BAH**	**ECN3944BAH**	**ECN3948BAH**	**AN700NN022B**
	460	100	75	480		**ECN3941CAH**	**ECN3942CAH**	**ECN3944CAH**	**ECN3948CAH**	**AN700NN022C**
	575	100	75	600		**ECN3941DAH**	**ECN3942DAH**	**ECN3944DAH**	**ECN3948DAH**	**AN700NN022D**
5	200	60	60	208	250 A	**ECN3951EAJ**	**ECN3952EAJ**	**ECN3954EAJ**	**ECN3958EAJ**	**AN700SN022E**
		75	—		400 A	**ECN3951EAK**	**ECN3952EAK**	**ECN3954EAK**	**ECN3958EAK**	
	230	75	75	240	250 A	**ECN3951BAJ**	**ECN3952BAJ**	**ECN3954BAJ**	**ECN3958BAJ**	**AN700SN022B**
		100	—		400 A	**ECN3951BAK**	**ECN3952BAK**	**ECN3954BAK**	**ECN3958BAK**	
	460	150	150	480	250 A	**ECN3951CAJ**	**ECN3952CAJ**	**ECN3954CAJ**	**ECN3958CAJ**	**AN700SN022C**
		200	—		400 A	**ECN3951CAK**	**ECN3952CAK**	**ECN3954CAK**	**ECN3958CAK**	
	575	200	150	600	250 A	**ECN3951DAJ**	**ECN3952DAJ**	**ECN3954DAJ**	**ECN3958DAJ**	**AN700SN022D**
6	200	150	100	208	⑤	**ECN3961EAU**	**ECN3962EAU**	**ECN3963EAU** ⑥	**ECN3968EAU**	**AN700TN022E**
	230	200	150	240		**ECN3961BAU**	**ECN3962BAU**	**ECN3963BAU** ⑥	**ECN3968BAU**	**AN700TN022B**
	460	400	300	480		**ECN3961CAU**	**ECN3962CAU**	**ECN3963CAU** ⑥	**ECN3968CAU**	**AN700TN022C**
	575	400	300	600		**ECN3961DAU**	**ECN3962DAU**	**ECN3963DAU** ⑥	**ECN3968DAU**	**AN700TN022D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Starters with 120 V coil (for separate control) are available. To order, substitute the letter **A** for the eight character of the listed catalog number.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN3934EAG. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order mod code **R5**.

④ Type 12 enclosure is without safety door interlock.

⑤ Supply hp, voltage, FLA and whether motor is design E or not when ordering the starter.

⑥ Type 4 (painted steel) size 6.

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Class ECN40—Combination Two-Speed One-Winding Starter (CT or VT)—Circuit Breaker

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
0	200	1	208	7 A	**ECN4001EAC**	**ECN4002EAC**	**ECN4004EAC**	**ECN4008EAC**	**AN700BN0218E**
		3		15 A	**ECN4001EAD**	**ECN4002EAD**	**ECN4004EAD**	**ECN4008EAD**	
	230	1	240	7 A	**ECN4001BAC**	**ECN4002BAC**	**ECN4004BAC**	**ECN4008BAC**	**AN700BN0218B**
		3		15 A	**ECN4001BAD**	**ECN4002BAD**	**ECN4004BAD**	**ECN4008BAD**	
	460	3/4	480	3 A	**ECN4001CAB**	**ECN4002CAB**	**ECN4004CAB**	**ECN4008CAB**	**AN700BN0218C**
		2		7 A	**ECN4001CAC**	**ECN4002CAC**	**ECN4004CAC**	**ECN4008CAC**	
		5		15 A	**ECN4001CAD**	**ECN4002CAD**	**ECN4004CAD**	**ECN4008CAD**	
	575	1	600	3 A	**ECN4001DA5**	**ECN4002DA5**	**ECN4004DA5**	**ECN4008DA5**	**AN700BN0218D**
		3		7A	**ECN4001DA6**	**ECN4002DA6**	**ECN4004DA6**	**ECN4008DA6**	
		5		15 A	**ECN4001DA7**	**ECN4002DA7**	**ECN4004DA7**	**ECN4008DA7**	
1	200	1	208	7 A	**ECN4011EAC**	**ECN4012EAC**	**ECN4014EAC**	**ECN4018EAC**	**AN700DN0218E**
		2		15 A	**ECN4011EAD**	**ECN4012EAD**	**ECN4014EAD**	**ECN4018EAD**	
		7-1/2		30 A	**ECN4011EAE**	**ECN4012EAE**	**ECN4014EAE**	**ECN4018EAE**	
	230	1	240	7 A	**ECN4011BAC**	**ECN4012BAC**	**ECN4014BAC**	**ECN4018BAC**	**AN700DN0218B**
		2		15 A	**ECN4011BAD**	**ECN4012BAD**	**ECN4014BAD**	**ECN4018BAD**	
		7-1/2		30 A	**ECN4011BAE**	**ECN4012BAE**	**ECN4014BAE**	**ECN4018BAE**	
	460	3/4	480	3 A	**ECN4011CAB**	**ECN4012CAB**	**ECN4014CAB**	**ECN4018CAB**	**AN700DN0218C**
		2		7 A	**ECN4011CAC**	**ECN4012CAC**	**ECN4014CAC**	**ECN4018CAC**	
		5		15 A	**ECN4011CAD**	**ECN4012CAD**	**ECN4014CAD**	**ECN4018CAD**	
		10		30 A	**ECN4011CAE**	**ECN4012CAE**	**ECN4014CAE**	**ECN4018CAE**	
	575	1	600	3 A	**ECN4011DA5**	**ECN4012DA5**	**ECN4014DA5**	**ECN4018DA5**	**AN700DN0218D**
		3		7 A	**ECN4011DA6**	**ECN4012DA6**	**ECN4014DA6**	**ECN4018DA6**	
		7-1/2		15 A	**ECN4011DA7**	**ECN4012DA7**	**ECN4014DA7**	**ECN4018DA7**	
		10		30 A	**ECN4011DA8**	**ECN4012DA8**	**ECN4014DA8**	**ECN4018DA8**	
2	200	10	208	50 A	**ECN4021EAF**	**ECN4022EAF**	**ECN4024EAF**	**ECN4028EAF**	**AN700GN0218E**
	230	15	240		**ECN4021BAF**	**ECN4022BAF**	**ECN4024BAF**	**ECN4028BAF**	**AN700GN0218B**
	460	25	480		**ECN4021CAF**	**ECN4022CAF**	**ECN4024CAF**	**ECN4028CAF**	**AN700GN0218C**
	575	25	600		**ECN4021DA9**	**ECN4022DA9**	**ECN4024DA9**	**ECN4028DA9**	**AN700GN0218D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Starters with 120 V coil (for separate control) are available. To order, substitute the letter **A** for the eight character of the listed catalog number.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN400**4**EAC. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order mod code **R5**.

④ Type 12 enclosure is without safety door interlock.

Class ECN40—Combination Two-Speed One-Winding Starter (CT or VT)—Circuit Breaker, continued

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
3	200	25	208	100 A	**ECN4031EAG**	**ECN4032EAG**	**ECN4034EAG**	**ECN4038EAG**	**AN700KN0218E**
	230	30	240		**ECN4031BAG**	**ECN4032BAG**	**ECN4034BAG**	**ECN4038BAG**	**AN700KN0218B**
	460	50	480		**ECN4031CAG**	**ECN4032CAG**	**ECN4034CAG**	**ECN4038CAG**	**AN700KN0218C**
	575		600		**ECN4031DAI**	**ECN4032DAI**	**ECN4034DAI**	**ECN4038DAI**	**AN700KN0218D**
4	200	40	208	150 A	**ECN4041EAH**	**ECN4042EAH**	**ECN4044EAH**	**ECN4048EAH**	**AN700NN0218E**
	230	50	240		**ECN4041BAH**	**ECN4042BAH**	**ECN4044BAH**	**ECN4048BAH**	**AN700NN0218B**
	460	100	480		**ECN4041CAH**	**ECN4042CAH**	**ECN4044CAH**	**ECN4048CAH**	**AN700NN0218C**
	575		600		**ECN4041DAH**	**ECN4042DAH**	**ECN4044DAH**	**ECN4048DAH**	**AN700NN0218D**
5	200	60	208	250 A	**ECN4051EAJ**	**ECN4052EAJ**	**ECN4054EAJ**	**ECN4058EAJ**	**AN700SN0218E**
		75		400 A	**ECN4051EAK**	**ECN4052EAK**	**ECN4054EAK**	**ECN4058EAK**	
	230	75	240	250 A	**ECN4051BAJ**	**ECN4052BAJ**	**ECN4054BAJ**	**ECN4058BAJ**	**AN700SN0218B**
		100		400 A	**ECN4051BAK**	**ECN4052BAK**	**ECN4054BAK**	**ECN4058BAK**	
	460	150	480	250 A	**ECN4051CAJ**	**ECN4052CAJ**	**ECN4054CAJ**	**ECN4058CAJ**	**AN700SN0218C**
		200		400 A	**ECN4051CAK**	**ECN4052CAK**	**ECN4054CAK**	**ECN4058CAK**	
	575	200	600	250 A	**ECN4051DAJ**	**ECN4052DAJ**	**ECN4054DAJ**	**ECN4058DAJ**	**AN700SN0218D**
6	200	150	208	⑤	**ECN4061EAU**	**ECN4062EAU**	**ECN4063EAU** ⑥	**ECN4068EAU**	**AN700TN0218E**
	230	200	240		**ECN4061BAU**	**ECN4062BAU**	**ECN4063BAU** ⑥	**ECN4068BAU**	**AN700TN0218B**
	460	400	480		**ECN4061CAU**	**ECN4062CAU**	**ECN4063CAU** ⑥	**ECN4068CAU**	**AN700TN0218C**
	575		600		**ECN4061DAU**	**ECN4062DAU**	**ECN4063DAU** ⑥	**ECN4068DAU**	**AN700TN0218D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Starters with 120 V coil (for separate control) are available. To order, substitute the letter **A** for the eight character of the listed catalog number.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN403**4**EAG. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order mod code **R5**.

④ Type 12 enclosure is without safety door interlock.

⑤ Supply hp, voltage, FLA and whether motor is design E or not when ordering the starter.

⑥ Type 4 (painted steel) size 6.

2

Class ECN41—Combination Two-Speed One-Winding Starter (Constant Horsepower)—Circuit Breaker

NEMA Size	Motor Voltage	Maximum hp Rating Constant Horsepower	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
0	200	1	208	7 A	**ECN4101EAC**	**ECN4102EAC**	**ECN4104EAC**	**ECN4108EAC**	**AN700BN0218E**
		2		15 A	**ECN4101EAD**	**ECN4102EAD**	**ECN4104EAD**	**ECN4108EAD**	
	230	1	240	7 A	**ECN4101BAC**	**ECN4102BAC**	**ECN4104BAC**	**ECN4108BAC**	**AN700BN0218B**
		2		15 A	**ECN4101BAD**	**ECN4102BAD**	**ECN4104BAD**	**ECN4108BAD**	
	460	3/4	480	3 A	**ECN4101CAB**	**ECN4102CAB**	**ECN4104CAB**	**ECN4108CAB**	**AN700BN0218C**
		2		7 A	**ECN4101CAC**	**ECN4102CAC**	**ECN4104CAC**	**ECN4108CAC**	
		3		15 A	**ECN4101CAD**	**ECN4102CAD**	**ECN4104CAD**	**ECN4108CAD**	
	575	1	600	3 A	**ECN4101DA5**	**ECN4102DA5**	**ECN4104DA5**	**ECN4108DA5**	**AN700BN0218D**
		3		7 A	**ECN4101DA6**	**ECN4102DA6**	**ECN4104DA6**	**ECN4108DA6**	
1	200	1	208	7 A	**ECN4111EAC**	**ECN4112EAC**	**ECN4114EAC**	**ECN4118EAC**	**AN700DN0218E**
		2		5 A	**ECN4111EAD**	**ECN4112EAD**	**ECN4114EAD**	**ECN4118EAD**	
		5		30 A	**ECN4111EAE**	**ECN4112EAE**	**ECN4114EAE**	**ECN4118EAE**	
	230	1	240	7 A	**ECN4111BAC**	**ECN4112BAC**	**ECN4114BAC**	**ECN4118BAC**	**AN700DN0218B**
		2		15 A	**ECN4111BAD**	**ECN4112BAD**	**ECN4114BAD**	**ECN4118BAD**	
		5		30 A	**ECN4111BAE**	**ECN4112BAE**	**ECN4114BAE**	**ECN4118BAE**	
	460	3/4	480	3 A	**ECN4111CAB**	**ECN4112CAB**	**ECN4114CAB**	**ECN4118CAB**	**AN700DN0218C**
		2		7 A	**ECN4111CAC**	**ECN4112CAC**	**ECN4114CAC**	**ECN4118CAC**	
		5		15 A	**ECN4111CAD**	**ECN4112CAD**	**ECN4114CAD**	**ECN4118CAD**	
		7-1/2		30 A	**ECN4111CAE**	**ECN4112CAE**	**ECN4114CAE**	**ECN4118CAE**	
	575	1	600	3 A	**ECN4111DA5**	**ECN4112DA5**	**ECN4114DA5**	**ECN4118DA5**	**AN700DN0218D**
		3		7 A	**ECN4111DA6**	**ECN4112DA6**	**ECN4114DA6**	**ECN4118DA6**	
		7-1/2		15 A	**ECN4111DA7**	**ECN4112DA7**	**ECN4114DA7**	**ECN4118DA7**	
2	200	7-1/2	208	50 A	**ECN4121EAF**	**ECN4122EAF**	**ECN4124EAF**	**ECN4128EAF**	**AN700GN0218E**
	230	10	240		**ECN4121BAF**	**ECN4122BAF**	**ECN4124BAF**	**ECN4128BAF**	**AN700GN0218B**
	460	20	480		**ECN4121CAF**	**ECN4122CAF**	**ECN4124CAF**	**ECN4128CAF**	**AN700GN0218C**
	575	20	600		**ECN4121DA9**	**ECN4122DA9**	**ECN4124DA9**	**ECN4128DA9**	**AN700GN0218D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Starters with 120 V coil (for separate control) are available. To order, substitute the letter **A** for the eight character of the listed catalog number.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN410**4**EAC. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order mod code **R5**.

④ Type 12 enclosure is without safety door interlock.

Class ECN41—Combination Two-Speed One-Winding Starter (Constant Horsepower)—Circuit Breaker, continued

NEMA Size	Motor Voltage	Maximum hp Rating Constant Horsepower	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
3	200	20	208	100 A	**ECN4131EAG**	**ECN4132EAG**	**ECN4134EAG**	**ECN4138EAG**	**AN700KN0218E**
	230	25	240		**ECN4131BAG**	**ECN4132BAG**	**ECN4134BAG**	**ECN4138BAG**	**AN700KN0218B**
	460	40	480		**ECN4131CAG**	**ECN4132CAG**	**ECN4134CAG**	**ECN4138CAG**	**AN700KN0218C**
	575	40	600		**ECN4131DAI**	**ECN4132DAI**	**ECN4134DAI**	**ECN4138DAI**	**AN700KN0218D**
4	200	30	208	150 A	**ECN4141EAH**	**ECN4142EAH**	**ECN4144EAH**	**ECN4148EAH**	**AN700NN0218E**
	230	40	240		**ECN4141BAH**	**ECN4142BAH**	**ECN4144BAH**	**ECN4148BAH**	**AN700NN0218B**
	460	75	480		**ECN4141CAH**	**ECN4142CAH**	**ECN4144CAH**	**ECN4148CAH**	**AN700NN0218C**
	575	75	600		**ECN4141DAH**	**ECN4142DAH**	**ECN4144DAH**	**ECN4148DAH**	**AN700NN0218D**
5	200	60	208	250 A	**ECN4151EAJ**	**ECN4152EAJ**	**ECN4154EAJ**	**ECN4158EAJ**	**AN700SN0218E**
	230	75	240		**ECN4151BAJ**	**ECN4152BAJ**	**ECN4154BAJ**	**ECN4158BAJ**	**AN700SN0218B**
	460	150	480		**ECN4151CAJ**	**ECN4152CAJ**	**ECN4154CAJ**	**ECN4158CAJ**	**AN700SN0218C**
	575	150	600		**ECN4151DAJ**	**ECN4152DAJ**	**ECN4154DAJ**	**ECN4158DAJ**	**AN700SN0218D**
6	200	100	208	⑤	**ECN4161EAU**	**ECN4162EAU**	**ECN4163EAU** ⑥	**ECN4168EAU**	**AN700TN0218E**
	230	150	240		**ECN4161BAU**	**ECN4162BAU**	**ECN4163BAU** ⑥	**ECN4168BAU**	**AN700TN0218B**
	460	300	480		**ECN4161CAU**	**ECN4162CAU**	**ECN4163CAU** ⑥	**ECN4168CAU**	**AN700TN0218C**
	575	300	600		**ECN4161DAU**	**ECN4162DAU**	**ECN4163DAU** ⑥	**ECN4168DAU**	**AN700TN0218D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each speed). For heater pack selection, see **Tab 15**.

① Starters with 120 V coil (for separate control) are available. To order, substitute the letter **A** for the eight character of the listed catalog number.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN413**4**EAG. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order mod code **R5**.

④ Type 12 enclosure is without safety door interlock.

⑤ Supply hp, voltage, FLA and whether motor is design E or not when ordering the starter.

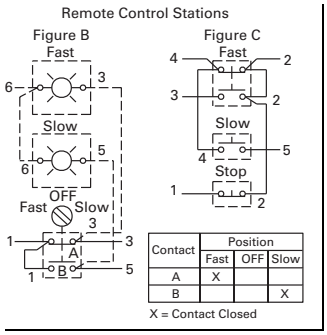
⑥ Type 4 (painted steel) size 6.

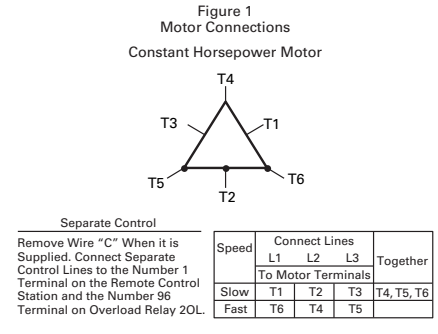
Wiring Diagrams

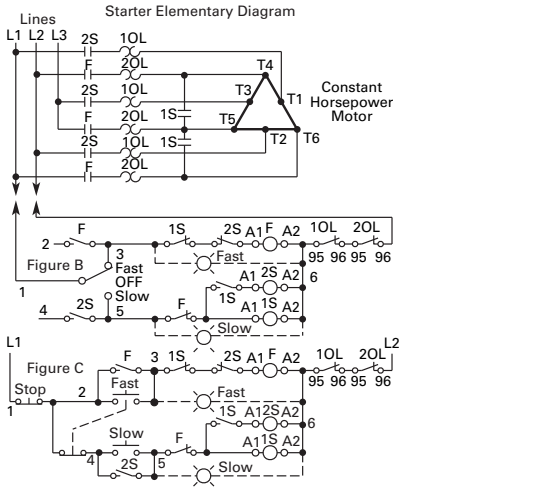
Multispeed

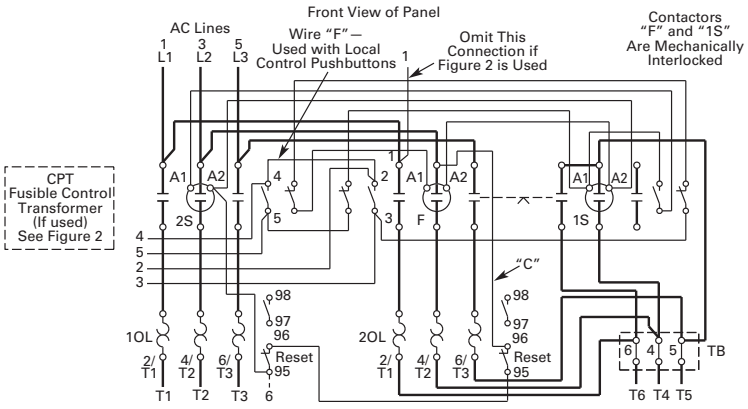
2

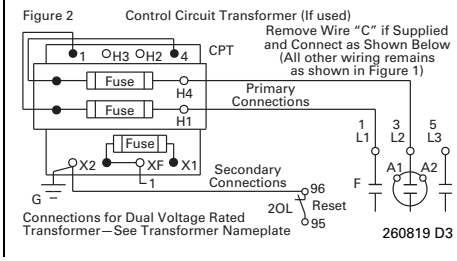
Two-Speed One-Winding Constant Horsepower



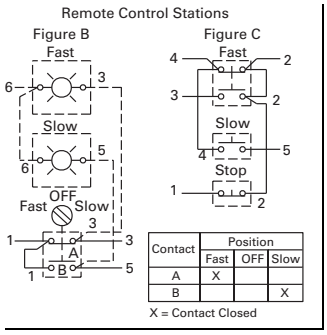


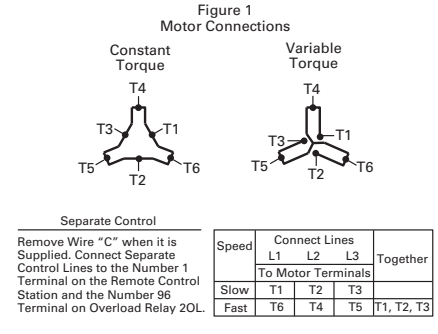


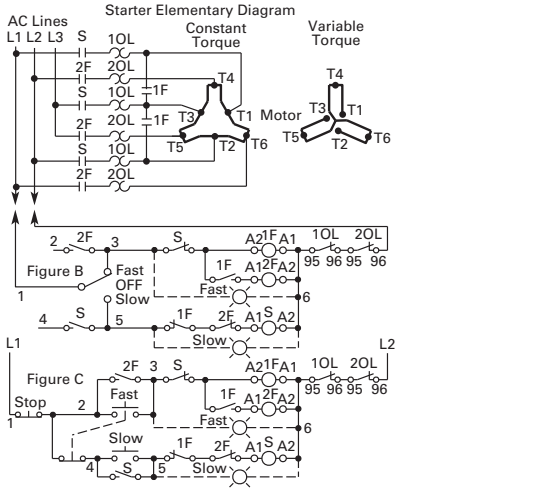


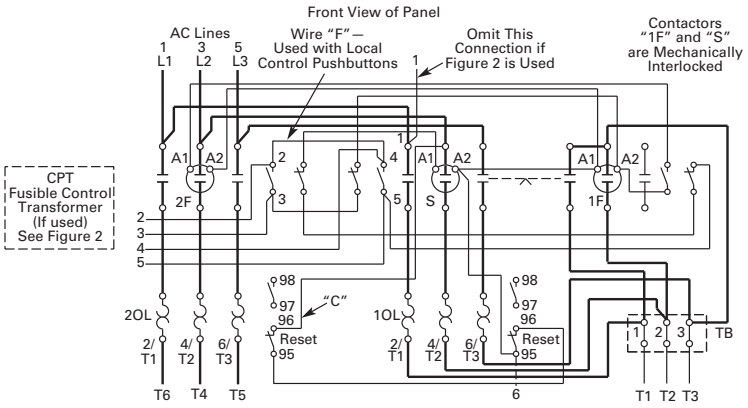


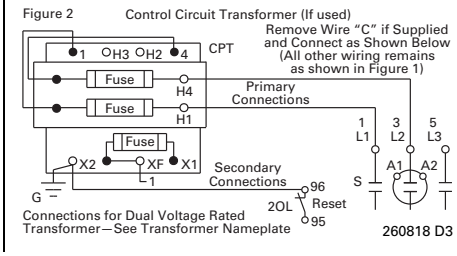
Two-Speed One-Winding Constant or Variable Torque











Two-Speed One-Winding

Remote Control Stations

Figure B

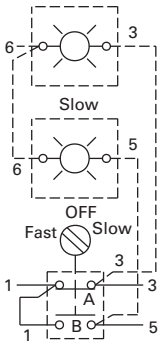
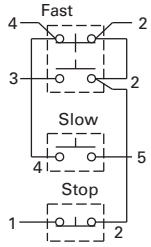


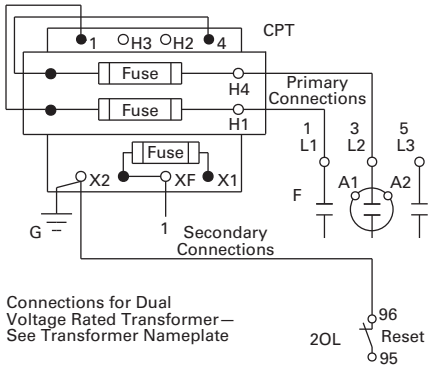
Figure C



Contact	Position		
	Fast	OFF	Slow
A	X		
B			X

X = Contact Closed

Figure 2
Control Circuit Transformer (If used)
Remove Wire "C" if Supplied and Connect as Shown Below
(All other wiring remains as shown in Figure 1)



Starter Elementary Diagram

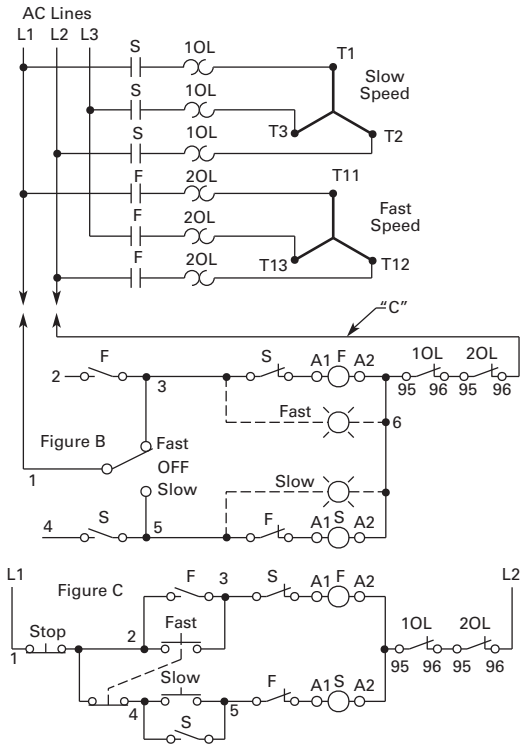
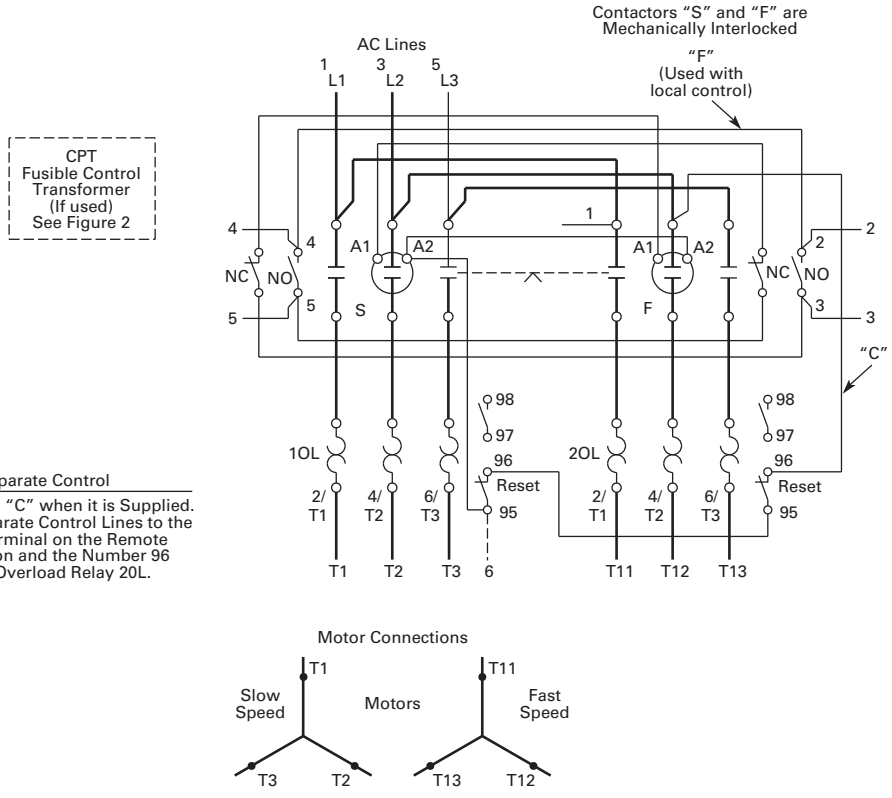


Figure 1
Front View of Panel



Separate Control

Remove Wire "C" when it is Supplied. Connect Separate Control Lines to the Number 1 Terminal on the Remote Control Station and the Number 96 Terminal on Overload Relay 20L.

260815 D3

Multispeed Cover Control

2

Two-Speed Two-Winding C400GK Control Options

Figure A
Three-Position Selector Switch
(Two-wire control)

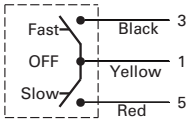
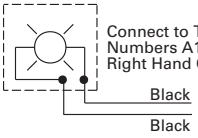
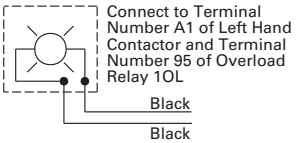


Figure B
Pilot Light
(FAST)



.Pilot Light
(SLOW)



260817 D1

Two-Speed One-Winding CH C400GK Control Options

Figure A
Three-Position Selector Switch
(Two-wire control)

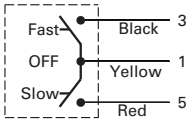


Figure B
Pilot Light
(FAST)

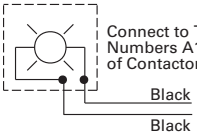
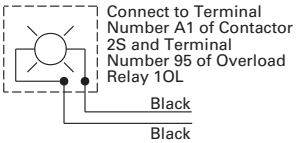


Figure C
Pilot Light
(SLOW)



260894 D1

Two-Speed One-Winding CT, VT C400GK Control Options

Figure A
Three-Position Selector Switch
(Two-wire control)

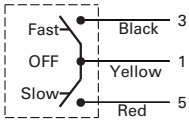


Figure B
Pilot Light
(FAST)

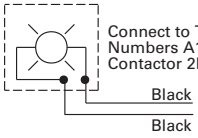
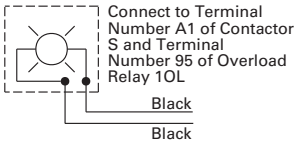


Figure C
Pilot Light
(SLOW)



260893 D1

Two-Speed One-Winding CH C400T Control Options

Figure A
Pushbuttons

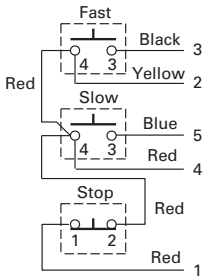


Figure C
Pushbuttons

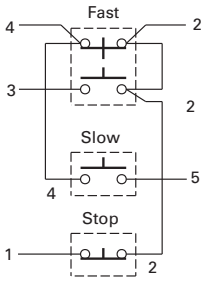
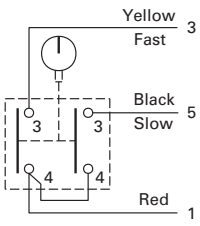
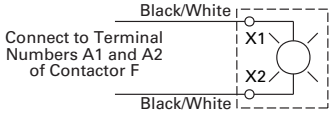


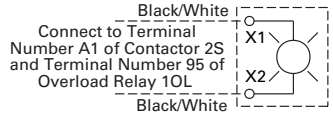
Figure B
Three-Position Selector Switch



Pilot Light
(FAST)



Pilot Light
(SLOW)



260896 D1

Two-Speed One-Winding CT, VT C400T Control Options

Figure A
Pushbuttons

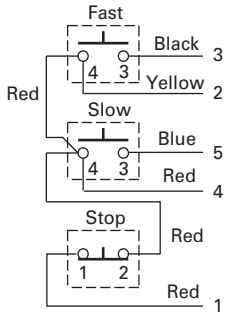


Figure C
Pushbuttons

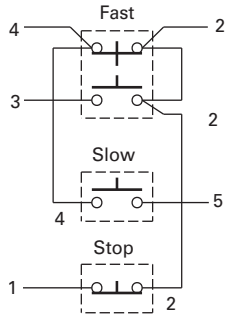
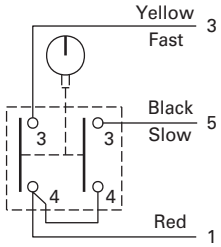
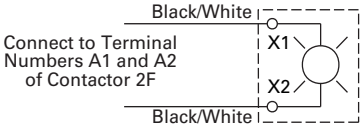


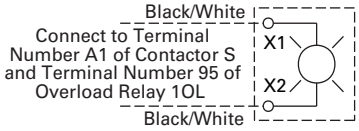
Figure B
Three-Position Selector Switch



Pilot Light
(FAST)



Pilot Light
(SLOW)



260895 D1

Two-Speed Two-Winding C400T Control Options

Figure A
Pushbuttons

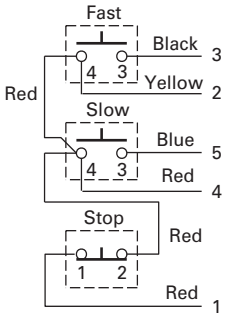


Figure C
Pushbuttons

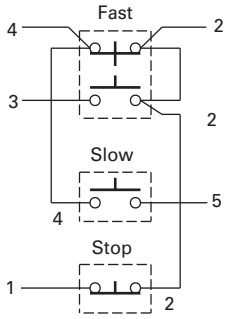
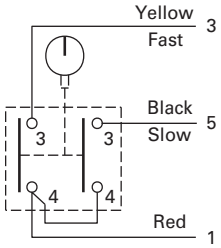
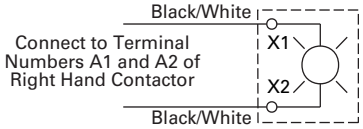


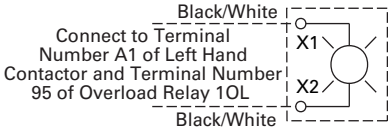
Figure B
Three-Position Selector Switch



Pilot Light
(FAST)



Pilot Light
(SLOW)



260816 D1

ECX Enclosed Control

3.1 *XT* IEC Power Control

IEC Non-Metallic Enclosure—Contactors and Starters

Contents

Non-Metallic Enclosure—Contactors and Starters

Product Description

XT non-metallic 4X starters are the latest addition to our broad line of pre-engineered solutions that make it easy to get an enclosed starter fast! These sturdy, uncomplicated staters are economical, but built to last. Components are all housed in a dust-tight, rain-tight, oil-tight, water-tight and corrosion resistant polycarbonate insulated enclosure. In most cases, ***XT*** non-metallic 4X starters are available from stock for next day delivery.

Reliable Protection

Each starter features an Eaton ***XT*** IEC thermal overload relay. Fourteen overload sizes are available to complete the starter, providing adjustable settings for 0.1 to 32 full load amps. Because of its direct mount design, the ***XT*** relay and resulting stater command a very small footprint.

Clever, Convenient Design to 25 hp

Six different base models (single- and three-phase) are available, ranging from fractional to 25 hp units (at 575 V). This allows you to closely match the starter to your application.

Each starter is equipped with a telescopic base-mount for the pilot device contact blocks. This eliminates all wiring between the cover and starter base, making commissioning and troubleshooting a snap.

Additional Reference

Cover Control	**V10-T3-3**
Dimensions	**Tab 14**
Accessories and Modifications	**Tab 15**
Renewal Parts	**Tab 16**
Technical Data and Specifications	**Tab 17**

Features and Benefits

- Single- and three-phase enclosed starters to 25 hp (at 575 V)
- Rugged IP65 polycarbonate enclosure equivalent to NEMA 1, 12, 13, 3R and 4X environmental protection
- All starters feature the modern ***XT*** contactor family from Eaton in your choice of control voltage from 24 Vac to 600 Vac
- Class 10 motor protection is provided by adjustable bimetal overload relays
- Standard starters feature START/STOP double pushbuttons and a RESET selected from our rugged M22 pilot device line
- Other control options include OFF–ON or HAND–0–AUTO selector switches, with or without pilot light
- All starters use electrical operators to energize and de-energize the starter, providing longer component lifespan and the option for two-wire control
- 5 hp starters are only six inches high; 25 hp starters are less than 10 inches high

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL Listed/CSA/IEC

Product Configuration Overview

Starter sizes (mm)

- To 5 hp (at 575 V): 160 x 100 x 145 (L x W x D)
- To 20 hp (at 575 V): 200 x 120 x 160 (L x W x D)
- To 25 hp (at 575 V): 240 x 160 x 160 (L x W x D)

Phases

- Available in single- and three-phase

Contactors

- From miniature to 32 amps

Voltages

- 50 Hz: 110 V, 23 V, 415 V
- 60 Hz: 24 V, 120 V, 208 V, 240 V, 480 V, 600 V

Pilot devices

- START/STOP double-pushbutton
- ON–OFF selector switch
- HAND–0–AUTO selector switch

Illumination options

- Red light 85–264 Vac
- Red light 12–30 Vac/Vdc
- Without illumination

Catalog Number Selection

XT IEC Line Non-Metallic Enclosed Control

EC X 09 E 5 A A A - _

Design
X = ***XT*** IEC

Class	Page
09 = Non-combination non-reversing starter	**V10-T3-4**

Size	
Non-Combination Ampere Rating	
B = 7 A	**F** = 18 A
C = 9 A	**G** = 25 A
D = 12 A	**H** = 32 A
E = 15 A	

Enclosure Type/IP Ratings ①
5 = Type 4X—Watertight (non-metallic)/IP66

Coil Voltage	
A = 120 V	**H** = 277 V
B = 240 V	**L** = 380 V/50 Hz
C = 480 V	**Q** = 24 Vdc
D = 600 V	**T** = 24 Vac
E = 208 V	

Cover Control
See table below

Disconnect
A = None

Overload Range
See table below

XTOB Overload Relays for Enclosed *XT*

FLA Ratings	Size B–E 7–15 A	Size F–H 18–32 A
0.1–0.16	**A**	**A**
0.16–0.24	**B**	**B**
0.24–0.4	**C**	**C**
0.4–0.6	**D**	**D**
0.6–1	**E**	**E**
1–1.6	**F**	**F**
1.6–2.4	**G**	**G**
2.4–4	**H**	**H**

FLA Ratings	Size B–E 7–15 A	Size F–H 18–32 A
4–6	**I**	**I**
6–10	**J**	**J**
9–12	**K**	—
10–16	—	**L**
12–16	**L**	—
16–24	—	**M**
24–32	—	**N**

XTOE Electronic Overload Relays for Enclosed *XT*

FLA Ratings	Size B–E 7–15 A	Size F–H 18–32 A
0.33–1.65	**R63/A**	**R63/A**
1–5	**R63/B**	**R63/B**
4–20	**R63/C**	**R63/C**
9–45	—	**R63/D**

Cover Control Options

B **C** **H** **J** **S** **T**

Cover Control Options

Description	Position 9 Control Code
No cover mounted pilot devices	**A**
START/STOP pushbuttons	**B**
With red RUN pilot light	**C**
HAND/OFF/AUTO selector switch	**H**
With red RUN pilot light	**J**
ON/OFF selector switch	**S**
With red RUN pilot light	**T**

Note

① See **Tab 1** for enclosure type/IP rating cross-reference.

Product Selection

CI-K Basic Enclosures

CI-K Basic Enclosures ①②

Dimensions in Inches (mm)

Width	Height	External Depth	Internal Depth	Internal Mounting Type	Pkg. Qty.	Catalog Number
3.94 (100.0)	6.30 (160.0)	3.94 (100.0)	2.87 (73.0)	With mounting rail	1	**CI-K2X-100-TS-NA** ③
			3.11 (79.0)	With mounting plate		**CI-K2X-100-M-NA** ③
		5.71 (145.0)	4.65 (118.0)	With mounting rail		**CI-K2X-145-TS-NA** ③
			4.88 (124.0)	With mounting plate		**CI-K2X-145-M-NA** ③
4.72 (120.0)	7.87 (200.0)	4.92 (125.0)	3.66 (93.0)	With mounting rail	1	**CI-K3X-125-TS-NA** ④
			3.86 (98.0)	With mounting plate		**CI-K3X-125-M-NA** ④
		6.30 (160.0)	5.04 (128.0)	With mounting rail		**CI-K3X-160-TS-NA** ④
			5.24 (133.0)	With mounting plate		**CI-K3X-160-M-NA** ④
6.30 (160.0)	9.45 (240.0)	6.30 (160.0)	5.04 (128.0)	With mounting rail	1	**CI-K4X-160-TS-NA** ④
			5.24 (133.0)	With mounting plate		**CI-K4X-160-M-NA** ④
7.87 (200.0)	11.02 (280.0)	6.30 (160.0)	5.04 (128.0)	With mounting rail	1	**CI-K5X-160-TS-NA** ④
			5.24 (133.0)	With mounting plate		**CI-K5X-160-M-NA** ④

Class ECX09—Non-Metallic Non-Combination Non-Reversing Contactor ONLY

Amps	Maximum hp ⑤ Motor Voltage ⑥	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ⑦	Type 4X/IP66 Catalog Number	Component Catalog Number
Size B						
7	115	1/4	—	120	**ECX09B5AAA**	**XTCE007B10A**
	208	3/4	1-1/2	208	**ECX09B5EAA**	**XTCE007B10E**
	230	1	2	240	**ECX09B5BAA**	**XTCE007B10B**
	380	—	3	380/50 Hz	**ECX09B5LAA**	**XTCE007B10L**
	460	—	3	480	**ECX09B5CAA**	**XTCE007B10C**
	575	—	5	600	**ECX09B5DAA**	**XTCE007B10D**
Size C						
9	115	1/2	—	120	**ECX09C5AAA**	**XTCE009B10A**
	208	1	2	208	**ECX09C5EAA**	**XTCE009B10E**
	230	1-1/2	3	240	**ECX09C5BAA**	**XTCE009B10B**
	380	—	5	380/50 Hz	**ECX09C5LAA**	**XTCE009B10L**
	460	—	5	480	**ECX09C5CAA**	**XTCE009B10C**
	575	—	7-1/2	600	**ECX09C5DAA**	**XTCE009B10D**
Size D						
12	115	1/2	—	120	**ECX09D5AAA**	**XTCE012B10A**
	208	1-1/2	3	208	**ECX09D5EAA**	**XTCE012B10E**
	230	2	3	240	**ECX09D5BAA**	**XTCE012B10B**
	380	—	5	380/50 Hz	**ECX09D5LAA**	**XTCE012B10L**
	460	—	7-1/2	480	**ECX09D5CAA**	**XTCE012B10C**
	575	—	10	600	**ECX09D5DAA**	**XTCE012B10D**
Size E						
15	115	3/4	—	120	**ECX09E5AAA**	**XTCE015B10A**
	208	2	3	208	**ECX09E5EAA**	**XTCE015B10E**
	230	2	3	240	**ECX09E5BAA**	**XTCE015B10B**
	380	—	5	380/50 Hz	**ECX09E5LAA**	**XTCE015B10L**
	460	—	7-1/2	480	**ECX09E5CAA**	**XTCE015B10C**
	575	—	10	600	**ECX09E5DAA**	**XTCE015B10D**

Notes

① Enclosure base RAL 9005, black/enclosure top only RAL 7035. light gray.
② Degree of protection—IEC: IP65; UL/CSA: Type 1, 3R, 4X, 12, 13—indoor and outdoor use.
③ CI-K2X_: 4 x 1/2 inch knockouts.
④ CI-K3X_, CI-K4X_, CI-K5X_: Smooth overall with sharp corners.
⑤ 1 hp = 0.746 kW.
⑥ Contact factory for other voltage options.
⑦ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

Class ECX09—Non-Metallic Non-Combination Non-Reversing Contactor ONLY, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Type 4X/IP66 Catalog Number	Component Catalog Number
Size F						
18	115	2	—	120	**ECX09F5AAA**	**XTCE018C10A**
	208	2	5	208	**ECX09F5EAA**	**XTCE018C10E**
	230	3	5	240	**ECX09F5BAA**	**XTCE018C10B**
	380	—	7-1/2	380/50 Hz	**ECX09F5LAA**	**XTCE018C10L**
	460	—	10	480	**ECX09F5CAA**	**XTCE018C10C**
	575	—	15	600	**ECX09F5DAA**	**XTCE018C10D**
Size G						
25	115	2	—	120	**ECX09G5AAA**	**XTCE025C10A**
	208	3	7-1/2	208	**ECX09G5EAA**	**XTCE025C10E**
	230	5	7-1/2	240	**ECX09G5BAA**	**XTCE025C10B**
	380	—	10	380/50 Hz	**ECX09G5LAA**	**XTCE025C10L**
	460	—	15	480	**ECX09G5CAA**	**XTCE025C10C**
	575	—	20	600	**ECX09G5DAA**	**XTCE025C10D**
Size H						
32	115	3	—	120	**ECX09H5AAA**	**XTCE032C10A**
	208	5	10	208	**ECX09H5EAA**	**XTCE032C10E**
	230	5	10	240	**ECX09H5BAA**	**XTCE032C10B**
	380	—	15	380/50 Hz	**ECX09H5LAA**	**XTCE032C10L**
	460	—	20	480	**ECX09H5CAA**	**XTCE032C10C**
	575	—	25	600	**ECX09H5DAA**	**XTCE032C10D**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

Class ECX09—Non-Metallic Non-Combination Non-Reversing Starter

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Type 4X/IP66 Catalog Number ④	Component Catalog Number ⑤
Size B						
7	115	1/4	—	120	**ECX09B5AAA-_**	**XTAE007B10A_**
	208	3/4	1-1/2	208	**ECX09B5EAA-_**	**XTAE007B10E_**
	230	1	2	240	**ECX09B5BAA-_**	**XTAE007B10B_**
	380	—	3	380/50 Hz	**ECX09B5LAA-_**	**XTAE007B10L_**
	460	—	3	480	**ECX09B5CAA-_**	**XTAE007B10C_**
	575	—	5	600	**ECX09B5DAA-_**	**XTAE007B10D_**
Size C						
9	115	1/2	—	120	**ECX09C5AAA-_**	**XTAE009B10A_**
	208	1	2	208	**ECX09C5EAA-_**	**XTAE009B10E_**
	230	1-1/2	3	240	**ECX09C5BAA-_**	**XTAE009B10B_**
	380	—	5	380/50 Hz	**ECX09C5LAA-_**	**XTAE009B10L_**
	460	—	5	480	**ECX09C5CAA-_**	**XTAE009B10C_**
	575	—	7-1/2	600	**ECX09C5DAA-_**	**XTAE009B10D_**
Size D						
12	115	1/2	—	120	**ECX09D5AAA-_**	**XTAE012B10A_**
	208	1-1/2	3	208	**ECX09D5EAA-_**	**XTAE012B10E_**
	230	2	3	240	**ECX09D5BAA-_**	**XTAE012B10B_**
	380	—	5	380/50 Hz	**ECX09D5LAA-_**	**XTAE012B10L_**
	460	—	7-1/2	480	**ECX09D5CAA-_**	**XTAE012B10C_**
	575	—	10	600	**ECX09D5DAA-_**	**XTAE012B10D_**
Size E						
15	115	3/4	—	120	**ECX09E5AAA-_**	**XTAE015B10A_**
	208	2	3	208	**ECX09E5EAA-_**	**XTAE015B10E_**
	230	2	3	240	**ECX09E5BAA-_**	**XTAE015B10B_**
	380	—	5	380/50 Hz	**ECX09E5LAA-_**	**XTAE015B10L_**
	460	—	7-1/2	480	**ECX09E5CAA-_**	**XTAE015B10C_**
	575	—	10	600	**ECX09E5DAA-_**	**XTAE015B10D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" or "XTOE" overload amperage range as per motor FLA, see **Page V10-T3-3**.

⑤ For complete component Catalog Number, see **Volume 5—Motor Control and Protection, CA08100005E, Tab 27**.

Class ECX09—Non-Metallic Non-Combination Non-Reversing Starter, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Type 4X/IP66 Catalog Number ④	Component Catalog Number ⑤
Size F						
18	115	2	—	120	**ECX09F5AAA-_**	**XTAE018C10A_**
	208	2	5	208	**ECX09F5EAA-_**	**XTAE018C10E_**
	230	3	5	240	**ECX09F5BAA-_**	**XTAE018C10B_**
	380	—	7-1/2	380/50 Hz	**ECX09F5LAA-_**	**XTAE018C10L_**
	460	—	10	480	**ECX09F5CAA-_**	**XTAE018C10C_**
	575	—	15	600	**ECX09F5DAA-_**	**XTAE018C10D_**
Size G						
25	115	2	—	120	**ECX09G5AAA-_**	**XTAE025C10A_**
	208	3	7-1/2	208	**ECX09G5EAA-_**	**XTAE025C10E_**
	230	5	7-1/2	240	**ECX09G5BAA-_**	**XTAE025C10B_**
	380	—	10	380/50 Hz	**ECX09G5LAA-_**	**XTAE025C10L_**
	460	—	15	480	**ECX09G5CAA-_**	**XTAE025C10C_**
	575	—	20	600	**ECX09G5DAA-_**	**XTAE025C10D_**
Size H						
32	115	3	—	120	**ECX09H5AAA-_**	**XTAE032C10A_**
	208	5	10	208	**ECX09H5EAA-_**	**XTAE032C10E_**
	230	5	10	240	**ECX09H5BAA-_**	**XTAE032C10B_**
	380	—	15	380/50 Hz	**ECX09H5LAA-_**	**XTAE032C10L_**
	460	—	20	480	**ECX09H5CAA-_**	**XTAE032C10C_**
	575	—	25	600	**ECX09H5DAA-_**	**XTAE032C10D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" or "XTOE" overload amperage range as per motor FLA, see **Page V10-T3-3**.

⑤ For complete component Catalog Number, see **Volume 5—Motor Control and Protection, CA08100005E, Tab 27**.

IEC Metallic Enclosure—Contactors and Starters

3

Contents

Metallic Enclosure—Contactors and Starters

Product Description

Eaton's ***XT*** line includes IEC contactors, starters and combination motor controllers (CMCs). Designed to meet international standards, the enclosed control ***XT*** line (ECX), carries UL and cUL certifications.

Features and Benefits

- AC control from 12 V to 600 V 50/60 Hz
- DC control from 24 V to 220 V
- Available with screw or spring cage terminals
- Reversing or non-reversing contactors and starters
- AC-3 contactor ratings to 1000 A and AC-1 contactor ratings to 2000 A
- Non-reversing starters to 650 A
- Panel or DIN rail mounting to 65 A
- IP20 finger and back-of-hand proof
- Large ambient temperature range, –25 °C to +50 °C [–13 °F to +122 °F]
- AC and DC controlled contactors in the same compact frame
- Low power consumption DC coils
- Built-in NO or NC auxiliary contacts to 32 A
- Plug-in accessories for reduced installation time
- Types 1 (IP23), 4 (IP66), 4X (IP66), 12 (IP65) and 3R (IP32)
- Circuit breakers, fused, non-fused and non-combination designs available
- Opaque (standard) or clear covers available on non-metallic Halyester enclosure option

Additional Reference

Dimensions	**Tab 14**
Accessories and Modifications	**Tab 15**
Renewal Parts	**Tab 16**
Technical Data and Specifications	**Tab 17**

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- Fusible—with Class J fuses
  - UL Listed
  - cUL Listed ①
- Circuit Breaker HMCP/E
  - UL Listed
  - cUL Listed ①

Short-Circuit Ratings

- Fused, non-fused
  - 10K AIC at 600 V
- HMCP
  - 0–10 hp 15K AIC at 600 V
  - 15–125 hp 25K AIC at 600 V
- Non-combination
  - 0–1 hp 1K AIC at 600 V
  - 1.5–50 hp 5K AIC at 600 V
  - 50–200 hp 10K AIC at 600 V

Note

① cUL Listing indicates appropriate CSA standard investigation.

3

Catalog Number Selection

XT IEC Line Metallic Enclosed Control

EC X 25 E 5 A A A - __ __

Design
X = ***XT*** IEC

Modification Codes
See **Tab 15**

Overload Range
See table below

Class		Page
09 =	Non-combination non-reversing starter	**V10-T3-14**
10 =	Non-combination reversing starter	**V10-T3-17**
11 =	Non-combination non-reversing starter with CPT	**V10-T3-20**
19 =	Combination non-reversing starter—fusible/non-fusible disconnect	**V10-T3-23**
20 =	Combination reversing starter—fusible/non-fusible disconnect	**V10-T3-26**
25 =	Combination non-reversing starter—circuit breaker	**V10-T3-29**
26 =	Combination reversing starter—circuit breaker	**V10-T3-32**

Disconnect Fuse Clip Ratings

A =	None
C =	30 A J
E =	60 A J
G =	100 A J

Circuit Breaker Ratings

A =	None	**F** =	50 A
B =	3 A	**W** =	70 A
C =	7 A	**G** =	100 A
D =	15 A	**H** =	150 A
E =	30 A	**J** =	250 A

Size

Combination (Class 16–74)	Non-Combination (Class 09–11) Ampere Rating (UL 600 V)	
IEC Size **B**–**Q**	**B** = 7 A	**J** = 40 A
	C = 9 A	**K** = 50 A
	D = 12 A	**L** = 65 A
	E = 15 A	**M** = 80 A
	F = 18 A	**N** = 95 A
	G = 25 A	**P** = 115 A
	H = 32 A	**Q** = 150 A

Enclosure Type/IP Ratings ①

1 =	Type 1—General purpose/IP23
3 =	Type 4—Painted steel/IP66
4 =	Type 4X—Watertight (304-Grade stainless steel)/IP66
5 =	Type 4X—Watertight (non-metallic)/IP66
8 =	Type 12—Dust-tight/IP65

Cover Control
Type 1 non-comb. (NEW BOX 1 only) starters see **Page V10-T3-11**
Type 1 non-comb. starters see **Page V10-T3-12**
All other starters see **Page V10-T3-14**

Coil Voltage

A =	120 V	**H** =	277 V
B =	240 V	**L** =	380 V / 50 Hz
C =	480 V	**Q** =	24 Vdc
D =	600 V	**T** =	24 Vac
E =	208 V		

XTOB Overload Relays for Enclosed XT

FLA Ratings	Size B–E 7–15 A	Size F–H 18–32 A	Size J–L 40–65 A	Size M–N 80–95 A	Size P–Q 115–150 A
0.1–0.16	**A**	**A**	—	—	—
0.16–0.24	**B**	**B**	—	—	—
0.24–0.4	**C**	**C**	—	—	—
0.4–0.6	**D**	**D**	—	—	—
0.6–1	**E**	**E**	—	—	—
1–1.6	**F**	**F**	—	—	—
1.6–2.4	**G**	**G**	—	—	—
2.4–4	**H**	**H**	—	—	—
4–6	**I**	**I**	—	—	—
6–10	**J**	**J**	**J**	—	—
9–12	**K**	—	—	—	—
12–16	**L** ②	**L**	**L**	—	—

FLA Ratings	Size B–E 7–15 A	Size F–H 18–32 A	Size J–L 40–65 A	Size M–N 80–95 A	Size P–Q 115–150 A
16–24	—	**M**	**M**	—	—
24–32	—	**N**	—	—	—
24–40	—	—	**P**	—	—
25–35	—	—	—	**S**	**S**
35–50	—	—	—	**T**	**T**
40–57	—	—	**Q**	—	—
50–65	—	—	**R**	—	—
50–70	—	—	—	**U**	**U**
70–100	—	—	—	**V**	**V**
95–125	—	—	—	—	**W**
120–150	—	—	—	—	**X**

Notes
① See **Tab 1** for enclosure type/IP rating cross-reference.
② Size B–E is 10–16 A.

C440 Solid-State Overload Modifications

Reliability and Improved Uptime

- C440 provides the users with peace of mind knowing that their assets are protected with the highest level of motor protection and communication capability in its class
- Extends the life of plant assets with selectable motor protection features such as trip class, phase unbalance and ground fault
- Protects against unnecessary downtime by discovering changes in your system (line/load) with remote monitoring capabilities
- Status LED provides added assurance that valuable assets are protected by indicating the overload operational status

Flexibility

- Improves return on investment by reducing inventory carrying costs with wide FLA adjustment (5:1) and selectable trip class
- Design incorporates built-in ground fault protection thus eliminating the need for separate CTs and modules
- Flexible communication with optional I/O enables easy integration into plant management systems for remote monitoring and control

Monitoring Capabilities

- Individual phase currents RMS
- Average three-phase current RMS
- Thermal memory
- Fault indication (overload, phase loss, phase unbalance, ground fault)

Safety

- IP20 rated terminal blocks
- Available in Eaton's industry leading FlashGard MCCs
- Tested to the highest industry standards such as UL, CSA, CE and IEC
- RoHS compliant

For solid-state overload enclosed control, add R63 or R64 modification code after the base Catalog Number. (Example, ECX09G1AAA-**R63**/B).

Modification	IEC Size	NEMA Size	Full Load Current Adjustment Range (A)	Three-Phase without Ground Fault Auto/Manual Reset Overload Selectable Class 10/20/30	Three-Phase with Ground Fault Auto/Manual Reset Overload Selectable Class 10/20/30
Solid-state electronic overload relay ①	B and C	00	0.33–1.65 ②	**R63/A**	**R64/A**
			1–5	**R63/B**	**R64/B**
			4–20	**R63/C**	**R64/C**
	C and D	0 and 1	0.33–1.65 ②	**R63/A**	**R64/A**
			1–5	**R63/B**	**R64/B**
			4–20	**R63/C**	**R64/C**
			9–45	**R63/D**	**R64/D**
	D	2	9–45	**R63/D**	**R64/D**
	D, F and G	3	20–100	**R63/E**	**R64/E**
	G	4	28–140	**R63/F**	**R64/F**
	N/A	5	60–300	**R63/G**	**R64/G**
	N/A	6	120–600	**R63/H**	**R64/H**

Notes

① Features:
- Self-powered
- Phase loss protection
- Current adjustment knob
- ±1% repeat accuracy
- 1NO and 1NC isolated contacts

② Not UL Listed.

Cover Control

Product Selection

Type 1 Non-Combination Cover Control (Box 1 Only)

- Cover control for non-combination starters uses M22 style devices as standard
- Pushbuttons are momentary type
- Field convertible selector switches from momentary to maintained operation and vice versa
- Cover control kits include hardware, M22 pushbuttons, bracket and pre-wired wire harnesses
- See Volume 7, Tab 1, for more details on M22 pushbuttons

Type 1 Non-Combination Cover Control (Box 1 Only)

Box 1 offering includes metallic enclosures with starters up to 32 A.

Description	Factory Installed Flange Control Position 9 Cover Control Code	Field Installation Kits Catalog Number
Non-Reversing		
No cover mounted pilot devices	**A**	—
STOP/START oval pushbuttons	**B**	**C600M1**
With red RUN pilot light	**C**	**C600M101_** ①
With red RUN/green OFF lights	**D**	**C600M102_** ①
OFF/ON oval pushbuttons	**E**	**C600M2**
With red RUN pilot light	**F**	**C600M201_** ①
With red RUN/green OFF lights	**G**	**C600M202_** ①
STOP/START selector switch	**S**	**C600M13**
With red RUN pilot light	**T**	**C600M131_** ①
With red RUN/green OFF lights	**U**	**C600M132_** ①
OFF/ON selector switch	**V**	**C600M14**
With red RUN pilot light	**W**	**C600M141_** ①
With red RUN/green OFF lights	**X**	**C600M142_** ①
HAND/OFF/AUTO selector switch	**H**	**C600M12**
With red RUN pilot light	**J**	**C600M121_** ①
With red RUN/green OFF lights	**K**	**C600M122_** ①
Green START pushbutton	**L**	**C600M3**
Red STOP pushbutton	**Y**	**C600M7** ①
Green ON pushbutton	**M**	**C600M4**
Red OFF pushbutton	**N**	**C600M5**
Red RUN pilot light	**P**	**C600M9_** ①
Green OFF pilot light	**Q**	**C600M10_** ①
Red RUN/green OFF lights	**R**	**C600M11_** ①
TEST/OFF/AUTO selector switch	—	**C600M8**
Reversing		
UP/STOP/DOWN selector switch	**E**	**C600M27**
With 2 red pilot lights	**F**	**C600M271_**
REV/STOP/FWD selector switch	**H**	**C600M15**
With 2 red pilot lights	**J**	**C600M151_**
Two red pilot lights (labeled FWD, REV)	**P**	**C600M28_**
Green OFF pilot light	**Q**	**C600M10_**

Note

① Add code letter from the table below to catalog number for voltage. Example: C600M101**A**.

Rating	Code Letter
85–264 Vac	**A**
480 Vac	**C**
12–30 Vac/Vdc	**T**

Type 1 Non-Combination Cover Control (Box 2 and Larger Enclosures Only)

- Cover control for combination starters uses 10250T style devices as standard
- Selector switches are maintained with lever operators
- Pushbuttons are momentary type with extended pushbutton
- The kit includes hardware and connecting wires (where possible)
- For factory installed control devices other than shown below, refer to modification codes, **Tab 15**

Type 1 Cover Control

Type 1 Non-Combination Cover Control (Box 2 and Larger Enclosures Only)

Box 2 and Larger Enclosure offering includes metallic enclosures with starters larger than 32 A.

Description	Factory Installed Flange Control ① Position 9 Cover Control Code	Field Installation Kits Catalog Number
Non-Reversing		
No cover mounted pilot devices	**A**	**C400GK0**
STOP/START pushbuttons	**B**	**C400GK1**
With red RUN pilot light	**C**	**C400GK12** ②
With red RUN/green OFF lights	**D**	**C400GK16** ②
HAND/OFF/AUTO selector switch	**H**	**C400GK3**
With red RUN pilot light	**J**	**C400GK32** ②
With red RUN/green OFF lights	**K**	**C400GK36** ②
Red RUN pilot light	**P**	**C400GK42** ②
Green OFF pilot light	**Q**	**C400GK41** ②
Red RUN/green OFF pilot lights	**R**	**C400GK46** ②
Reversing		
No cover mounted pilot devices	**A**	**C400GK0**
FOR/REV/STOP pushbuttons	**B**	**C400GR1**
With two red pilot lights	**C**	**C400GR14** ②
UP/STOP/DOWN pushbuttons	**E**	**C400GR2**
With two red pilot lights	**F**	**C400GR24** ②
Two red pilot lights	**P**	**C400GK44** ②
One green pilot light	**Q**	**C400GK41** ②

Notes

① For more available factory installed flange control, see **Page V10-T3-11**.

② Add code letter from the table below to catalog number for voltage—kits only. Example: C400GK0**B**.

Rating	Code Letter	Rating	Code Letter	Rating	Code Letter
120 V 60 Hz	**A**	277 V 60 Hz	**H**	480 V 60 Hz	**C**
208 V 60 Hz	**E**	380 V 50 Hz	**L**	600 V 60 Hz	**D**
240 V 60 Hz	**B**				

Type 1 Non-Combination Empty Enclosure (Box 1 Only)

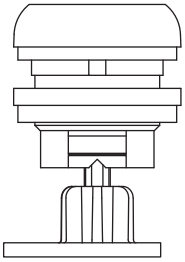
There is a universal empty enclosure for the non-metallic Type 1 Non-Combination Box 1 regardless of the starter or the contactor needed. The only difference is the length of the easily interchangeable reset rod. The reset rod kit provides everything needed to install the correct reset rod, including all the reset rod lengths, a protective shroud, a paddle and a reset button with nut.

Box 1 offering includes metallic enclosures with starters up to 32 A.

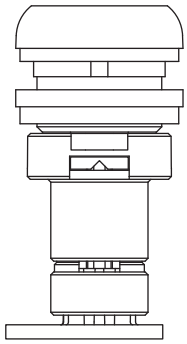
Empty Enclosure Stocking Needs	Catalog Number
Empty enclosure	**C899001**
Reset rod kit	**RESET001**

The table below shows which reset rod is used with each starter or contactor.

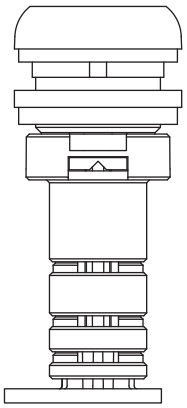
Starter or Contactor	Reset Rod Length
IEC Frame Size B and C, SSOL	0.74-inch reset
IEC Frame Size B, Bi-Metallic Overload	1.74-inch reset
IEC Frame Size C, Bi-Metallic Overload	1.30-inch reset



IEC Frame Size B and C, SSOL—0.74-inch reset



IEC Frame Size C, Bi-Metallic Overload—1.30-inch reset



IEC Frame Size B, Bi-Metallic Overload —1.74-inch reset

Product Selection

Non-Combination Starters

Class ECX09—Non-Combination Non-Reversing Starter

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size B								
7	115	1/4	—	120	**ECX09B1AAA-_**	**ECX09B4AAA-_**	**ECX09B8AAA-_**	**XTAE007B10A_**
	208	3/4	1-1/2	208	**ECX09B1EAA-_**	**ECX09B4EAA-_**	**ECX09B8EAA-_**	**XTAE007B10E_**
	230	1	2	240	**ECX09B1BAA-_**	**ECX09B4BAA-_**	**ECX09B8BAA-_**	**XTAE007B10B_**
	380	—	3	380/50 Hz	**ECX09B1LAA-_**	**ECX09B4LAA-_**	**ECX09B8LAA-_**	**XTAE007B10L_**
	460	—	3	480	**ECX09B1CAA-_**	**ECX09B4CAA-_**	**ECX09B8CAA-_**	**XTAE007B10C_**
	575	—	5	600	**ECX09B1DAA-_**	**ECX09B4DAA-_**	**ECX09B8DAA-_**	**XTAE007B10D_**
Size C								
9	115	1/2	—	120	**ECX09C1AAA-_**	**ECX09C4AAA-_**	**ECX09C8AAA-_**	**XTAE009B10A_**
	208	1	2	208	**ECX09C1EAA-_**	**ECX09C4EAA-_**	**ECX09C8EAA-_**	**XTAE009B10E_**
	230	1-1/2	3	240	**ECX09C1BAA-_**	**ECX09C4BAA-_**	**ECX09C8BAA-_**	**XTAE009B10B_**
	380	—	5	380/50 Hz	**ECX09C1LAA-_**	**ECX09C4LAA-_**	**ECX09C8LAA-_**	**XTAE009B10L_**
	460	—	5	480	**ECX09C1CAA-_**	**ECX09C4CAA-_**	**ECX09C8CAA-_**	**XTAE009B10C_**
	575	—	7-1/2	600	**ECX09C1DAA-_**	**ECX09C4DAA-_**	**ECX09C8DAA-_**	**XTAE009B10D_**
Size D								
12	115	1/2	—	120	**ECX09D1AAA-_**	**ECX09D4AAA-_**	**ECX09D8AAA-_**	**XTAE012B10A_**
	208	1-1/2	3	208	**ECX09D1EAA-_**	**ECX09D4EAA-_**	**ECX09D8EAA-_**	**XTAE012B10E_**
	230	2	3	240	**ECX09D1BAA-_**	**ECX09D4BAA-_**	**ECX09D8BAA-_**	**XTAE012B10B_**
	380	—	5	380/50 Hz	**ECX09D1LAA-_**	**ECX09D4LAA-_**	**ECX09D8LAA-_**	**XTAE012B10L_**
	460	—	7-1/2	480	**ECX09D1CAA-_**	**ECX09D4CAA-_**	**ECX09D8CAA-_**	**XTAE012B10C_**
	575	—	10	600	**ECX09D1DAA-_**	**ECX09D4DAA-_**	**ECX09D8DAA-_**	**XTAE012B10D_**
Size E								
15	115	3/4	—	120	**ECX09E1AAA-_**	**ECX09E4AAA-_**	**ECX09E8AAA-_**	**XTAE015B10A_**
	208	2	3	208	**ECX09E1EAA-_**	**ECX09E4EAA-_**	**ECX09E8EAA-_**	**XTAE015B10E_**
	230	2	3	240	**ECX09E1BAA-_**	**ECX09E4BAA-_**	**ECX09E8BAA-_**	**XTAE015B10B_**
	380	—	5	380/50 Hz	**ECX09E1LAA-_**	**ECX09E4LAA-_**	**ECX09E8LAA-_**	**XTAE015B10L_**
	460	—	7-1/2	480	**ECX09E1CAA-_**	**ECX09E4CAA-_**	**ECX09E8CAA-_**	**XTAE015B10C_**
	575	—	10	600	**ECX09E1DAA-_**	**ECX09E4DAA-_**	**ECX09E8DAA-_**	**XTAE015B10D_**
Size F								
18	115	2	—	120	**ECX09F1AAA-_**	**ECX09F4AAA-_**	**ECX09F8AAA-_**	**XTAE018C10A_**
	208	2	5	208	**ECX09F1EAA-_**	**ECX09F4EAA-_**	**ECX09F8EAA-_**	**XTAE018C10E_**
	230	3	5	240	**ECX09F1BAA-_**	**ECX09F4BAA-_**	**ECX09F8BAA-_**	**XTAE018C10B_**
	380	—	7-1/2	380/50 Hz	**ECX09F1LAA-_**	**ECX09F4LAA-_**	**ECX09F8LAA-_**	**XTAE018C10L_**
	460	—	10	480	**ECX09F1CAA-_**	**ECX09F4CAA-_**	**ECX09F8CAA-_**	**XTAE018C10C_**
	575	—	15	600	**ECX09F1DAA-_**	**ECX09F4DAA-_**	**ECX09F8DAA-_**	**XTAE018C10D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX09B**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX09—Non-Combination Non-Reversing Starter, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size G								
25	115	2	—	120	**ECX09G1AAA-_**	**ECX09G4AAA-_**	**ECX09G8AAA-_**	**XTAE025C10A_**
	208	3	7-1/2	208	**ECX09G1EAA-_**	**ECX09G4EAA-_**	**ECX09G8EAA-_**	**XTAE025C10E_**
	230	5	7-1/2	240	**ECX09G1BAA-_**	**ECX09G4BAA-_**	**ECX09G8BAA-_**	**XTAE025C10B_**
	380	—	10	380/50 Hz	**ECX09G1LAA-_**	**ECX09G4LAA-_**	**ECX09G8LAA-_**	**XTAE025C10L_**
	460	—	15	480	**ECX09G1CAA-_**	**ECX09G4CAA-_**	**ECX09G8CAA-_**	**XTAE025C10C_**
	575	—	20	600	**ECX09G1DAA-_**	**ECX09G4DAA-_**	**ECX09G8DAA-_**	**XTAE025C10D_**
Size H								
32	115	3	—	120	**ECX09H1AAA-_**	**ECX09H4AAA-_**	**ECX09H8AAA-_**	**XTAE032C10A_**
	208	5	10	208	**ECX09H1EAA-_**	**ECX09H4EAA-_**	**ECX09H8EAA-_**	**XTAE032C10E_**
	230	5	10	240	**ECX09H1BAA-_**	**ECX09H4BAA-_**	**ECX09H8BAA-_**	**XTAE032C10B_**
	380	—	15	380/50 Hz	**ECX09H1LAA-_**	**ECX09H4LAA-_**	**ECX09H8LAA-_**	**XTAE032C10L_**
	460	—	20	480	**ECX09H1CAA-_**	**ECX09H4CAA-_**	**ECX09H8CAA-_**	**XTAE032C10C_**
	575	—	25	600	**ECX09H1DAA-_**	**ECX09H4DAA-_**	**ECX09H8DAA-_**	**XTAE032C10D_**
Size J								
40	115	3	—	120	**ECX09J1AAA-_**	**ECX09J4AAA-_**	**ECX09J8AAA-_**	**XTAE040D00A_**
	208	5	10	208	**ECX09J1EAA-_**	**ECX09J4EAA-_**	**ECX09J8EAA-_**	**XTAE040D00E_**
	230	7-1/2	15	240	**ECX09J1BAA-_**	**ECX09J4BAA-_**	**ECX09J8BAA-_**	**XTAE040D00D_**
	380	—	15	380/50 Hz	**ECX09J1LAA-_**	**ECX09J4LAA-_**	**ECX09J8LAA-_**	**XTAE040D00L_**
	460	—	30	480	**ECX09J1CAA-_**	**ECX09J4CAA-_**	**ECX09J8CAA-_**	**XTAE040D00C_**
	575	—	40	600	**ECX09J1DAA-_**	**ECX09J4DAA-_**	**ECX09J8DAA-_**	**XTAE040D00D_**
Size K								
50	115	3	—	120	**ECX09K1AAA-_**	**ECX09K4AAA-_**	**ECX09K8AAA-_**	**XTAE050D00A_**
	208	7-1/2	15	208	**ECX09K1EAA-_**	**ECX09K4EAA-_**	**ECX09K8EAA-_**	**XTAE050D00E_**
	230	10	20	240	**ECX09K1BAA-_**	**ECX09K4BAA-_**	**ECX09K8BAA-_**	**XTAE050D00B_**
	380	—	20	380/50 Hz	**ECX09K1LAA-_**	**ECX09K4LAA-_**	**ECX09K8LAA-_**	**XTAE050D00L_**
	460	—	40	480	**ECX09K1CAA-_**	**ECX09K4CAA-_**	**ECX09K8CAA-_**	**XTAE050D00C_**
	575	—	50	600	**ECX09K1DAA-_**	**ECX09K4DAA-_**	**ECX09K8DAA-_**	**XTAE050D00D_**
Size L								
65	115	5	—	120	**ECX09L1AAA-_**	**ECX09L4AAA-_**	**ECX09L8AAA-_**	**XTAE065D00A_**
	208	10	20	208	**ECX09L1EAA-_**	**ECX09L4EAA-_**	**ECX09L8EAA-_**	**XTAE065D00E_**
	230	15	25	240	**ECX09L1BAA-_**	**ECX09L4BAA-_**	**ECX09L8BAA-_**	**XTAE065D00B_**
	380	—	30	380/50 Hz	**ECX09L1LAA-_**	**ECX09L4LAA-_**	**ECX09L8LAA-_**	**XTAE065D00L_**
	460	—	50	480	**ECX09L1CAA-_**	**ECX09L4CAA-_**	**ECX09L8CAA-_**	**XTAE065D00C_**
	575	—	60	600	**ECX09L1DAA-_**	**ECX09L4DAA-_**	**ECX09L8DAA-_**	**XTAE065D00D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX09G**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX09—Non-Combination Non-Reversing Starter, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size M								
80	115	7-1/2	—	120	**ECX09M1AAA-_**	**ECX09M4AAA-_**	**ECX09M8AAA-_**	**XTAE080F00A_**
	208	15	25	208	**ECX09M1EAA-_**	**ECX09M4EAA-_**	**ECX09M8EAA-_**	**XTAE080F00E_**
	230	15	30	240	**ECX09M1BAA-_**	**ECX09M4BAA-_**	**ECX09M8BAA-_**	**XTAE080F00B_**
	380	—	50	380/50 Hz	**ECX09M1LAA-_**	**ECX09M4LAA-_**	**ECX09M8LAA-_**	**XTAE080F00L_**
	460	—	60	480	**ECX09M1CAA-_**	**ECX09M4CAA-_**	**ECX09M8CAA-_**	**XTAE080F00C_**
	575	—	75	600	**ECX09M1DAA-_**	**ECX09M4DAA-_**	**ECX09M8DAA-_**	**XTAE080F00D_**
Size N								
95	115	7-1/2	—	120	**ECX09N1AAA-_**	**ECX09N4AAA-_**	**ECX09N8AAA-_**	**XTAE095F00A_**
	208	15	25	208	**ECX09N1EAA-_**	**ECX09N4EAA-_**	**ECX09N8EAA-_**	**XTAE095F00E_**
	230	15	40	240	**ECX09N1BAA-_**	**ECX09N4BAA-_**	**ECX09N8BAA-_**	**XTAE095F00B_**
	380	—	60	380/50 Hz	**ECX09N1LAA-_**	**ECX09N4LAA-_**	**ECX09N8LAA-_**	**XTAE095F00L_**
	460	—	75	480	**ECX09N1CAA-_**	**ECX09N4CAA-_**	**ECX09N8CAA-_**	**XTAE095F00C_**
	575	—	100	600	**ECX09N1DAA-_**	**ECX09N4DAA-_**	**ECX09N8DAA-_**	**XTAE095F00D_**
Size P								
115	115	10	—	120	**ECX09P1AAA-_**	**ECX09P4AAA-_**	**ECX09P8AAA-_**	**XTAE115G00A_**
	208	25	40	208	**ECX09P1EAA-_**	**ECX09P4EAA-_**	**ECX09P8EAA-_**	**XTAE115G00E_**
	230	25	50	240	**ECX09P1BAA-_**	**ECX09P4BAA-_**	**ECX09P8BAA-_**	**XTAE115G00B_**
	380	—	60	380/50 Hz	**ECX09P1LAA-_**	**ECX09P4LAA-_**	**ECX09P8LAA-_**	**XTAE115G00L_**
	460	—	100	480	**ECX09P1CAA-_**	**ECX09P4CAA-_**	**ECX09P8CAA-_**	**XTAE115G00C_**
	575	—	125	600	**ECX09P1DAA-_**	**ECX09P4DAA-_**	**ECX09P8DAA-_**	**XTAE115G00D_**
Size Q								
150	115	15	—	120	**ECX09Q1AAA-_**	**ECX09Q4AAA-_**	**ECX09Q8AAA-_**	**XTAE150G00A_**
	208	25	40	208	**ECX09Q1EAA-_**	**ECX09Q4EAA-_**	**ECX09Q8EAA-_**	**XTAE150G00E_**
	230	30	60	240	**ECX09Q1BAA-_**	**ECX09Q4BAA-_**	**ECX09Q8BAA-_**	**XTAE150G00B_**
	380	—	60	380/50 Hz	**ECX09Q1LAA-_**	**ECX09Q4LAA-_**	**ECX09Q8LAA-_**	**XTAE150G00L_**
	460	—	125	480	**ECX09Q1CAA-_**	**ECX09Q4CAA-_**	**ECX09Q8CAA-_**	**XTAE150G00C_**
	575	—	150	600	**ECX09Q1DAA-_**	**ECX09Q4DAA-_**	**ECX09Q8DAA-_**	**XTAE150G00D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX09M**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX10—Non-Combination Reversing Starter

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size B								
7	115	1/4	—	120	**ECX10B1AAA-_**	**ECX10B4AAA-_**	**ECX10B8AAA-_**	**XTAR007B10A_**
	208	3/4	1-1/2	208	**ECX10B1EAA-_**	**ECX10B4EAA-_**	**ECX10B8EAA-_**	**XTAR007B10E_**
	230	1	2	240	**ECX10B1BAA-_**	**ECX10B4BAA-_**	**ECX10B8BAA-_**	**XTAR007B10B_**
	380	—	3	380/50 Hz	**ECX10B1LAA-_**	**ECX10B4LAA-_**	**ECX10B8LAA-_**	**XTAR007B10L_**
	460	—	3	480	**ECX10B1CAA-_**	**ECX10B4CAA-_**	**ECX10B8CAA-_**	**XTAR007B10C_**
	575	—	5	600	**ECX10B1DAA-_**	**ECX10B4DAA-_**	**ECX10B8DAA-_**	**XTAR007B10D_**
Size C								
9	115	1/2	—	120	**ECX10C1AAA-_**	**ECX10C4AAA-_**	**ECX10C8AAA-_**	**XTAR009B10A_**
	208	1	2	208	**ECX10C1EAA-_**	**ECX10C4EAA-_**	**ECX10C8EAA-_**	**XTAR009B10E_**
	230	1-1/2	3	240	**ECX10C1BAA-_**	**ECX10C4BAA-_**	**ECX10C8BAA-_**	**XTAR009B10B_**
	380	—	5	380/50 Hz	**ECX10C1LAA-_**	**ECX10C4LAA-_**	**ECX10C8LAA-_**	**XTAR009B10L_**
	460	—	5	480	**ECX10C1CAA-_**	**ECX10C4CAA-_**	**ECX10C8CAA-_**	**XTAR009B10C_**
	575	—	7-1/2	600	**ECX10C1DAA-_**	**ECX10C4DAA-_**	**ECX10C8DAA-_**	**XTAR009B10D_**
Size D								
12	115	1/2	—	120	**ECX10D1AAA-_**	**ECX10D4AAA-_**	**ECX10D8AAA-_**	**XTAR012B10A_**
	208	1-1/2	3	208	**ECX10D1EAA-_**	**ECX10D4EAA-_**	**ECX10D8EAA-_**	**XTAR012B10E_**
	230	2	3	240	**ECX10D1BAA-_**	**ECX10D4BAA-_**	**ECX10D8BAA-_**	**XTAR012B10B_**
	380	—	5	380/50 Hz	**ECX10D1LAA-_**	**ECX10D4LAA-_**	**ECX10D8LAA-_**	**XTAR012B10L_**
	460	—	7-1/2	480	**ECX10D1CAA-_**	**ECX10D4CAA-_**	**ECX10D8CAA-_**	**XTAR012B10C_**
	575	—	10	600	**ECX10D1DAA-_**	**ECX10D4DAA-_**	**ECX10D8DAA-_**	**XTAR012B10D_**
Size E								
15	115	3/4	—	120	**ECX10E1AAA-_**	**ECX10E4AAA-_**	**ECX10E8AAA-_**	**XTAR015B10A_**
	208	2	3	208	**ECX10E1EAA-_**	**ECX10E4EAA-_**	**ECX10E8EAA-_**	**XTAR015B10E_**
	230	2	3	240	**ECX10E1BAA-_**	**ECX10E4BAA-_**	**ECX10E8BAA-_**	**XTAR015B10B_**
	380	—	5	380/50 Hz	**ECX10E1LAA-_**	**ECX10E4LAA-_**	**ECX10E8LAA-_**	**XTAR015B10L_**
	460	—	7-1/2	480	**ECX10E1CAA-_**	**ECX10E4CAA-_**	**ECX10E8CAA-_**	**XTAR015B10C_**
	575	—	10	600	**ECX10E1DAA-_**	**ECX10E4DAA-_**	**ECX10E8DAA-_**	**XTAR015B10D_**
Size F								
18	115	2	—	120	**ECX10F1AAA-_**	**ECX10F4AAA-_**	**ECX10F8AAA-_**	**XTAR018C10A_**
	208	2	5	208	**ECX10F1EAA-_**	**ECX10F4EAA-_**	**ECX10F8EAA-_**	**XTAR018C10E_**
	230	3	5	240	**ECX10F1BAA-_**	**ECX10F4BAA-_**	**ECX10F8BAA-_**	**XTAR018C10B_**
	380	—	7-1/2	380/50 Hz	**ECX10F1LAA-_**	**ECX10F4LAA-_**	**ECX10F8LAA-_**	**XTAR018C10L_**
	460	—	10	480	**ECX10F1CAA-_**	**ECX10F4CAA-_**	**ECX10F8CAA-_**	**XTAR018C10C_**
	575	—	15	600	**ECX10F1DAA-_**	**ECX10F4DAA-_**	**ECX10F8DAA-_**	**XTAR018C10D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX10B**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX10—Non-Combination Reversing Starter, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size G								
25	115	2	—	120	**ECX10G1AAA-_**	**ECX10G4AAA-_**	**ECX10G8AAA-_**	**XTAR025C10A_**
	208	3	7-1/2	208	**ECX10G1EAA-_**	**ECX10G4EAA-_**	**ECX10G8EAA-_**	**XTAR025C10E_**
	230	5	7-1/2	240	**ECX10G1BAA-_**	**ECX10G4BAA-_**	**ECX10G8BAA-_**	**XTAR025C10B_**
	380	—	10	380/50 Hz	**ECX10G1LAA-_**	**ECX10G4LAA-_**	**ECX10G8LAA-_**	**XTAR025C10L_**
	460	—	15	480	**ECX10G1CAA-_**	**ECX10G4CAA-_**	**ECX10G8CAA-_**	**XTAR025C10C_**
	575	—	20	600	**ECX10G1DAA-_**	**ECX10G4DAA-_**	**ECX10G8DAA-_**	**XTAR025C10D_**
Size H								
32	115	3	—	120	**ECX10H1AAA-_**	**ECX10H4AAA-_**	**ECX10H8AAA-_**	**XTAR032C10A_**
	208	5	10	208	**ECX10H1EAA-_**	**ECX10H4EAA-_**	**ECX10H8EAA-_**	**XTAR032C10E_**
	230	5	10	240	**ECX10H1BAA-_**	**ECX10H4BAA-_**	**ECX10H8BAA-_**	**XTAR032C10B_**
	380	—	15	380/50 Hz	**ECX10H1LAA-_**	**ECX10H4LAA-_**	**ECX10H8LAA-_**	**XTAR032C10L_**
	460	—	20	480	**ECX10H1CAA-_**	**ECX10H4CAA-_**	**ECX10H8CAA-_**	**XTAR032C10C_**
	575	—	25	600	**ECX10H1DAA-_**	**ECX10H4DAA-_**	**ECX10H8DAA-_**	**XTAR032C10D_**
Size J								
40	115	3	—	120	**ECX10J1AAA-_**	**ECX10J4AAA-_**	**ECX10J8AAA-_**	**XTAR040D00A_**
	208	5	10	208	**ECX10J1EAA-_**	**ECX10J4EAA-_**	**ECX10J8EAA-_**	**XTAR040D00E_**
	230	7-1/2	15	240	**ECX10J1BAA-_**	**ECX10J4BAA-_**	**ECX10J8BAA-_**	**XTAR040D00B_**
	380	—	15	380/50 Hz	**ECX10J1LAA-_**	**ECX10J4LAA-_**	**ECX10J8LAA-_**	**XTAR040D00L_**
	460	—	30	480	**ECX10J1CAA-_**	**ECX10J4CAA-_**	**ECX10J8CAA-_**	**XTAR040D00C_**
	575	—	40	600	**ECX10J1DAA-_**	**ECX10J4DAA-_**	**ECX10J8DAA-_**	**XTAR040D00D_**
Size K								
50	115	3	—	120	**ECX10K1AAA-_**	**ECX10K4AAA-_**	**ECX10K8AAA-_**	**XTAR050D00A_**
	208	7-1/2	15	208	**ECX10K1EAA-_**	**ECX10K4EAA-_**	**ECX10K8EAA-_**	**XTAR050D00E_**
	230	10	20	240	**ECX10K1BAA-_**	**ECX10K4BAA-_**	**ECX10K8BAA-_**	**XTAR050D00B_**
	380	—	20	380/50 Hz	**ECX10K1LAA-_**	**ECX10K4LAA-_**	**ECX10K8LAA-_**	**XTAR050D00L_**
	460	—	40	480	**ECX10K1CAA-_**	**ECX10K4CAA-_**	**ECX10K8CAA-_**	**XTAR050D00C_**
	575	—	50	600	**ECX10K1DAA-_**	**ECX10K4DAA-_**	**ECX10K8DAA-_**	**XTAR050D00D_**
Size L								
65	115	5	—	120	**ECX10L1AAA-_**	**ECX10L4AAA-_**	**ECX10L8AAA-_**	**XTAR065D00A_**
	208	10	20	208	**ECX10L1EAA-_**	**ECX10L4EAA-_**	**ECX10L8EAA-_**	**XTAR065D00E_**
	230	15	25	240	**ECX10L1BAA-_**	**ECX10L4BAA-_**	**ECX10L8BAA-_**	**XTAR065D00B_**
	380	—	30	380/50 Hz	**ECX10L1LAA-_**	**ECX10L4LAA-_**	**ECX10L8LAA-_**	**XTAR065D00L_**
	460	—	50	480	**ECX10L1CAA-_**	**ECX10L4CAA-_**	**ECX10L8CAA-_**	**XTAR065D00C_**
	575	—	60	600	**ECX10L1DAA-_**	**ECX10L4DAA-_**	**ECX10L8DAA-_**	**XTAR065D00D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX10G**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX10—Non-Combination Reversing Starter, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size M								
80	115	7-1/2	—	120	**ECX10M1AAA-_**	**ECX10M4AAA-_**	**ECX10M8AAA-_**	**XTAR080F00A_**
	208	15	25	208	**ECX10M1EAA-_**	**ECX10M4EAA-_**	**ECX10M8EAA-_**	**XTAR080F00E_**
	230	15	30	240	**ECX10M1BAA-_**	**ECX10M4BAA-_**	**ECX10M8BAA-_**	**XTAR080F00B_**
	380	—	50	380/50 Hz	**ECX10M1LAA-_**	**ECX10M4LAA-_**	**ECX10M8LAA-_**	**XTAR080F00L_**
	460	—	60	480	**ECX10M1CAA-_**	**ECX10M4CAA-_**	**ECX10M8CAA-_**	**XTAR080F00C_**
	575	—	75	600	**ECX10M1DAA-_**	**ECX10M4DAA-_**	**ECX10M8DAA-_**	**XTAR080F00D_**
Size N								
95	115	7-1/2	—	120	**ECX10N1AAA-_**	**ECX10N4AAA-_**	**ECX10N8AAA-_**	**XTAR095F00A_**
	208	15	25	208	**ECX10N1EAA-_**	**ECX10N4EAA-_**	**ECX10N8EAA-_**	**XTAR095F00E_**
	230	15	40	240	**ECX10N1BAA-_**	**ECX10N4BAA-_**	**ECX10N8BAA-_**	**XTAR095F00B_**
	380	—	60	380/50 Hz	**ECX10N1LAA-_**	**ECX10N4LAA-_**	**ECX10N8LAA-_**	**XTAR095F00L_**
	460	—	75	480	**ECX10N1CAA-_**	**ECX10N4CAA-_**	**ECX10N8CAA-_**	**XTAR095F00C_**
	575	—	100	600	**ECX10N1DAA-_**	**ECX10N4DAA-_**	**ECX10N8DAA-_**	**XTAR095F00D_**
Size P								
115	115	10	—	120	**ECX10P1AAA-_**	**ECX10P4AAA-_**	**ECX10P8AAA-_**	**XTAR115G00A_**
	208	25	40	208	**ECX10P1EAA-_**	**ECX10P4EAA-_**	**ECX10P8EAA-_**	**XTAR115G00E_**
	230	25	50	240	**ECX10P1BAA-_**	**ECX10P4BAA-_**	**ECX10P8BAA-_**	**XTAR115G00B_**
	380	—	60	380/50 Hz	**ECX10P1LAA-_**	**ECX10P4LAA-_**	**ECX10P8LAA-_**	**XTAR115G00L_**
	460	—	100	480	**ECX10P1CAA-_**	**ECX10P4CAA-_**	**ECX10P8CAA-_**	**XTAR115G00C_**
	575	—	125	600	**ECX10P1DAA-_**	**ECX10P4DAA-_**	**ECX10P8DAA-_**	**XTAR115G00D_**
Size Q								
150	115	15	—	120	**ECX10Q1AAA-_**	**ECX10Q4AAA-_**	**ECX10Q8AAA-_**	**XTAR150G00A_**
	208	25	40	208	**ECX10Q1EAA-_**	**ECX10Q4EAA-_**	**ECX10Q8EAA-_**	**XTAR150G00E_**
	230	30	60	240	**ECX10Q1BAA-_**	**ECX10Q4BAA-_**	**ECX10Q8BAA-_**	**XTAR150G00B_**
	380	—	60	380/50 Hz	**ECX10Q1LAA-_**	**ECX10Q4LAA-_**	**ECX10Q8LAA-_**	**XTAR150G00L_**
	460	—	125	480	**ECX10Q1CAA-_**	**ECX10Q4CAA-_**	**ECX10Q8CAA-_**	**XTAR150G00C_**
	575	—	150	600	**ECX10Q1DAA-_**	**ECX10Q4DAA-_**	**ECX10Q8DAA-_**	**XTAR150G00D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX10M**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX11—Non-Combination Non-Reversing Starter with CPT

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size B								
7	115	1/4	—	120	**ECX11B1AAA-_**	**ECX11B4AAA-_**	**ECX11B8AAA-_**	**XTAE007B10A_**
	208	3/4	1-1/2	120	**ECX11B1AAA-_**	**ECX11B4AAA-_**	**ECX11B8AAA-_**	**XTAE007B10A_**
	230	1	2	120	**ECX11B1AAA-_**	**ECX11B4AAA-_**	**ECX11B8AAA-_**	**XTAE007B10A_**
	380	—	3	110	**ECX11B1AAA-_**	**ECX11B4AAA-_**	**ECX11B8AAA-_**	**XTAE007B10A_**
	460	—	3	120	**ECX11B1AAA-_**	**ECX11B4AAA-_**	**ECX11B8AAA-_**	**XTAE007B10A_**
	575	—	5	120	**ECX11B1AAA-_**	**ECX11B4AAA-_**	**ECX11B8AAA-_**	**XTAE007B10A_**
Size C								
9	115	1/2	—	120	**ECX11C1AAA-_**	**ECX11C4AAA-_**	**ECX11C8AAA-_**	**XTAE009B10A_**
	208	1	2	120	**ECX11C1AAA-_**	**ECX11C4AAA-_**	**ECX11C8AAA-_**	**XTAE009B10A_**
	230	1-1/2	3	120	**ECX11C1AAA-_**	**ECX11C4AAA-_**	**ECX11C8AAA-_**	**XTAE009B10A_**
	380	—	5	110	**ECX11C1AAA-_**	**ECX11C4AAA-_**	**ECX11C8AAA-_**	**XTAE009B10A_**
	460	—	5	120	**ECX11C1AAA-_**	**ECX11C4AAA-_**	**ECX11C8AAA-_**	**XTAE009B10A_**
	575	—	7-1/2	120	**ECX11C1AAA-_**	**ECX11C4AAA-_**	**ECX11C8AAA-_**	**XTAE009B10A_**
Size D								
12	115	1/2	—	120	**ECX11D1AAA-_**	**ECX11D4AAA-_**	**ECX11D8AAA-_**	**XTAE012B10A_**
	208	1-1/2	3	120	**ECX11D1AAA-_**	**ECX11D4AAA-_**	**ECX11D8AAA-_**	**XTAE012B10A_**
	230	2	3	120	**ECX11D1AAA-_**	**ECX11D4AAA-_**	**ECX11D8AAA-_**	**XTAE012B10A_**
	380	—	5	110	**ECX11D1AAA-_**	**ECX11D4AAA-_**	**ECX11D8AAA-_**	**XTAE012B10A_**
	460	—	7-1/2	120	**ECX11D1AAA-_**	**ECX11D4AAA-_**	**ECX11D8AAA-_**	**XTAE012B10A_**
	575	—	10	120	**ECX11D1AAA-_**	**ECX11D4AAA-_**	**ECX11D8AAA-_**	**XTAE012B10A_**
Size E								
15	115	3/4	—	120	**ECX11E1AAA-_**	**ECX11E4AAA-_**	**ECX11E8AAA-_**	**XTAE015B10A_**
	208	2	3	120	**ECX11E1AAA-_**	**ECX11E4AAA-_**	**ECX11E8AAA-_**	**XTAE015B10A_**
	230	2	3	120	**ECX11E1AAA-_**	**ECX11E4AAA-_**	**ECX11E8AAA-_**	**XTAE015B10A_**
	380	—	5	110	**ECX11E1AAA-_**	**ECX11E4AAA-_**	**ECX11E8AAA-_**	**XTAE015B10A_**
	460	—	7-1/2	120	**ECX11E1AAA-_**	**ECX11E4AAA-_**	**ECX11E8AAA-_**	**XTAE015B10A_**
	575	—	10	120	**ECX11E1AAA-_**	**ECX11E4AAA-_**	**ECX11E8AAA-_**	**XTAE015B10A_**
Size F								
18	115	2	—	120	**ECX11F1AAA-_**	**ECX11F4AAA-_**	**ECX11F8AAA-_**	**XTAE018C10A_**
	208	2	5	120	**ECX11F1AAA-_**	**ECX11F4AAA-_**	**ECX11F8AAA-_**	**XTAE018C10A_**
	230	3	5	120	**ECX11F1AAA-_**	**ECX11F4AAA-_**	**ECX11F8AAA-_**	**XTAE018C10A_**
	380	—	7-1/2	110	**ECX11F1AAA-_**	**ECX11F4AAA-_**	**ECX11F8AAA-_**	**XTAE018C10A_**
	460	—	10	120	**ECX11F1AAA-_**	**ECX11F4AAA-_**	**ECX11F8AAA-_**	**XTAE018C10A_**
	575	—	15	120	**ECX11F1AAA-_**	**ECX11F4AAA-_**	**ECX11F8AAA-_**	**XTAE018C10A_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX11B**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX11—Non-Combination Non-Reversing Starter with CPT, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size G								
25	115	2	—	120	**ECX11G1AAA-_**	**ECX11G4AAA-_**	**ECX11G8AAA-_**	**XTAE025C10A_**
	208	3	7-1/2	120	**ECX11G1AAA-_**	**ECX11G4AAA-_**	**ECX11G8AAA-_**	**XTAE025C10A_**
	230	5	7-1/2	120	**ECX11G1AAA-_**	**ECX11G4AAA-_**	**ECX11G8AAA-_**	**XTAE025C10A_**
	380	—	10	110	**ECX11G1AAA-_**	**ECX11G4AAA-_**	**ECX11G8AAA-_**	**XTAE025C10A_**
	460	—	15	120	**ECX11G1AAA-_**	**ECX11G4AAA-_**	**ECX11G8AAA-_**	**XTAE025C10A_**
	575	—	20	120	**ECX11G1AAA-_**	**ECX11G4AAA-_**	**ECX11G8AAA-_**	**XTAE025C10A_**
Size H								
32	115	3	—	120	**ECX11H1AAA-_**	**ECX11H4AAA-_**	**ECX11H8AAA-_**	**XTAE032C10A_**
	208	5	10	120	**ECX11H1AAA-_**	**ECX11H4AAA-_**	**ECX11H8AAA-_**	**XTAE032C10A_**
	230	5	10	120	**ECX11H1AAA-_**	**ECX11H4AAA-_**	**ECX11H8AAA-_**	**XTAE032C10A_**
	380	—	15	110	**ECX11H1AAA-_**	**ECX11H4AAA-_**	**ECX11H8AAA-_**	**XTAE032C10A_**
	460	—	20	120	**ECX11H1AAA-_**	**ECX11H4AAA-_**	**ECX11H8AAA-_**	**XTAE032C10A_**
	575	—	25	120	**ECX11H1AAA-_**	**ECX11H4AAA-_**	**ECX11H8AAA-_**	**XTAE032C10A_**
Size J								
40	115	3	—	120	**ECX11J1AAA-_**	**ECX11J4AAA-_**	**ECX11J8AAA-_**	**XTAE040D00A_**
	208	5	10	120	**ECX11J1AAA-_**	**ECX11J4AAA-_**	**ECX11J8AAA-_**	**XTAE040D00A_**
	230	7-1/2	15	120	**ECX11J1AAA-_**	**ECX11J4AAA-_**	**ECX11J8AAA-_**	**XTAE040D00A_**
	380	—	15	110	**ECX11J1AAA-_**	**ECX11J4AAA-_**	**ECX11J8AAA-_**	**XTAE040D00A_**
	460	—	30	120	**ECX11J1AAA-_**	**ECX11J4AAA-_**	**ECX11J8AAA-_**	**XTAE040D00A_**
	575	—	40	120	**ECX11J1AAA-_**	**ECX11J4AAA-_**	**ECX11J8AAA-_**	**XTAE040D00A_**
Size K								
50	115	3	—	120	**ECX11K1AAA-_**	**ECX11K4AAA-_**	**ECX11K8AAA-_**	**XTAE050D00A_**
	208	7-1/2	15	120	**ECX11K1AAA-_**	**ECX11K4AAA-_**	**ECX11K8AAA-_**	**XTAE050D00A_**
	230	10	20	120	**ECX11K1AAA-_**	**ECX11K4AAA-_**	**ECX11K8AAA-_**	**XTAE050D00A_**
	380	—	20	110	**ECX11K1AAA-_**	**ECX11K4AAA-_**	**ECX11K8AAA-_**	**XTAE050D00A_**
	460	—	40	120	**ECX11K1AAA-_**	**ECX11K4AAA-_**	**ECX11K8AAA-_**	**XTAE050D00A_**
	575	—	50	120	**ECX11K1AAA-_**	**ECX11K4AAA-_**	**ECX11K8AAA-_**	**XTAE050D00A_**
Size L								
65	115	5	—	120	**ECX11L1AAA-_**	**ECX11L4AAA-_**	**ECX11L8AAA-_**	**XTAE065D00A_**
	208	10	20	120	**ECX11L1AAA-_**	**ECX11L4AAA-_**	**ECX11L8AAA-_**	**XTAE065D00A_**
	230	15	25	120	**ECX11L1AAA-_**	**ECX11L4AAA-_**	**ECX11L8AAA-_**	**XTAE065D00A_**
	380	—	30	110	**ECX11L1AAA-_**	**ECX11L4AAA-_**	**ECX11L8AAA-_**	**XTAE065D00A_**
	460	—	50	120	**ECX11L1AAA-_**	**ECX11L4AAA-_**	**ECX11L8AAA-_**	**XTAE065D00A_**
	575	—	60	120	**ECX11L1AAA-_**	**ECX11L4AAA-_**	**ECX11L8AAA-_**	**XTAE065D00A_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX11G**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX11—Non-Combination Non-Reversing Starter with CPT, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size M								
80	115	7-1/2	—	120	**ECX11M1AAA-_**	**ECX11M4AAA-_**	**ECX11M8AAA-_**	**XTAE080F00A_**
	208	15	25	120	**ECX11M1AAA-_**	**ECX11M4AAA-_**	**ECX11M8AAA-_**	**XTAE080F00A_**
	230	15	30	120	**ECX11M1AAA-_**	**ECX11M4AAA-_**	**ECX11M8AAA-_**	**XTAE080F00A_**
	380	—	50	110	**ECX11M1AAA-_**	**ECX11M4AAA-_**	**ECX11M8AAA-_**	**XTAE080F00A_**
	460	—	60	120	**ECX11M1AAA-_**	**ECX11M4AAA-_**	**ECX11M8AAA-_**	**XTAE080F00A_**
	575	—	75	120	**ECX11M1AAA-_**	**ECX11M4AAA-_**	**ECX11M8AAA-_**	**XTAE080F00A_**
Size N								
95	115	7-1/2	—	120	**ECX11N1AAA-_**	**ECX11N4AAA-_**	**ECX11N8AAA-_**	**XTAE095F00A_**
	208	15	25	120	**ECX11N1AAA-_**	**ECX11N4AAA-_**	**ECX11N8AAA-_**	**XTAE095F00A_**
	230	15	40	120	**ECX11N1AAA-_**	**ECX11N4AAA-_**	**ECX11N8AAA-_**	**XTAE095F00A_**
	380	—	60	110	**ECX11N1AAA-_**	**ECX11N4AAA-_**	**ECX11N8AAA-_**	**XTAE095F00A_**
	460	—	75	120	**ECX11N1AAA-_**	**ECX11N4AAA-_**	**ECX11N8AAA-_**	**XTAE095F00A_**
	575	—	100	120	**ECX11N1AAA-_**	**ECX11N4AAA-_**	**ECX11N8AAA-_**	**XTAE095F00A_**
Size P								
115	115	10	—	120	**ECX11P1AAA-_**	**ECX11P4AAA-_**	**ECX11P8AAA-_**	**XTAE115G00A_**
	208	25	40	120	**ECX11P1AAA-_**	**ECX11P4AAA-_**	**ECX11P8AAA-_**	**XTAE115G00A_**
	230	25	50	120	**ECX11P1AAA-_**	**ECX11P4AAA-_**	**ECX11P8AAA-_**	**XTAE115G00A_**
	380	—	60	110	**ECX11P1AAA-_**	**ECX11P4AAA-_**	**ECX11P8AAA-_**	**XTAE115G00A_**
	460	—	100	120	**ECX11P1AAA-_**	**ECX11P4AAA-_**	**ECX11P8AAA-_**	**XTAE115G00A_**
	575	—	125	120	**ECX11P1AAA-_**	**ECX11P4AAA-_**	**ECX11P8AAA-_**	**XTAE115G00A_**
Size Q								
150	115	15	—	120	**ECX11Q1AAA-_**	**ECX11Q4AAA-_**	**ECX11Q8AAA-_**	**XTAE150G00A_**
	208	25	40	120	**ECX11Q1AAA-_**	**ECX11Q4AAA-_**	**ECX11Q8AAA-_**	**XTAE150G00A_**
	230	30	60	120	**ECX11Q1AAA-_**	**ECX11Q4AAA-_**	**ECX11Q8AAA-_**	**XTAE150G00A_**
	380	—	60	110	**ECX11Q1AAA-_**	**ECX11Q4AAA-_**	**ECX11Q8AAA-_**	**XTAE150G00A_**
	460	—	125	120	**ECX11Q1AAA-_**	**ECX11Q4AAA-_**	**ECX11Q8AAA-_**	**XTAE150G00A_**
	575	—	150	120	**ECX11Q1AAA-_**	**ECX11Q4AAA-_**	**ECX11Q8AAA-_**	**XTAE150G00A_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX11M**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Combination Starters

Class ECX19—Combination Non-Reversing Starter—Fusible/Non-Fusible Disconnect

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Fuse Clips	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size B									
7	—	—	—	—	30 A	**ECX19B1AAA-_**	**ECX19B4AAA-_**	**ECX19B8AAA-_**	**XTAE007B10A_**
	115	1/4	—	120		**ECX19B1AAC-_**	**ECX19B4AAC-_**	**ECX19B8AAC-_**	**XTAE007B10A_**
	208	3/4	1-1/2	208		**ECX19B1EAC-_**	**ECX19B4EAC-_**	**ECX19B8EAC-_**	**XTAE007B10E_**
	230	1	2	240		**ECX19B1BAC-_**	**ECX19B4BAC-_**	**ECX19B8BAC-_**	**XTAE007B10B_**
	380	—	3	380/50 Hz		**ECX19B1LAC-_**	**ECX19B4LAC-_**	**ECX19B8LAC-_**	**XTAE007B10L_**
	460	—	3	480		**ECX19B1CAC-_**	**ECX19B4CAC-_**	**ECX19B8CAC-_**	**XTAE007B10C_**
	575	—	5	600		**ECX19B1DAC-_**	**ECX19B4DAC-_**	**ECX19B8DAC-_**	**XTAE007B10D_**
Size C									
9	—	—	—	—	30 A	**ECX19C1AAA-_**	**ECX19C4AAA-_**	**ECX19C8AAA-_**	**XTAE009B10A_**
	115	1/2	—	120		**ECX19C1AAC-_**	**ECX19C4AAC-_**	**ECX19C8AAC-_**	**XTAE009B10A_**
	208	1	2	208		**ECX19C1EAC-_**	**ECX19C4EAC-_**	**ECX19C8EAC-_**	**XTAE009B10E_**
	230	1-1/2	3	240		**ECX19C1BAC-_**	**ECX19C4BAC-_**	**ECX19C8BAC-_**	**XTAE009B10B_**
	380	—	5	380/50 Hz		**ECX19C1LAC-_**	**ECX19C4LAC-_**	**ECX19C8LAC-_**	**XTAE009B10L_**
	460	—	5	480		**ECX19C1CAC-_**	**ECX19C4CAC-_**	**ECX19C8CAC-_**	**XTAE009B10C_**
	575	—	7-1/2	600		**ECX19C1DAC-_**	**ECX19C4DAC-_**	**ECX19C8DAC-_**	**XTAE009B10D_**
Size D									
12	—	—	—	—	30 A	**ECX19D1AAA-_**	**ECX19D4AAA-_**	**ECX19D8AAA-_**	**XTAE012B10A_**
	115	1/2	—	120		**ECX19D1AAC-_**	**ECX19D4AAC-_**	**ECX19D8AAC-_**	**XTAE012B10A_**
	208	1-1/2	3	208		**ECX19D1EAC-_**	**ECX19D4EAC-_**	**ECX19D8EAC-_**	**XTAE012B10E_**
	230	2	3	240		**ECX19D1BAC-_**	**ECX19D4BAC-_**	**ECX19D8BAC-_**	**XTAE012B10B_**
	380	—	5	380/50 Hz		**ECX19D1LAC-_**	**ECX19D4LAC-_**	**ECX19D8LAC-_**	**XTAE012B10L_**
	460	—	7-1/2	480		**ECX19D1CAC-_**	**ECX19D4CAC-_**	**ECX19D8CAC-_**	**XTAE012B10C_**
	575	—	10	600		**ECX19D1DAC-_**	**ECX19D4DAC-_**	**ECX19D8DAC-_**	**XTAE012B10D_**
Size E									
15	—	—	—	—	30 A	**ECX19E1AAA-_**	**ECX19E4AAA-_**	**ECX19E8AAA-_**	**XTAE015B10A_**
	115	3/4	—	120		**ECX19E1AAC-_**	**ECX19E4AAC-_**	**ECX19E8AAC-_**	**XTAE015B10A_**
	208	2	3	208		**ECX19E1EAC-_**	**ECX19E4EAC-_**	**ECX19E8EAC-_**	**XTAE015B10E_**
	230	2	3	240		**ECX19E1BAC-_**	**ECX19E4BAC-_**	**ECX19E8BAC-_**	**XTAE015B10B_**
	380	—	5	380/50 Hz		**ECX19E1LAC-_**	**ECX19E4LAC-_**	**ECX19E8LAC-_**	**XTAE015B10L_**
	460	—	7-1/2	480		**ECX19E1CAC-_**	**ECX19E4CAC-_**	**ECX19E8CAC-_**	**XTAE015B10C_**
	575	—	10	600		**ECX19E1DAC-_**	**ECX19E4DAC-_**	**ECX19E8DAC-_**	**XTAE015B10D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX19B**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX19—Combination Non-Reversing Starter—Fusible/Non-Fusible Disconnect, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Fuse Clips	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size F									
18	—	—	—	—	30 A	**ECX19F1AAA-_**	**ECX19F4AAA-_**	**ECX19F8AAA-_**	**XTAE018C10A_**
	115	2	—	120		**ECX19F1AAC-_**	**ECX19F4AAC-_**	**ECX19F8AAC-_**	**XTAE018C10A_**
	208	2	5	208		**ECX19F1EAC-_**	**ECX19F4EAC-_**	**ECX19F8EAC-_**	**XTAE018C10E_**
	230	3	5	240		**ECX19F1BAC-_**	**ECX19F4BAC-_**	**ECX19F8BAC-_**	**XTAE018C10B_**
	380	—	7-1/2	380/50 Hz		**ECX19F1LAC-_**	**ECX19F4LAC-_**	**ECX19F8LAC-_**	**XTAE018C10L_**
	460	—	10	480		**ECX19F1CAC-_**	**ECX19F4CAC-_**	**ECX19F8CAC-_**	**XTAE018C10C_**
	575	—	15	600		**ECX19F1DAC-_**	**ECX19F4DAC-_**	**ECX19F8DAC-_**	**XTAE018C10D_**
Size G									
25	—	—	—	—	30 A	**ECX19G1AAA-_**	**ECX19G4AAA-_**	**ECX19G8AAA-_**	**XTAE025C10A_**
	115	2	—	120		**ECX19G1AAC-_**	**ECX19G4AAC-_**	**ECX19G8AAC-_**	**XTAE025C10A_**
	208	3	7-1/2	208		**ECX19G1EAC-_**	**ECX19G4EAC-_**	**ECX19G8EAC-_**	**XTAE025C10E_**
	230	5	7-1/2	240		**ECX19G1BAC-_**	**ECX19G4BAC-_**	**ECX19G8BAC-_**	**XTAE025C10B_**
	380	—	10	380/50 Hz		**ECX19G1LAC-_**	**ECX19G4LAC-_**	**ECX19G8LAC-_**	**XTAE025C10L_**
	460	—	15	480		**ECX19G1CAC-_**	**ECX19G4CAC-_**	**ECX19G8CAC-_**	**XTAE025C10C_**
	575	—	20	600		**ECX19G1DAC-_**	**ECX19G4DAC-_**	**ECX19G8DAC-_**	**XTAE025C10D_**
Size H									
32	—	—	—	—	60 A	**ECX19H1AAA-_**	**ECX19H4AAA-_**	**ECX19H8AAA-_**	**XTAE032C10A_**
	115	3	—	120		**ECX19H1AAE-_**	**ECX19H4AAE-_**	**ECX19H8AAE-_**	**XTAE032C10A_**
	208	5	10	208		**ECX19H1EAE-_**	**ECX19H4EAE-_**	**ECX19H8EAE-_**	**XTAE032C10E_**
	230	5	10	240		**ECX19H1BAE-_**	**ECX19H4BAE-_**	**ECX19H8BAE-_**	**XTAE032C10B_**
	380	—	15	380/50 Hz		**ECX19H1LAE-_**	**ECX19H4LAE-_**	**ECX19H8LAE-_**	**XTAE032C10L_**
	460	—	20	480		**ECX19H1CAE-_**	**ECX19H4CAE-_**	**ECX19H8CAE-_**	**XTAE032C10C_**
	575	—	25	600		**ECX19H1DAE-_**	**ECX19H4DAE-_**	**ECX19H8DAE-_**	**XTAE032C10D_**
Size J									
40	—	—	—	—	60 A	**ECX19J1AAA-_**	**ECX19J4AAA-_**	**ECX19J8AAA-_**	**XTAE040D00A_**
	115	3	—	120		**ECX19J1AAE-_**	**ECX19J4AAE-_**	**ECX19J8AAE-_**	**XTAE040D00A_**
	208	5	10	208		**ECX19J1EAE-_**	**ECX19J4EAE-_**	**ECX19J8EAE-_**	**XTAE040D00E_**
	230	7-1/2	15	240		**ECX19J1BAE-_**	**ECX19J4BAE-_**	**ECX19J8BAE-_**	**XTAE040D00B_**
	380	—	15	380/50 Hz		**ECX19J1LAE-_**	**ECX19J4LAE-_**	**ECX19J8LAE-_**	**XTAE040D00L_**
	460	—	30	480		**ECX19J1CAE-_**	**ECX19J4CAE-_**	**ECX19J8CAE-_**	**XTAE040D00C_**
	575	—	40	600		**ECX19J1DAE-_**	**ECX19J4DAE-_**	**ECX19J8DAE-_**	**XTAE040D00D_**
Size K									
50	—	—	—	—	100 A	**ECX19K1AAA-_**	**ECX19K4AAA-_**	**ECX19K8AAA-_**	**XTAE050D00A_**
	115	3	—	120		**ECX19K1AAE-_**	**ECX19K4AAG-_**	**ECX19K8AAG-_**	**XTAE050D00A_**
	208	7-1/2	15	208		**ECX19K1EAE-_**	**ECX19K4EAG-_**	**ECX19K8EAG-_**	**XTAE050D00E_**
	230	10	20	240		**ECX19K1BAE-_**	**ECX19K4BAG-_**	**ECX19K8BAG-_**	**XTAE050D00B_**
	380	—	20	380/50 Hz		**ECX19K1LAE-_**	**ECX19K4LAG-_**	**ECX19K8LAG-_**	**XTAE050D00L_**
	460	—	40	480		**ECX19K1CAE-_**	**ECX19K4CAG-_**	**ECX19K8CAG-_**	**XTAE050D00C_**
	575	—	50	600		**ECX19K1DAE-_**	**ECX19K4DAG-_**	**ECX19K8DAG-_**	**XTAE050D00D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX19F**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX19—Combination Non-Reversing Starter—Fusible/Non-Fusible Disconnect, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ②	Fuse Clips	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size L									
65	—	—	—	—	100 A	ECX19L1AAA-_	ECX19L4AAA-_	ECX19L8AAA-_	XTAE065D00A_
	115	5	—	120		ECX19L1AAG-_	ECX19L4AAG-_	ECX19L8AAG-_	XTAE065D00A_
	208	10	20	208		ECX19L1EAG-_	ECX19L4EAG-_	ECX19L8EAG-_	XTAE065D00E_
	230	15	25	240		ECX19L1BAG-_	ECX19L4BAG-_	ECX19L8BAG-_	XTAE065D00B_
	380	—	30	380/50 Hz		ECX19L1LAG-_	ECX19L4LAG-_	ECX19L8LAG-_	XTAE065D00L_
	460	—	50	480		ECX19L1CAG-_	ECX19L4CAG-_	ECX19L8CAG-_	XTAE065D00C_
	575	—	60	600		ECX19L1DAG-_	ECX19L4DAG-_	ECX19L8DAG-_	XTAE065D00D_
Size M									
80	—	—	—	—	100 A	ECX19M1AAA-_	ECX19M4AAA-_	ECX19M8AAA-_	XTAE080F00A_
	115	7-1/2	—	120		ECX19M1AAG-_	ECX19M4AAG-_	ECX19M8AAG-_	XTAE080F00A_
	208	15	25	208		ECX19M1EAG-_	ECX19M4EAG-_	ECX19M8EAG-_	XTAE080F00E_
	230	15	30	240		ECX19M1BAG-_	ECX19M4BAG-_	ECX19M8BAG-_	XTAE080F00B_
	380	—	50	380/50 Hz		ECX19M1LAG-_	ECX19M4LAG-_	ECX19M8LAG-_	XTAE080F00L_
	460	—	60	480		ECX19M1CAG-_	ECX19M4CAG-_	ECX19M8CAG-_	XTAE080F00C_
	575	—	75	600		ECX19M1DAG-_	ECX19M4DAG-_	ECX19M8DAG-_	XTAE080F00D_
Size N ⑥									
95	—	—	—	—	⑥	ECX19N1AAA-_	ECX19N4AAA-_	ECX19N8AAA-_	XTAE095F00A_
	115	7-1/2	—	120		ECX19N1AAA-_	ECX19N4AAA-_	ECX19N8AAA-_	XTAE095F00A_
	208	15	25	208		ECX19N1EAA-_	ECX19N4EAA-_	ECX19N8EAA-_	XTAE095F00E_
	230	15	40	240		ECX19N1BAA-_	ECX19N4BAA-_	ECX19N8BAA-_	XTAE095F00B_
	380	—	60	380/50 Hz		ECX19N1LAA-_	ECX19N4LAA-_	ECX19N8LAA-_	XTAE095F00L_
	460	—	75	480		ECX19N1CAA-_	ECX19N4CAA-_	ECX19N8CAA-_	XTAE095F00C_
	575	—	100	600		ECX19N1DAA-_	ECX19N4DAA-_	ECX19N8DAA-_	XTAE095F00D_
Size P ⑥									
105	—	—	—	—	⑥	ECX19P1AAA-_	ECX19P4AAA-_	ECX19P8AAA-_	XTAE115G00A_
	115	10	—	120		ECX19P1AAA-_	ECX19P4AAA-_	ECX19P8AAA-_	XTAE115G00A_
	208	25	30	208		ECX19P1EAA-_	ECX19P4EAA-_	ECX19P8EAA-_	XTAE115G00E_
	230	25	40	240		ECX19P1BAA-_	ECX19P4BAA-_	ECX19P8BAA-_	XTAE115G00B_
	380	—	60	380/50 Hz		ECX19P1LAA-_	ECX19P4LAA-_	ECX19P8LAA-_	XTAE115G00L_
	460	—	75	480		ECX19P1CAA-_	ECX19P4CAA-_	ECX19P8CAA-_	XTAE115G00C_
	575	—	100	600		ECX19P1DAA-_	ECX19P4DAA-_	ECX19P8DAA-_	XTAE115G00D_

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX19L**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

⑥ Non-fused disconnect only.

Class ECX20—Combination Reversing Starter—Fusible/Non-Fusible Disconnect

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Fuse Clips	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size B									
7	—	—	—	—	30 A	**ECX20B1AAA-_**	**ECX20B4AAA-_**	**ECX20B8AAA-_**	**XTAR007B10A_**
	115	1/4	—	120		**ECX20B1AAC-_**	**ECX20B4AAC-_**	**ECX20B8AAC-_**	**XTAR007B10A_**
	208	3/4	1-1/2	208		**ECX20B1EAC-_**	**ECX20B4EAC-_**	**ECX20B8EAC-_**	**XTAR007B10E_**
	230	1	2	240		**ECX20B1BAC-_**	**ECX20B4BAC-_**	**ECX20B8BAC-_**	**XTAR007B10B_**
	380	—	3	380/50 Hz		**ECX20B1LAC-_**	**ECX20B4LAC-_**	**ECX20B8LAC-_**	**XTAR007B10L_**
	460	—	3	480		**ECX20B1CAC-_**	**ECX20B4CAC-_**	**ECX20B8CAC-_**	**XTAR007B10C_**
	575	—	5	600		**ECX20B1DAC-_**	**ECX20B4DAC-_**	**ECX20B8DAC-_**	**XTAR007B10D_**
Size C									
9	—	—	—	—	30 A	**ECX20C1AAA-_**	**ECX20C4AAA-_**	**ECX20C8AAA-_**	**XTAR009B10A_**
	115	1/2	—	120		**ECX20C1AAC-_**	**ECX20C4AAC-_**	**ECX20C8AAC-_**	**XTAR009B10A_**
	208	1	2	208		**ECX20C1EAC-_**	**ECX20C4EAC-_**	**ECX20C8EAC-_**	**XTAR009B10E_**
	230	1-1/2	3	240		**ECX20C1BAC-_**	**ECX20C4BAC-_**	**ECX20C8BAC-_**	**XTAR009B10B_**
	380	—	5	380/50 Hz		**ECX20C1LAC-_**	**ECX20C4LAC-_**	**ECX20C8LAC-_**	**XTAR009B10L_**
	460	—	5	480		**ECX20C1CAC-_**	**ECX20C4CAC-_**	**ECX20C8CAC-_**	**XTAR009B10C_**
	575	—	7-1/2	600		**ECX20C1DAC-_**	**ECX20C4DAC-_**	**ECX20C8DAC-_**	**XTAR009B10D_**
Size D									
12	—	—	—	—	30 A	**ECX20D1AAA-_**	**ECX20D4AAA-_**	**ECX20D8AAA-_**	**XTAR012B10A_**
	115	1/2	—	120		**ECX20D1AAC-_**	**ECX20D4AAC-_**	**ECX20D8AAC-_**	**XTAR012B10A_**
	208	1-1/2	3	208		**ECX20D1EAC-_**	**ECX20D4EAC-_**	**ECX20D8EAC-_**	**XTAR012B10E_**
	230	2	3	240		**ECX20D1BAC-_**	**ECX20D4BAC-_**	**ECX20D8BAC-_**	**XTAR012B10B_**
	380	—	5	380/50 Hz		**ECX20D1LAC-_**	**ECX20D4LAC-_**	**ECX20D8LAC-_**	**XTAR012B10L_**
	460	—	7-1/2	480		**ECX20D1CAC-_**	**ECX20D4CAC-_**	**ECX20D8CAC-_**	**XTAR012B10C_**
	575	—	10	600		**ECX20D1DAC-_**	**ECX20D4DAC-_**	**ECX20D8DAC-_**	**XTAR012B10D_**
Size E									
15	—	—	—	—	30 A	**ECX20E1AAA-_**	**ECX20E4AAA-_**	**ECX20E8AAA-_**	**XTAR015B10A_**
	115	3/4	—	120		**ECX20E1AAC-_**	**ECX20E4AAC-_**	**ECX20E8AAC-_**	**XTAR015B10A_**
	208	2	3	208		**ECX20E1EAC-_**	**ECX20E4EAC-_**	**ECX20E8EAC-_**	**XTAR015B10E_**
	230	2	3	240		**ECX20E1BAC-_**	**ECX20E4BAC-_**	**ECX20E8BAC-_**	**XTAR015B10B_**
	380	—	5	380/50 Hz		**ECX20E1LAC-_**	**ECX20E4LAC-_**	**ECX20E8LAC-_**	**XTAR015B10L_**
	460	—	7-1/2	480		**ECX20E1CAC-_**	**ECX20E4CAC-_**	**ECX20E8CAC-_**	**XTAR015B10C_**
	575	—	10	600		**ECX20E1DAC-_**	**ECX20E4DAC-_**	**ECX20E8DAC-_**	**XTAR015B10D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX20B**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX20—Combination Reversing Starter—Fusible/Non-Fusible Disconnect, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Fuse Clips	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size F									
18	—	—	—	—	30 A	ECX20F1AAA-_	ECX20F4AAA-_	ECX20F8AAA-_	XTAR018C10A_
	115	2	—	120		ECX20F1AAC-_	ECX20F4AAC-_	ECX20F8AAC-_	XTAR018C10A_
	208	2	5	208		ECX20F1EAC-_	ECX20F4EAC-_	ECX20F8EAC-_	XTAR018C10E_
	230	3	5	240		ECX20F1BAC-_	ECX20F4BAC-_	ECX20F8BAC-_	XTAR018C10B_
	380	—	7-1/2	380/50 Hz		ECX20F1LAC-_	ECX20F4LAC-_	ECX20F8LAC-_	XTAR018C10L_
	460	—	10	480		ECX20F1CAC-_	ECX20F4CAC-_	ECX20F8CAC-_	XTAR018C10C_
	575	—	15	600		ECX20F1DAC-_	ECX20F4DAC-_	ECX20F8DAC-_	XTAR018C10D_
Size G									
25	—	—	—	—	30 A	ECX20G1AAA-_	ECX20G4AAA-_	ECX20G8AAA-_	XTAR025C10A_
	115	2	—	120		ECX20G1AAC-_	ECX20G4AAC-_	ECX20G8AAC-_	XTAR025C10A_
	208	3	7-1/2	208		ECX20G1EAC-_	ECX20G4EAC-_	ECX20G8EAC-_	XTAR025C10E_
	230	5	7-1/2	240		ECX20G1BAC-_	ECX20G4BAC-_	ECX20G8BAC-_	XTAR025C10B_
	380	—	10	380/50 Hz		ECX20G1LAC-_	ECX20G4LAC-_	ECX20G8LAC-_	XTAR025C10L_
	460	—	15	480		ECX20G1CAC-_	ECX20G4CAC-_	ECX20G8CAC-_	XTAR025C10C_
	575	—	20	600		ECX20G1DAC-_	ECX20G4DAC-_	ECX20G8DAC-_	XTAR025C10D_
Size H									
32	—	—	—	—	60 A	ECX20H1AAA-_	ECX20H4AAA-_	ECX20H8AAA-_	XTAR032C10A_
	115	3	—	120		ECX20H1AAE-_	ECX20H4AAE-_	ECX20H8AAE-_	XTAR032C10A_
	208	5	10	208		ECX20H1EAE-_	ECX20H4EAE-_	ECX20H8EAE-_	XTAR032C10E_
	230	5	10	240		ECX20H1BAE-_	ECX20H4BAE-_	ECX20H8BAE-_	XTAR032C10B_
	380	—	15	380/50 Hz		ECX20H1LAE-_	ECX20H4LAE-_	ECX20H8LAE-_	XTAR032C10L_
	460	—	20	480		ECX20H1CAE-_	ECX20H4CAE-_	ECX20H8CAE-_	XTAR032C10C_
	575	—	25	600		ECX20H1DAE-_	ECX20H4DAE-_	ECX20H8DAE-_	XTAR032C10D_
Size J									
40	—	—	—	—	60 A	ECX20J1AAA-_	ECX20J4AAA-_	ECX20J8AAA-_	XTAR040D00A_
	115	3	—	120		ECX20J1AAE-_	ECX20J4AAE-_	ECX20J8AAE-_	XTAR040D00A_
	208	5	10	208		ECX20J1EAE-_	ECX20J4EAE-_	ECX20J8EAE-_	XTAR040D00E_
	230	7-1/2	15	240		ECX20J1BAE-_	ECX20J4BAE-_	ECX20J8BAE-_	XTAR040D00B_
	380	—	15	380/50 Hz		ECX20J1LAE-_	ECX20J4LAE-_	ECX20J8LAE-_	XTAR040D00L_
	460	—	30	480		ECX20J1CAE-_	ECX20J4CAE-_	ECX20J8CAE-_	XTAR040D00C_
	575	—	40	600		ECX20J1DAE-_	ECX20J4DAE-_	ECX20J8DAE-_	XTAR040D00D_
Size K									
50	—	—	—	—	100 A	ECX20K1AAA-_	ECX20K4AAA-_	ECX20K8AAA-_	XTAR050D00A_
	115	3	—	120		ECX20K1AAG-_	ECX20K4AAG-_	ECX20K8AAG-_	XTAR050D00A_
	208	7-1/2	15	208		ECX20K1EAG-_	ECX20K4EAG-_	ECX20K8EAG-_	XTAR050D00E_
	230	10	20	240		ECX20K1BAG-_	ECX20K4BAG-_	ECX20K8BAG-_	XTAR050D00B_
	380	—	20	380/50 Hz		ECX20K1LAG-_	ECX20K4LAG-_	ECX20K8LAG-_	XTAR050D00L_
	460	—	40	480		ECX20K1CAG-_	ECX20K4CAG-_	ECX20K8CAG-_	XTAR050D00C_
	575	—	50	600		ECX20K1DAG-_	ECX20K4DAG-_	ECX20K8DAG-_	XTAR050D00D_

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX20F**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX20—Combination Reversing Starter—Fusible/Non-Fusible Disconnect, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Fuse Clips	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size L									
65	—	—	—	—	100 A	**ECX20L1AAA-_**	**ECX20L4AAA-_**	**ECX20L8AAA-_**	**XTAR065D00A_**
	115	5	—	120		**ECX20L1AAG-_**	**ECX20L4AAG-_**	**ECX20L8AAG-_**	**XTAR065D00A_**
	208	10	20	208		**ECX20L1EAG-_**	**ECX20L4EAG-_**	**ECX20L8EAG-_**	**XTAR065D00E_**
	230	15	25	240		**ECX20L1BAG-_**	**ECX20L4BAG-_**	**ECX20L8BAG-_**	**XTAR065D00B_**
	380	—	30	380/50 Hz		**ECX20L1LAG-_**	**ECX20L4LAG-_**	**ECX20L8LAG-_**	**XTAR065D00L_**
	460	—	50	480		**ECX20L1CAG-_**	**ECX20L4CAG-_**	**ECX20L8CAG-_**	**XTAR065D00C_**
	575	—	60	600		**ECX20L1DAG-_**	**ECX20L4DAG-_**	**ECX20L8DAG-_**	**XTAR065D00D_**
Size M									
80	—	—	—	—	100 A	**ECX20M1AAA-_**	**ECX20M4AAA-_**	**ECX20M8AAA-_**	**XTAR080F00A_**
	115	7-1/2	—	120		**ECX20M1AAG-_**	**ECX20M4AAG-_**	**ECX20M8AAG-_**	**XTAR080F00A_**
	208	15	25	208		**ECX20M1EAG-_**	**ECX20M4EAG-_**	**ECX20M8EAG-_**	**XTAR080F00E_**
	230	15	30	240		**ECX20M1BAG-_**	**ECX20M4BAG-_**	**ECX20M8BAG-_**	**XTAR080F00B_**
	380	—	50	380/50 Hz		**ECX20M1LAG-_**	**ECX20M4LAG-_**	**ECX20M8LAG-_**	**XTAR080F00L_**
	460	—	60	480		**ECX20M1CAG-_**	**ECX20M4CAG-_**	**ECX20M8CAG-_**	**XTAR080F00C_**
	575	—	75	600		**ECX20M1DAG-_**	**ECX20M4DAG-_**	**ECX20M8DAG-_**	**XTAR080F00D_**
Size N ⑥									
95	—	—	—	—	⑥	**ECX20N1AAA-_**	**ECX20N4AAA-_**	**ECX20N8AAA-_**	**XTAR095F00A_**
	115	7-1/2	—	120		**ECX20N1AAA-_**	**ECX20N4AAA-_**	**ECX20N8AAA-_**	**XTAR095F00A_**
	208	15	25	208		**ECX20N1EAA-_**	**ECX20N4EAA-_**	**ECX20N8EAA-_**	**XTAR095F00E_**
	230	15	40	240		**ECX20N1BAA-_**	**ECX20N4BAA-_**	**ECX20N8BAA-_**	**XTAR095F00B_**
	380	—	60	380/50 Hz		**ECX20N1LAA-_**	**ECX20N4LAA-_**	**ECX20N8LAA-_**	**XTAR095F00L_**
	460	—	75	480		**ECX20N1CAA-_**	**ECX20N4CAA-_**	**ECX20N8CAA-_**	**XTAR095F00C_**
	575	—	100	600		**ECX20N1DAA-_**	**ECX20N4DAA-_**	**ECX20N8DAA-_**	**XTAR095F00D_**
Size P ⑥									
105	—	—	—	—	⑥	**ECX20P1AAA-_**	**ECX20P4AAA-_**	**ECX20P8AAA-_**	**XTAR115G00A_**
	115	10	—	120		**ECX20P1AAA-_**	**ECX20P4AAA-_**	**ECX20P8AAA-_**	**XTAR115G00A_**
	208	25	30	208		**ECX20P1EAA-_**	**ECX20P4EAA-_**	**ECX20P8EAA-_**	**XTAR115G00E_**
	230	25	40	240		**ECX20P1BAA-_**	**ECX20P4BAA-_**	**ECX20P8BAA-_**	**XTAR115G00B_**
	380	—	60	380/50 Hz		**ECX20P1LAA-_**	**ECX20P4LAA-_**	**ECX20P8LAA-_**	**XTAR115G00L_**
	460	—	75	480		**ECX20P1CAA-_**	**ECX20P4CAA-_**	**ECX20P8CAA-_**	**XTAR115G00C_**
	575	—	100	600		**ECX20P1DAA-_**	**ECX20P4DAA-**	**ECX20P8DAA-_**	**XTAR115G00D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX20L**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

⑥ Non-fused disconnect only.

Class ECX25—Combination Non-Reversing Starter—Circuit Breaker

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Circuit Breaker	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size B									
7	115	1/4	—	120	7 A	**ECX25B1AAC-_**	**ECX25B4AAC-_**	**ECX25B8AAC-_**	**XTAE007B10A_**
	208	3/4	1-1/2	208		**ECX25B1EAC-_**	**ECX25B4EAC-_**	**ECX25B8EAC-_**	**XTAE007B10E_**
	230	1	2	240		**ECX25B1BAC-_**	**ECX25B4BAC-_**	**ECX25B8BAC-_**	**XTAE007B10B_**
	380	—	3	380/50 Hz		**ECX25B1LAC-_**	**ECX25B4LAC-_**	**ECX25B8LAC-_**	**XTAE007B10L_**
	460	—	3	480		**ECX25B1CAC-_**	**ECX25B4CAC-_**	**ECX25B8CAC-_**	**XTAE007B10C_**
	575	—	5	600		**ECX25B1DAC-_**	**ECX25B4DAC-_**	**ECX25B8DAC-_**	**XTAE007B10D_**
Size C									
9	115	1/2	—	120	15 A	**ECX25C1AAD-_**	**ECX25C4AAD-_**	**ECX25C8AAD-_**	**XTAE009B10A_**
	208	1	2	208		**ECX25C1EAD-_**	**ECX25C4EAD-_**	**ECX25C8EAD-_**	**XTAE009B10E_**
	230	1-1/2	3	240		**ECX25C1BAD-_**	**ECX25C4BAD-_**	**ECX25C8BAD-_**	**XTAE009B10B_**
	380	—	5	380/50 Hz		**ECX25C1LAD-_**	**ECX25C4LAD-_**	**ECX25C8LAD-_**	**XTAE009B10L_**
	460	—	5	480		**ECX25C1CAD-_**	**ECX25C4CAD-_**	**ECX25C8CAD-_**	**XTAE009B10C_**
	575	—	7-1/2	600		**ECX25C1DAD-_**	**ECX25C4DAD-_**	**ECX25C8DAD-_**	**XTAE009B10D_**
Size D									
12	115	1/2	—	120	15 A	**ECX25D1AAD-_**	**ECX25D4AAD-_**	**ECX25D8AAD-_**	**XTAE012B10A_**
	208	1-1/2	3	208		**ECX25D1EAD-_**	**ECX25D4EAD-_**	**ECX25D8EAD-_**	**XTAE012B10E_**
	230	2	3	240		**ECX25D1BAD-_**	**ECX25D4BAD-_**	**ECX25D8BAD-_**	**XTAE012B10B_**
	380	—	5	380/50 Hz		**ECX25D1LAD-_**	**ECX25D4LAD-_**	**ECX25D8LAD-_**	**XTAE012B10L_**
	460	—	7-1/2	480		**ECX25D1CAD-_**	**ECX25D4CAD-_**	**ECX25D8CAD-_**	**XTAE012B10C_**
	575	—	10	600		**ECX25D1DAD-_**	**ECX25D4DAD-_**	**ECX25D8DAD-_**	**XTAE012B10D_**
Size E									
15	115	3/4	—	120	30 A	**ECX25E1AAE-_**	**ECX25E4AAE-_**	**ECX25E8AAE-_**	**XTAE015B10A_**
	208	2	3	208		**ECX25E1EAE-_**	**ECX25E4EAE-_**	**ECX25E8EAE-_**	**XTAE015B10E_**
	230	2	3	240		**ECX25E1BAE-_**	**ECX25E4BAE-_**	**ECX25E8BAE-_**	**XTAE015B10B_**
	380	—	5	380/50 Hz		**ECX25E1LAE-_**	**ECX25E4LAE-_**	**ECX25E8LAE-_**	**XTAE015B10L_**
	460	—	7-1/2	480		**ECX25E1CAE-_**	**ECX25E4CAE-_**	**ECX25E8CAE-_**	**XTAE015B10C_**
	575	—	10	600		**ECX25E1DAE-_**	**ECX25E4DAE-_**	**ECX25E8DAE-_**	**XTAE015B10D_**
Size F									
18	115	2	—	120	30 A	**ECX25F1AAE-_**	**ECX25F4AAE-_**	**ECX25F8AAE-_**	**XTAE018C10A_**
	208	2	5	208		**ECX25F1EAE-_**	**ECX25F4EAE-_**	**ECX25F8EAE-_**	**XTAE018C10E_**
	230	3	5	240		**ECX25F1BAE-_**	**ECX25F4BAE-_**	**ECX25F8BAE-_**	**XTAE018C10B_**
	380	—	7-1/2	380/50 Hz		**ECX25F1LAE-_**	**ECX25F4LAE-_**	**ECX25F8LAE-_**	**XTAE018C10L_**
	460	—	10	480		**ECX25F1CAE-_**	**ECX25F4CAE-_**	**ECX25F8CAE-_**	**XTAE018C10C_**
	575	—	15	600		**ECX25F1DAE-_**	**ECX25F4DAE-_**	**ECX25F8DAE-_**	**XTAE018C10D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX25B**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX25—Combination Non-Reversing Starter—Circuit Breaker, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Circuit Breaker	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size G									
25	115	2	—	120	50 A	**ECX25G1AAF-_**	**ECX25G4AAF-_**	**ECX25G8AAF-_**	**XTAE025C10A_**
	208	3	7-1/2	208		**ECX25G1EAF-_**	**ECX25G4EAF-_**	**ECX25G8EAF-_**	**XTAE025C10E_**
	230	5	7-1/2	240		**ECX25G1BAF-_**	**ECX25G4BAF-_**	**ECX25G8BAF-_**	**XTAE025C10B_**
	380	—	10	380/50 Hz		**ECX25G1LAF-_**	**ECX25G4LAF-_**	**ECX25G8LAF-_**	**XTAE025C10L_**
	460	—	15	480		**ECX25G1CAF-_**	**ECX25G4CAF-_**	**ECX25G8CAF-_**	**XTAE025C10C_**
	575	—	20	600		**ECX25G1DAF-_**	**ECX25G4DAF-_**	**ECX25G8DAF-_**	**XTAE025C10D_**
Size H									
32	115	3	—	120	50 A	**ECX25H1AAF-_**	**ECX25H4AAF-_**	**ECX25H8AAF-_**	**XTAE032C10A_**
	208	5	10	208		**ECX25H1EAF-_**	**ECX25H4EAF-_**	**ECX25H8EAF-_**	**XTAE032C10E_**
	230	5	10	240		**ECX25H1BAF-_**	**ECX25H4BAF-_**	**ECX25H8BAF-_**	**XTAE032C10B_**
	380	—	15	380/50 Hz		**ECX25H1LAF-_**	**ECX25H4LAF-_**	**ECX25H8LAF-_**	**XTAE032C10L_**
	460	—	20	480		**ECX25H1CAF-_**	**ECX25H4CAF-_**	**ECX25H8CAF-_**	**XTAE032C10C_**
	575	—	25	600		**ECX25H1DAF-_**	**ECX25H4DAF-_**	**ECX25H8DAF-_**	**XTAE032C10D_**
Size J									
40	115	3	—	120	50 A	**ECX25J1AAF-_**	**ECX25J4AAF-_**	**ECX25J8AAF-_**	**XTAE040D00A_**
	208	5	10	208		**ECX25J1EAF-_**	**ECX25J4EAF-_**	**ECX25J8EAF-_**	**XTAE040D00E_**
	230	7-1/2	15	240		**ECX25J1BAF-_**	**ECX25J4BAF-_**	**ECX25J8BAF-_**	**XTAE040D00B_**
	380	—	15	380/50 Hz		**ECX25J1LAF-_**	**ECX25J4LAF-_**	**ECX25J8LAF-_**	**XTAE040D00L_**
	460	—	30	480		**ECX25J1CAF-_**	**ECX25J4CAF-_**	**ECX25J8CAF-_**	**XTAE040D00C_**
	575	—	40	600		**ECX25J1DAF-_**	**ECX25J4DAF-_**	**ECX25J8DAF-_**	**XTAE040D00D_**
Size K									
50	115	3	—	120	70 A	**ECX25K1AAW-_**	**ECX25K4AAW-_**	**ECX25K8AAW-_**	**XTAE050D00A_**
	208	7-1/2	15	208		**ECX25K1EAW-_**	**ECX25K4EAW-_**	**ECX25K8EAW-_**	**XTAE050D00E_**
	230	10	20	240		**ECX25K1BAW-_**	**ECX25K4BAW-_**	**ECX25K8BAW-_**	**XTAE050D00B_**
	380	—	20	380/50 Hz		**ECX25K1LAW-_**	**ECX25K4LAW-_**	**ECX25K8LAW-_**	**XTAE050D00L_**
	460	—	40	480		**ECX25K1CAW-_**	**ECX25K4CAW-_**	**ECX25K8CAW-_**	**XTAE050D00C_**
	575	—	50	600		**ECX25K1DAW-_**	**ECX25K4DAW-_**	**ECX25K8DAW-_**	**XTAE050D00D_**
Size L									
65	115	5	—	120	70 A	**ECX25L1AAW-_**	**ECX25L4AAW-_**	**ECX25L8AAW-_**	**XTAE065D00A_**
	208	10	20	208		**ECX25L1EAW-_**	**ECX25L4EAW-_**	**ECX25L8EAW-_**	**XTAE065D00E_**
	230	15	25	240		**ECX25L1BAW-_**	**ECX25L4BAW-_**	**ECX25L8BAW-_**	**XTAE065D00B_**
	380	—	30	380/50 Hz		**ECX25L1LAW-_**	**ECX25L4LAW-_**	**ECX25L8LAW-_**	**XTAE065D00L_**
	460	—	50	480		**ECX25L1CAW-_**	**ECX25L4CAW-_**	**ECX25L8CAW-_**	**XTAE065D00C_**
	575	—	60	600		**ECX25L1DAW-_**	**ECX25L4DAW-_**	**ECX25L8DAW-_**	**XTAE065D00D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX25G**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX25—Combination Non-Reversing Starter—Circuit Breaker, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Circuit Breaker	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size M									
80	115	7-1/2	—	120	100 A	**ECX25M1AAG-_**	**ECX25M4AAG-_**	**ECX25M8AAG-_**	**XTAE080F00A_**
	208	15	25	208		**ECX25M1EAG-_**	**ECX25M4EAG-_**	**ECX25M8EAG-_**	**XTAE080F00E_**
	230	15	30	240		**ECX25M1BAG-_**	**ECX25M4BAG-_**	**ECX25M8BAG-_**	**XTAE080F00B_**
	380	—	50	380/50 Hz		**ECX25M1LAG-_**	**ECX25M4LAG-_**	**ECX25M8LAG-_**	**XTAE080F00L_**
	460	—	60	480		**ECX25M1CAG-_**	**ECX25M4CAG-_**	**ECX25M8CAG-_**	**XTAE080F00C_**
	575	—	75	600		**ECX25M1DAG-_**	**ECX25M4DAG-_**	**ECX25M8DAG-_**	**XTAE080F00D_**
Size N									
95	115	7-1/2	—	120	100 A	**ECX25N1AAG-_**	**ECX25N4AAG-_**	**ECX25N8AAG-_**	**XTAE095F00A_**
	208	15	25	208		**ECX25N1EAG-_**	**ECX25N4EAG-_**	**ECX25N8EAG-_**	**XTAE095F00E_**
	230	15	40	240		**ECX25N1BAG-_**	**ECX25N4BAG-_**	**ECX25N8BAG-_**	**XTAE095F00B_**
	380	—	60	380/50 Hz		**ECX25N1LAG-_**	**ECX25N4LAG-_**	**ECX25N8LAG-_**	**XTAE095F00L_**
	460	—	75	480		**ECX25N1CAG-_**	**ECX25N4CAG-_**	**ECX25N8CAG-_**	**XTAE095F00C_**
	575	—	100	600		**ECX25N1DAG-_**	**ECX25N4DAG-_**	**ECX25N8DAG-_**	**XTAE095F00D_**
Size P									
115	115	10	—	120	150 A	**ECX25P1AAH-_**	**ECX25P4AAH-_**	**ECX25P8AAH-_**	**XTAE115G00A_**
	208	25	40	208		**ECX25P1EAH-_**	**ECX25P4EAH-_**	**ECX25P8EAH-_**	**XTAE115G00E_**
	230	25	50	240		**ECX25P1BAH-_**	**ECX25P4BAH-_**	**ECX25P8BAH-_**	**XTAE115G00B_**
	380	—	60	380/50 Hz		**ECX25P1LAH-_**	**ECX25P4LAH-_**	**ECX25P8LAH-_**	**XTAE115G00L_**
	460	—	100	480		**ECX25P1CAH-_**	**ECX25P4CAH-_**	**ECX25P8CAH-_**	**XTAE115G00C_**
	575	—	125	600		**ECX25P1DAH-_**	**ECX25P4DAH-_**	**ECX25P8DAH-_**	**XTAE115G00D_**
Size Q									
125	115	15	—	120	150 A	**ECX25Q1AAH-_**	**ECX25Q4AAH-_**	**ECX25Q8AAH-_**	**XTAE150G00A_**
	208	25	40	208		**ECX25Q1EAH-_**	**ECX25Q4EAH-_**	**ECX25Q8EAH-_**	**XTAE150G00E_**
	230	25	50	240		**ECX25Q1BAH-_**	**ECX25Q4BAH-_**	**ECX25Q8BAH-_**	**XTAE150G00B_**
	380	—	75	380/50 Hz		**ECX25Q1LAH-_**	**ECX25Q4LAH-_**	**ECX25Q8LAH-_**	**XTAE150G00L_**
	460	—	100	480		**ECX25Q1CAH-_**	**ECX25Q4CAH-_**	**ECX25Q8CAH-_**	**XTAE150G00C_**
	575	—	125	600		**ECX25Q1DAH-_**	**ECX25Q4DAH-_**	**ECX25Q8DAH-_**	**XTAE150G00D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX25M**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX26—Combination Reversing Starter—Circuit Breaker

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Circuit Breaker	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size B									
7	115	1/4	—	120	7 A	**ECX26B1AAC-_**	**ECX26B4AAC-_**	**ECX26B8AAC-_**	**XTAR007B10A_**
	208	3/4	1-1/2	208		**ECX26B1EAC-_**	**ECX26B4EAC-_**	**ECX26B8EAC-_**	**XTAR007B10E_**
	230	1	2	240		**ECX26B1BAC-_**	**ECX26B4BAC-_**	**ECX26B8BAC-_**	**XTAR007B10B_**
	380	—	3	380/50 Hz		**ECX26B1LAC-_**	**ECX26B4LAC-_**	**ECX26B8LAC-_**	**XTAR007B10L_**
	460	—	3	480		**ECX26B1CAC-_**	**ECX26B4CAC-_**	**ECX26B8CAC-_**	**XTAR007B10C_**
	575	—	5	600		**ECX26B1DAC-_**	**ECX26B4DAC-_**	**ECX26B8DAC-_**	**XTAR007B10D_**
Size C									
9	115	1/2	—	120	15 A	**ECX26C1AAD-_**	**ECX26C4AAD-_**	**ECX26C8AAD-_**	**XTAR009B10A_**
	208	1	2	208		**ECX26C1EAD-_**	**ECX26C4EAD-_**	**ECX26C8EAD-_**	**XTAR009B10E_**
	230	1-1/2	3	240		**ECX26C1BAD-_**	**ECX26C4BAD-_**	**ECX26C8BAD-_**	**XTAR009B10B_**
	380	—	5	380/50 Hz		**ECX26C1LAD-_**	**ECX26C4LAD-_**	**ECX26C8LAD-_**	**XTAR009B10L_**
	460	—	5	480		**ECX26C1CAD-_**	**ECX26C4CAD-_**	**ECX26C8CAD-_**	**XTAR009B10C_**
	575	—	7-1/2	600		**ECX26C1DAD-_**	**ECX26C4DAD-_**	**ECX26C8DAD-_**	**XTAR009B10D_**
Size D									
12	115	1/2	—	120	15 A	**ECX26D1AAD-_**	**ECX26D4AAD-_**	**ECX26D8AAD-_**	**XTAR012B10A_**
	208	1-1/2	3	208		**ECX26D1EAD-_**	**ECX26D4EAD-_**	**ECX26D8EAD-_**	**XTAR012B10E_**
	230	2	3	240		**ECX26D1BAD-_**	**ECX26D4BAD-_**	**ECX26D8BAD-_**	**XTAR012B10B_**
	380	—	5	380/50 Hz		**ECX26D1LAD-_**	**ECX26D4LAD-_**	**ECX26D8LAD-_**	**XTAR012B10L_**
	460	—	7-1/2	480		**ECX26D1CAD-_**	**ECX26D4CAD-_**	**ECX26D8CAD-_**	**XTAR012B10C_**
	575	—	10	600		**ECX26D1DAD-_**	**ECX26D4DAD-_**	**ECX26D8DAD-_**	**XTAR012B10D_**
Size E									
15	115	3/4	—	120	30 A	**ECX26E1AAE-_**	**ECX26E4AAE-_**	**ECX26E8AAE-_**	**XTAR015B10A_**
	208	2	3	208		**ECX26E1EAE-_**	**ECX26E4EAE-_**	**ECX26E8EAE-_**	**XTAR015B10E_**
	230	2	3	240		**ECX26E1BAE-_**	**ECX26E4BAE-_**	**ECX26E8BAE-_**	**XTAR015B10B_**
	380	—	5	380/50 Hz		**ECX26E1LAE-_**	**ECX26E4LAE-_**	**ECX26E8LAE-_**	**XTAR015B10L_**
	460	—	7-1/2	480		**ECX26E1CAE-_**	**ECX26E4CAE-_**	**ECX26E8CAE-_**	**XTAR015B10C_**
	575	—	10	600		**ECX26E1DAE-_**	**ECX26E4DAE-_**	**ECX26E8DAE-_**	**XTAR015B10D_**
Size F									
18	115	2	—	120	30 A	**ECX26F1AAE-_**	**ECX26F4AAE-_**	**ECX26F8AAE-_**	**XTAR018C10A_**
	208	2	5	208		**ECX26F1EAE-_**	**ECX26F4EAE-_**	**ECX26F8EAE-_**	**XTAR018C10E_**
	230	3	5	240		**ECX26F1BAE-_**	**ECX26F4BAE-_**	**ECX26F8BAE-_**	**XTAR018C10B_**
	380	—	7-1/2	380/50 Hz		**ECX26F1LAE-_**	**ECX26F4LAE-_**	**ECX26F8LAE-_**	**XTAR018C10L_**
	460	—	10	480		**ECX26F1CAE-_**	**ECX26F4CAE-_**	**ECX26F8CAE-_**	**XTAR018C10C_**
	575	—	15	600		**ECX26F1DAE-_**	**ECX26F4DAE-_**	**ECX26F8DAE-_**	**XTAR018C10D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX26B**4**AAA-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX26—Combination Reversing Starter—Circuit Breaker, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Circuit Breaker	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size G									
25	115	2	—	120	50 A	**ECX26G1AAF-_**	**ECX26G4AAF-_**	**ECX26G8AAF-_**	**XTAR025C10A_**
	208	3	7-1/2	208		**ECX26G1EAF-_**	**ECX26G4EAF-_**	**ECX26G8EAF-_**	**XTAR025C10E_**
	230	5	7-1/2	240		**ECX26G1BAF-_**	**ECX26G4BAF-_**	**ECX26G8BAF-_**	**XTAR025C10B_**
	380	—	10	380/50 Hz		**ECX26G1LAF-_**	**ECX26G4LAF-_**	**ECX26G8LAF-_**	**XTAR025C10L_**
	460	—	15	480		**ECX26G1CAF-_**	**ECX26G4CAF-_**	**ECX26G8CAF-_**	**XTAR025C10C_**
	575	—	20	600		**ECX26G1DAF-_**	**ECX26G4DAF-_**	**ECX26G8DAF-_**	**XTAR025C10D_**
Size H									
32	115	3	—	120	50 A	**ECX26H1AAF-_**	**ECX26H4AAF-_**	**ECX26H8AAF-_**	**XTAR032C10A_**
	208	5	10	208		**ECX26H1EAF-_**	**ECX26H4EAF-_**	**ECX26H8EAF-_**	**XTAR032C10E_**
	230	5	10	240		**ECX26H1BAF-_**	**ECX26H4BAF-_**	**ECX26H8BAF-_**	**XTAR032C10B_**
	380	—	15	380/50 Hz		**ECX26H1LAF-_**	**ECX26H4LAF-_**	**ECX26H8LAF-_**	**XTAR032C10L_**
	460	—	20	480		**ECX26H1CAF-_**	**ECX26H4CAF-_**	**ECX26H8CAF-_**	**XTAR032C10C_**
	575	—	25	600		**ECX26H1DAF-_**	**ECX26H4DAF-_**	**ECX26H8DAF-_**	**XTAR032C10D_**
Size J									
40	115	3	—	120	50 A	**ECX26J1AAF-_**	**ECX26J4AAF-_**	**ECX26J8AAF-_**	**XTAR040D00A_**
	208	5	10	208		**ECX26J1EAF-_**	**ECX26J4EAF-_**	**ECX26J8EAF-_**	**XTAR040D00E_**
	230	7-1/2	15	240		**ECX26J1BAF-_**	**ECX26J4BAF-_**	**ECX26J8BAF-_**	**XTAR040D00B_**
	380	—	15	380/50 Hz		**ECX26J1LAF-_**	**ECX26J4LAF-_**	**ECX26J8LAF-_**	**XTAR040D00L_**
	460	—	30	480		**ECX26J1CAF-_**	**ECX26J4CAF-_**	**ECX26J8CAF-_**	**XTAR040D00C_**
	575	—	40	600		**ECX26J1DAF-_**	**ECX26J4DAF-_**	**ECX26J8DAF-_**	**XTAR040D00D_**
Size K									
50	115	3	—	120	70 A	**ECX26K1AAW-_**	**ECX26K4AAW-_**	**ECX26K8AAW-_**	**XTAR050D00A_**
	208	7-1/2	15	208		**ECX26K1EAW-_**	**ECX26K4EAW-_**	**ECX26K8EAW-_**	**XTAR050D00E_**
	230	10	20	240		**ECX26K1BAW-_**	**ECX26K4BAW-_**	**ECX26K8BAW-_**	**XTAR050D00B_**
	380	—	20	380/50 Hz		**ECX26K1LAW-_**	**ECX26K4LAW-_**	**ECX26K8LAW-_**	**XTAR050D00L_**
	460	—	40	480		**ECX26K1CAW-_**	**ECX26K4CAW-_**	**ECX26K8CAW-_**	**XTAR050D00C_**
	575	—	50	600		**ECX26K1DAW-_**	**ECX26K4DAW-_**	**ECX26K8DAW-_**	**XTAR050D00D_**
Size L									
65	115	5	—	120	100 A	**ECX26L1AAW-_**	**ECX26L4AAW-_**	**ECX26L8AAW-_**	**XTAR065D00A_**
	208	10	20	208		**ECX26L1EAW-_**	**ECX26L4EAW-_**	**ECX26L8EAW-_**	**XTAR065D00E_**
	230	15	25	240		**ECX26L1BAW-_**	**ECX26L4BAW-_**	**ECX26L8BAW-_**	**XTAR065D00B_**
	380	—	30	380/50 Hz		**ECX26L1LAW-_**	**ECX26L4LAW-_**	**ECX26L8LAW-_**	**XTAR065D00L_**
	460	—	50	480		**ECX26L1CAW-_**	**ECX26L4CAW-_**	**ECX26L8CAW-_**	**XTAR065D00C_**
	575	—	60	600		**ECX26L1DAW-_**	**ECX26L4DAW-_**	**ECX26L8DAW-_**	**XTAR065D00D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX26G**4**AAF-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECX26—Combination Reversing Starter—Circuit Breaker, continued

Amps	Maximum hp ① Motor Voltage ②	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ③	Circuit Breaker	Type 1/IP23 Catalog Number ④	Type 4X/IP66 ⑤ Catalog Number ④	Type 12/IP65 Catalog Number ④	Component Catalog Number ④
Size M									
80	115	7-1/2	—	120	100 A	**ECX26M1AAG-_**	**ECX26M4AAG-_**	**ECX26M8AAG-_**	**XTAR080F00A_**
	208	15	25	208		**ECX26M1EAG-_**	**ECX26M4EAG-_**	**ECX26M8EAG-_**	**XTAR080F00E_**
	230	15	30	240		**ECX26M1BAG-_**	**ECX26M4BAG-_**	**ECX26M8BAG-_**	**XTAR080F00B_**
	380	—	50	380/50 Hz		**ECX26M1LAG-_**	**ECX26M4LAG-_**	**ECX26M8LAG-_**	**XTAR080F00L_**
	460	—	60	480		**ECX26M1CAG-_**	**ECX26M4CAG-_**	**ECX26M8CAG-_**	**XTAR080F00C_**
	575	—	75	600		**ECX26M1DAG-_**	**ECX26M4DAG-_**	**ECX26M8DAG-_**	**XTAR080F00D_**
Size N									
95	115	7-1/2	—	120	100 A	**ECX26N1AAG-_**	**ECX26N4AAG-_**	**ECX26N8AAG-_**	**XTAR095F00A_**
	208	15	25	208		**ECX26N1EAG-_**	**ECX26N4EAG-_**	**ECX26N8EAG-_**	**XTAR095F00E_**
	230	15	40	240		**ECX26N1BAG-_**	**ECX26N4BAG-_**	**ECX26N8BAG-_**	**XTAR095F00B_**
	380	—	60	380/50 Hz		**ECX26N1LAG-_**	**ECX26N4LAG-_**	**ECX26N8LAG-_**	**XTAR095F00L_**
	460	—	75	480		**ECX26N1CAG-_**	**ECX26N4CAG-_**	**ECX26N8CAG-_**	**XTAR095F00C_**
	575	—	100	600		**ECX26N1DAG-_**	**ECX26N4DAG-_**	**ECX26N8DAG-_**	**XTAR095F00D_**
Size P									
115	115	10	—	120	150 A	**ECX26P1AAH-_**	**ECX26P4AAH-_**	**ECX26P8AAH-_**	**XTAR115G00A_**
	208	25	40	208		**ECX26P1EAH-_**	**ECX26P4EAH-_**	**ECX26P8EAH-_**	**XTAR115G00E_**
	230	25	50	240		**ECX26P1BAH-_**	**ECX26P4BAH-_**	**ECX26P8BAH-_**	**XTAR115G00B_**
	380	—	60	380/50 Hz		**ECX26P1LAH-_**	**ECX26P4LAH-_**	**ECX26P8LAH-_**	**XTAR115G00L_**
	460	—	100	480		**ECX26P1CAH-_**	**ECX26P4CAH-_**	**ECX26P8CAH-_**	**XTAR115G00C_**
	575	—	125	600		**ECX26P1DAH-_**	**ECX26P4DAH-_**	**ECX26P8DAH-_**	**XTAR115G00D_**

Notes

① 1 hp = 0.746 kW.

② Contact factory for other voltage options.

③ Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

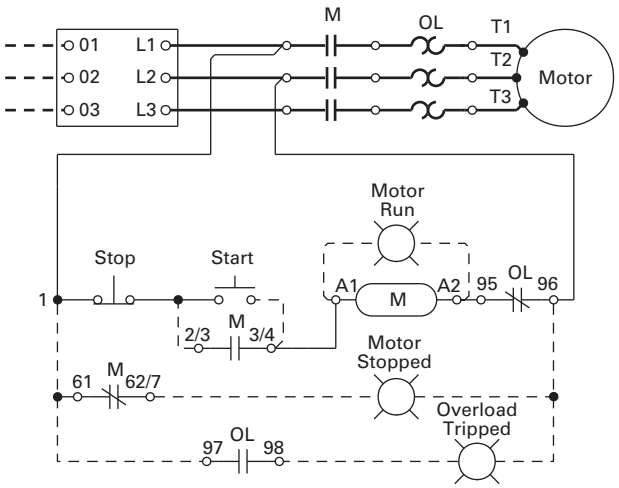
④ Select proper "XTOB" overload amperage range as per motor FLA, see **Page V10-T3-9**.

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECX26M**4**AAG-_. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

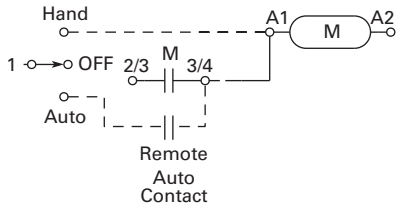
Wiring Diagrams

Typical Wiring Diagram

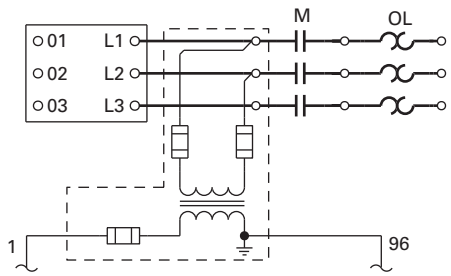
FVNR with Pushbutton Control



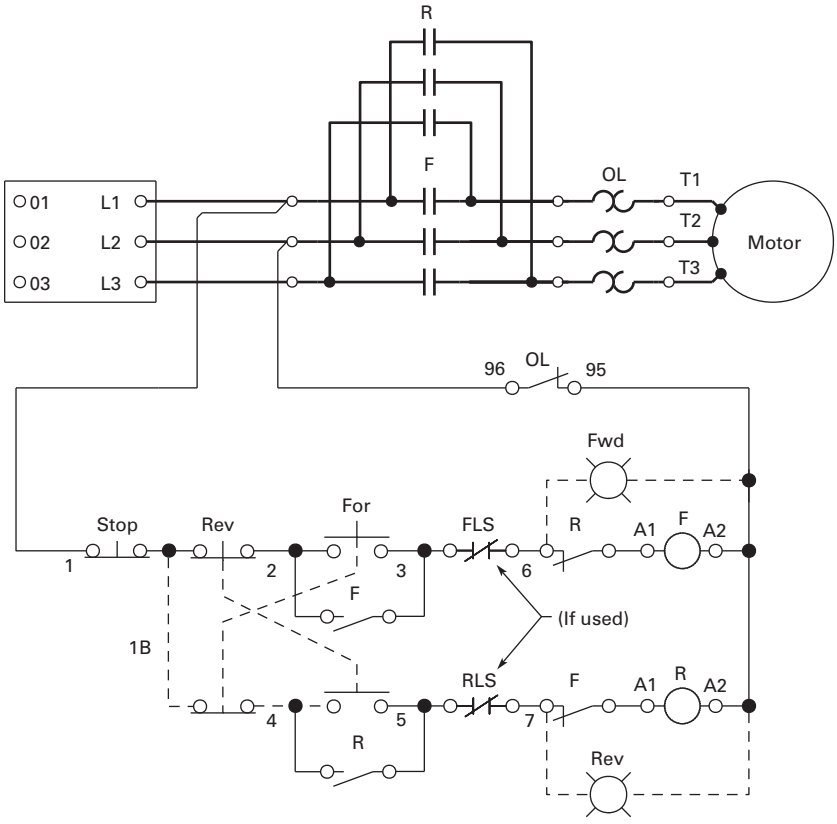
With Three-Position Selector Switch



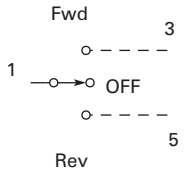
Control Power Transformer Option



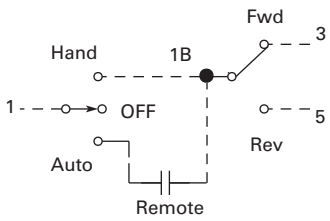
Reversing Combination Starter Wiring



Three-Position Switch



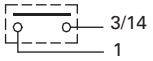
Two- and Three-Position Switch



Non-Combination Starters (Non-Reversing)

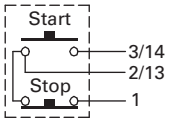
Remote Pilot Devices

Two-Wire Control

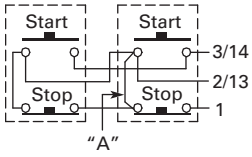


Not for Use with Auto Reset OL Relays

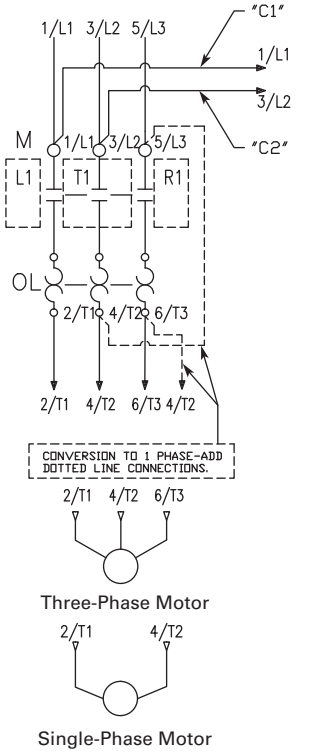
Three-Wire Control



When More than One Pushbutton Station is Used, Omit Connector "A" and Connect per Sketch Below



Connections for Non-Reversing Starter

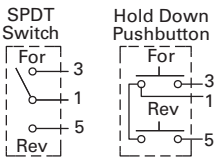


Three-Phase Motor

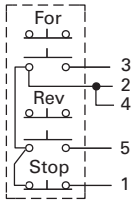
Single-Phase Motor

Non-Combination Starters (Reversing)

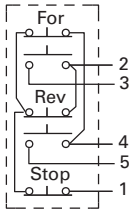
Remote Control Stations



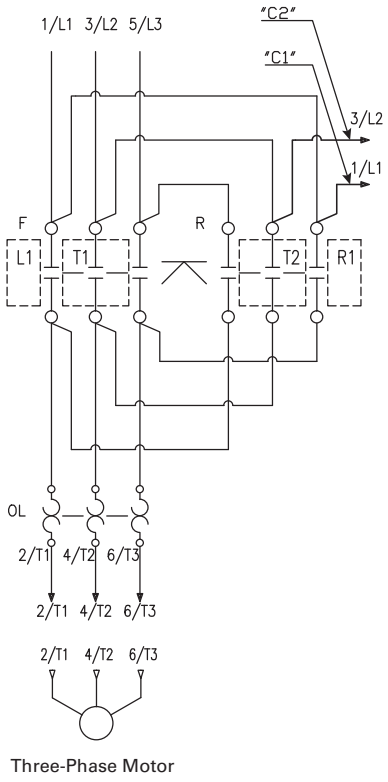
Pushbutton



Pushbutton with FOR and REV Buttons Electrically Interlocked

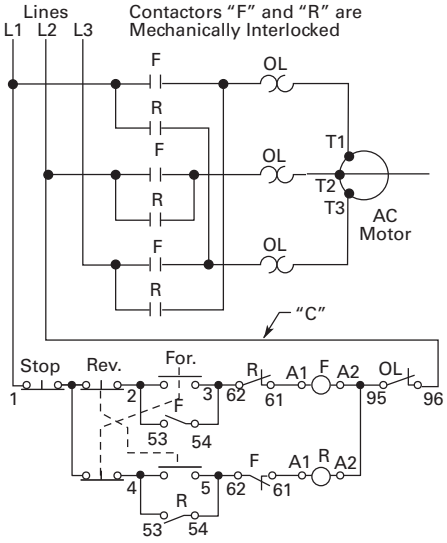


Connections for Reversing Starter



Three-Phase Motor

Reversing Starter Elementary Diagram



C400T Control Options

Local Control Options (If used)
Full Voltage Non-Reversing Starters

Figure A START/STOP Pushbuttons

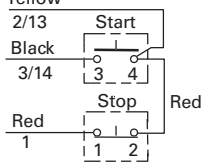


Figure B START/STOP Selector Switch

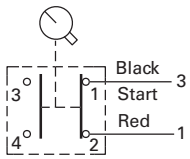


Figure C Three-Position Selector Switch

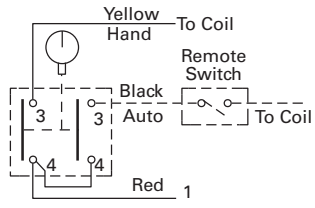


Figure D Two-Positon Selector Switch

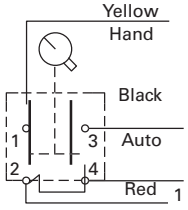


Figure E Pilot Light (Motor RUN)
Connect to Coil Terminals "A1" and "A2"

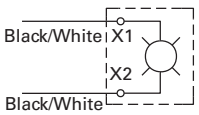


Figure G Overload Tripped

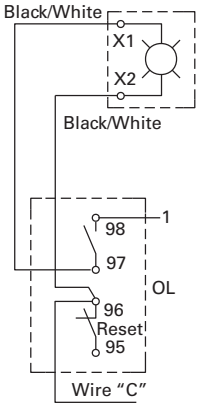
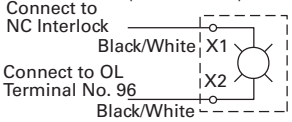


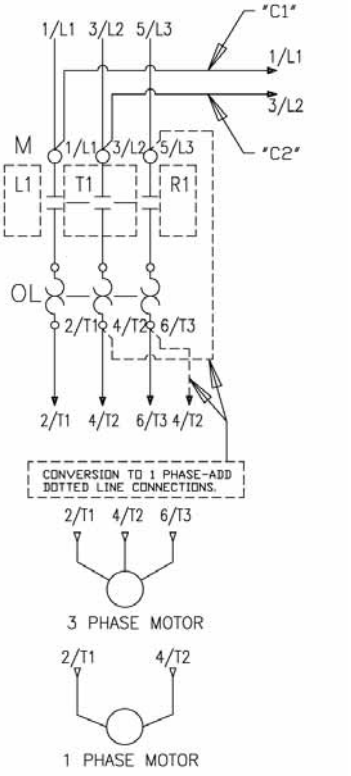
Figure F Pilot Light (Motor STOP)



Non-Reversing Cover Control

Type 1 C600M Control Options (To be used with Box 1 Only)

Connections for Non-Reversing Starter



Schematic Symbol Legend

2/13 3/14	Normally Open Auxiliary
61 62	Normally Closed Auxiliary
NO4 NO3	Normally Open Momentary PB
NC1 NC2	Normally Closed Momentary PB
M A1 A2	Contactor Coil
X1 R X2	Red Pilot Light
X1 G X2	Green Pilot Light
95 OL 96	Normally Closed Overload Auxiliary
OL 97 98	Normally Open Overload Auxiliary
1 2	M22-XLED230-T: Used to lower voltage for pilot lights.
STOP/OFF START/ON NO4 NO3	Two-position selector switch (STOP/START, OFF/ON)
HAND 0 AUTO NO4 NO3	Three-position selector switch (HOA)
L1 T1 R1	Signifies Location of Side and Top Adder Auxiliary Referenced on Diagram Under Auxiliary Symbol

CAUTION

READ AND FOLLOW INSTRUCTIONS PRIOR TO WIRING OR CONNECTING POWER! THIS PRODUCT CAN BE FACTORY OR FIELD CONFIGURED FOR MULTIPLE CONTROL MODES OR CONTROL VOLTAGES. CHECK NAMEPLATE FOR COIL VOLTAGE.

SEPARATE CONTROL POWER

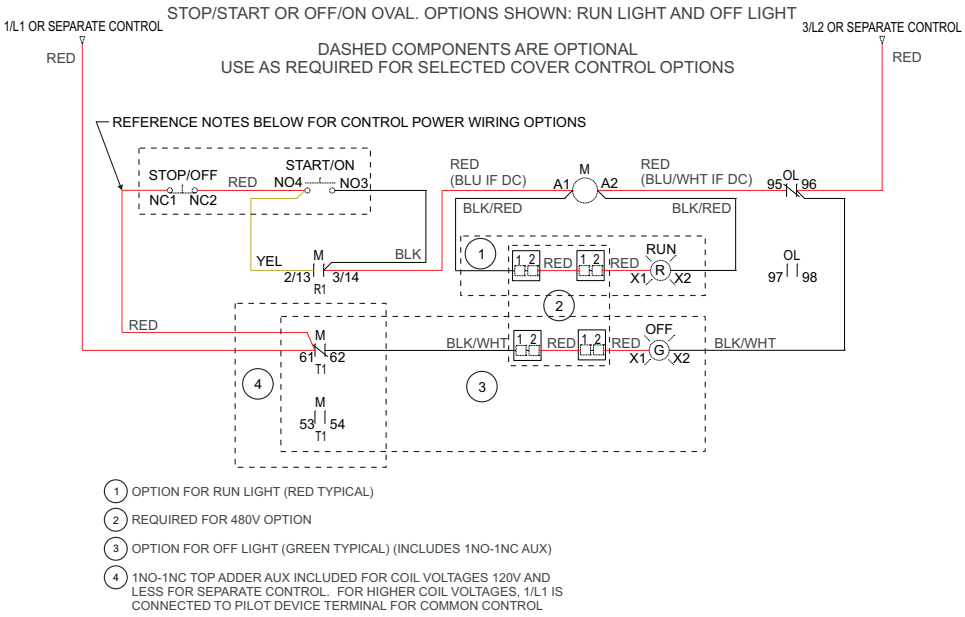
FOR COIL VOLTAGES 120V AND LESS: CONNECT SEPARATE CONTROL LINES TO THE NO. 61 TERMINAL ON THE TOP ADDER AUX. AND TO THE NO. 96 TERMINAL ON THE OVERLOAD RELAY.

FOR COIL VOLTAGES GREATER THAN 120V: REMOVE WIRE "C2" IF SUPPLIED. IF WIRE "C1" IS TERMINATED ON L1, DISCONNECT FROM L1. CONNECT SEPARATE CONTROL LINES TO THE "C1" WIRE OR APPROPRIATE PILOT DEVICE TERMINAL PER DIAGRAM AND TO THE NO. 96 TERMINAL ON THE OVERLOAD RELAY.

COMMON CONTROL POWER

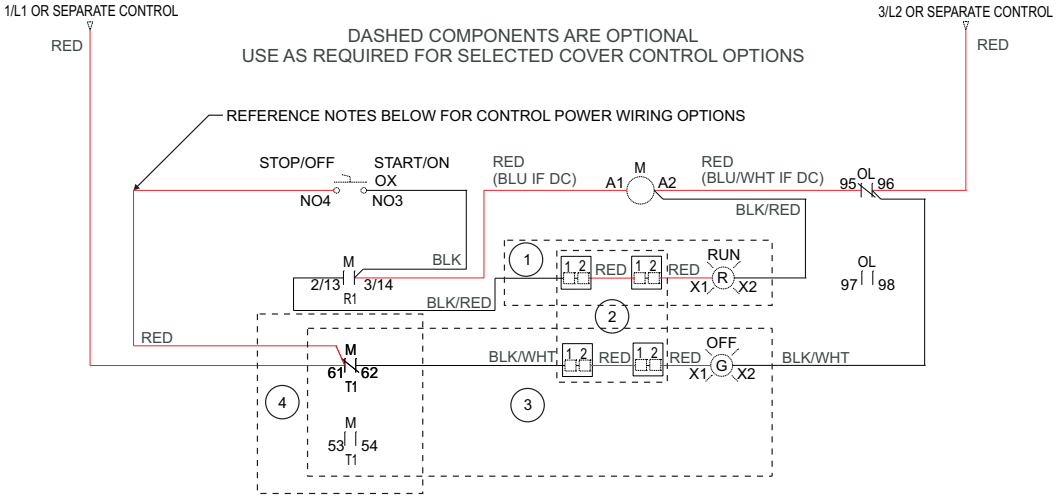
FOR COIL VOLTAGES 120V AND LESS: ADD WIRE "C2" IF NOT SUPPLIED. ADD CONNECTOR BETWEEN L1 TERMINAL AND THE NO. 61 TERMINAL ON THE TOP ADDER AUX. OR APPROPRIATE PILOT DEVICE TERMINAL PER DIAGRAM.

FOR COIL VOLTAGES GREATER THAN 120V: ADD WIRE "C1" AND "C2" IF NOT SUPPLIED.



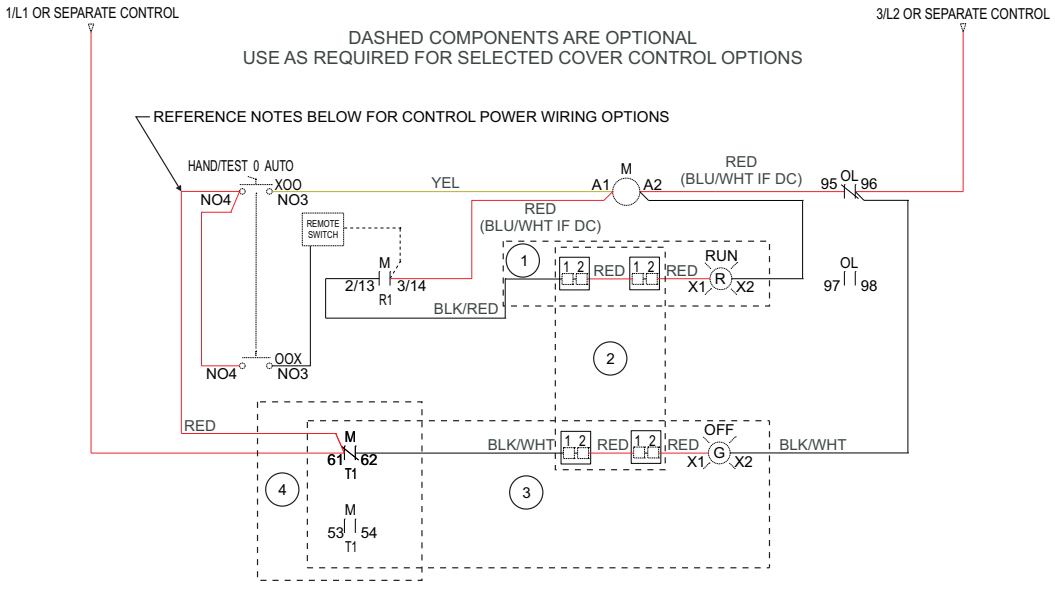
Type 1 C600M Control Options (To be used with Box 1 Only)

STOP/START OR OFF/ON 2-POSTION SELECTOR SWITCH
OPTIONS SHOWN: RUN LIGHT, AND OFF LIGHT



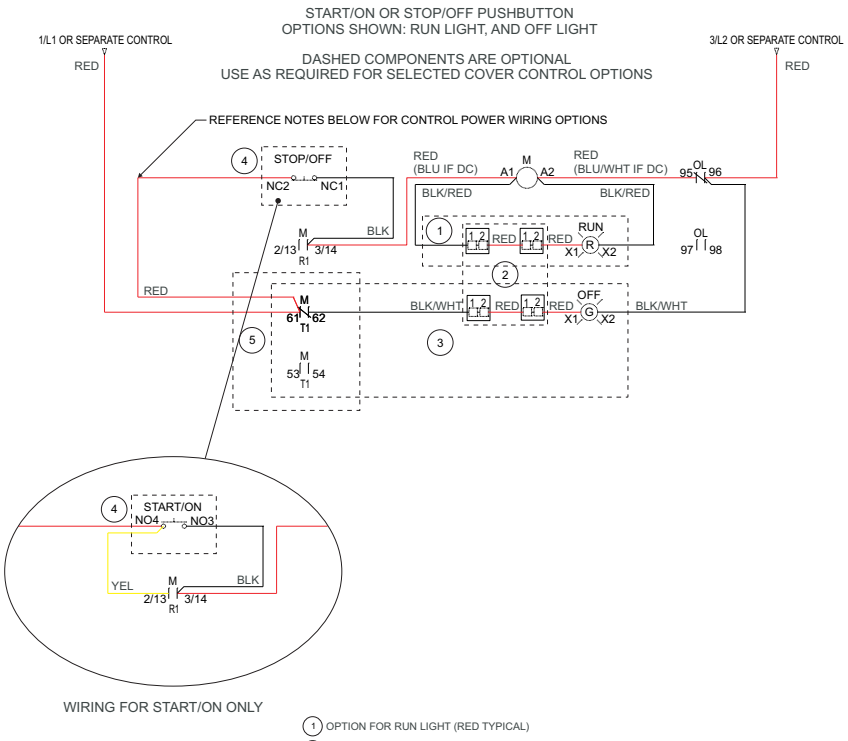
1. OPTION FOR RUN LIGHT (RED TYPICAL)
2. REQUIRED FOR 480V OPTION
3. OPTION FOR OFF LIGHT (GREEN TYPICAL) (INCLUDES 1NO-1NC AUX)
4. 1NO-1NC TOP ADDER AUX INCLUDED FOR COIL VOLTAGES 120V AND LESS FOR SEPARATE CONTROL. FOR HIGHER COIL VOLTAGES, 1/L1 IS CONNECTED TO PILOT DEVICE TERMINAL FOR COMMON CONTROL

HAND/OFF/AUTO OR TEST/OFF/AUTO 3-POSTION SELECTOR SWITCH
OPTIONS SHOWN: RUN LIGHT, AND OFF LIGHT



1. OPTION FOR RUN LIGHT (RED TYPICAL)
2. REQUIRED FOR 480V OPTION
3. OPTION FOR OFF LIGHT (GREEN TYPICAL) (INCLUDES 1NO-1NC AUX)
4. 1NO-1NC TOP ADDER AUX INCLUDED FOR COIL VOLTAGES 120V AND LESS FOR SEPARATE CONTROL. FOR HIGHER COIL VOLTAGES, 1/L1 IS CONNECTED TO PILOT DEVICE TERMINAL FOR COMMON CONTROL

Type 1 C600M Control Options (To be used with Box 1 Only)



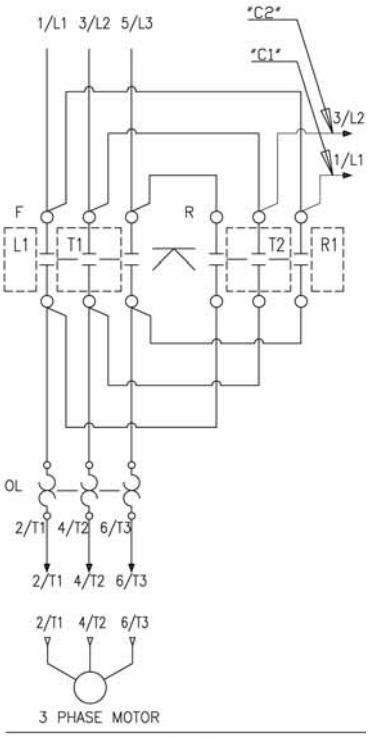
WIRING FOR START/ON ONLY

1. OPTION FOR RUN LIGHT (RED TYPICAL)
2. REQUIRED FOR 480V OPTION
3. OPTION FOR OFF LIGHT (GREEN TYPICAL) (INCLUDES 1NO-1NC AUX)
4. OPTION FOR START/ON OR STOP/OFF PB
5. 1NO-1NC TOP ADDER AUX INCLUDED FOR COIL VOLTAGES 120V AND LESS FOR SEPARATE CONTROL. FOR HIGHER COIL VOLTAGES, 1/L1 IS CONNECTED TO PILOT DEVICE TERMINAL FOR COMMON CONTROL

Reversing Cover Control

Type 1 C600M Control Options (To be used with Box 1 Only)

Connections for Reversing Starter



CAUTION

READ AND FOLLOW INSTRUCTIONS PRIOR TO WIRING OR CONNECTING POWER! THIS PRODUCT CAN BE FACTORY OR FIELD CONFIGURED FOR MULTIPLE CONTROL MODES OR CONTROL VOLTAGES. CHECK NAMEPLATE FOR COIL VOLTAGE.

SEPARATE CONTROL POWER

FOR COIL VOLTAGES 120V AND LESS: CONNECT SEPARATE CONTROL LINES TO THE NO. 63 OR NO. 61 TERMINAL PER DIAGRAM ON THE TOP ADDER AUX. AND TO THE NO. 96 TERMINAL ON THE OVERLOAD RELAY.

FOR COIL VOLTAGES GREATER THAN 120V: REMOVE WIRE "C2" IF SUPPLIED. IF WIRE "C1" IS TERMINATED ON L1, DISCONNECT FROM L1. CONNECT SEPARATE CONTROL LINES TO THE "C1" WIRE OR APPROPRIATE PILOT DEVICE TERMINAL PER DIAGRAM AND TO THE NO. 96 TERMINAL ON THE OVERLOAD RELAY.

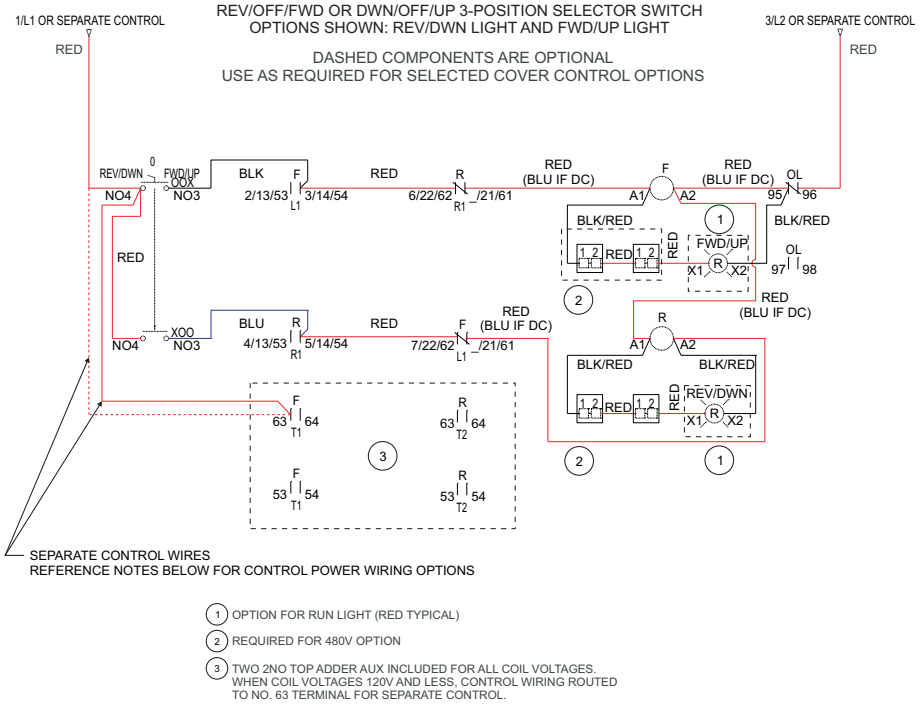
COMMON CONTROL POWER

FOR COIL VOLTAGES 120V AND LESS: ADD WIRE "C2" IF NOT SUPPLIED. ADD CONNECTOR BETWEEN L1 TERMINAL AND THE NO. 61 OR NO. 63 TERMINAL PER DIAGRAM ON THE TOP ADDER AUX. OR APPROPRIATE PILOT DEVICE TERMINAL PER DIAGRAM.

FOR COIL VOLTAGES GREATER THAN 120V: ADD WIRE "C1" AND "C2" IF NOT SUPPLIED.

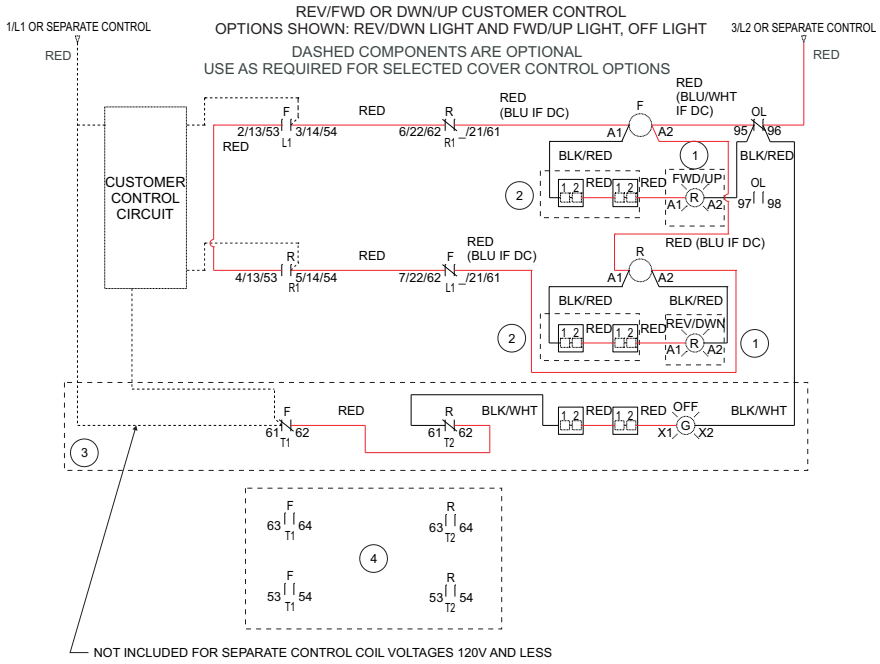
Schematic Symbol Legend

2/13 3/14	Normally Open Auxiliary
61 62	Normally Closed Auxiliary
NO4 NO3	Normally Open Momentary PB
NC1 NC2	Normally Closed Momentary PB
M A1 A2	Contactor Coil
X1 R X2	Red Pilot Light
X1 G X2	Green Pilot Light
95 OL 96	Normally Closed Overload Auxiliary
OL 97 98	Normally Open Overload Auxiliary
1 2	M22-XLED230-T: Used to lower voltage for pilot lights.
STOP/OFF START/ON NO4 NO3	Two-position selector switch (STOP/START, OFF/ON)
HAND 0 AUTO NO4 NO3	Three-position selector switch (HOA)
L1 T1 R1	Signifies Location of Side and Top Adder Auxiliary Referenced on Diagram Under Auxiliary Symbol



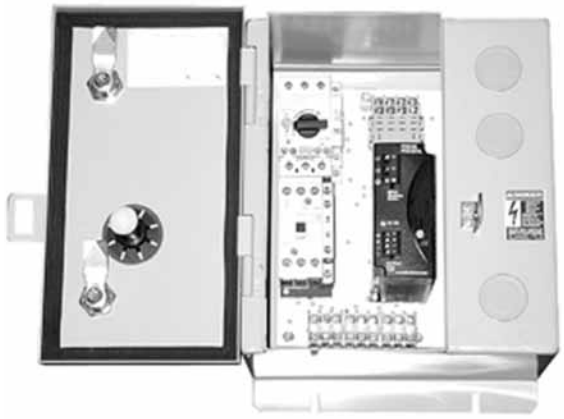
1. OPTION FOR RUN LIGHT (RED TYPICAL)
2. REQUIRED FOR 480V OPTION
3. TWO 2NO TOP ADDER AUX INCLUDED FOR ALL COIL VOLTAGES. WHEN COIL VOLTAGES 120V AND LESS, CONTROL WIRING ROUTED TO NO. 63 TERMINAL FOR SEPARATE CONTROL.

Type 1 C600M Control Options (To be used with Box 1 Only)



1. OPTION FOR RUN LIGHT (RED TYPICAL)
2. REQUIRED FOR 480V OPTION
3. OPTION FOR OFF LIGHT (GREEN TYPICAL) (INCLUDES 1NO-1NC AUX IN PLACE OF 2NO AUX IN POSITION T1)
4. TWO 2NO TOP ADDER AUX INCLUDED FOR ALL COIL VOLTAGES EXCEPT WHEN OPTION FOR OFF LIGHT IS USED AND ONE 2NO TOP ADDER AUX IS SWAPPED OUT FOR ONE 1NO-1NC.

Enclosed *XT* Combination Motor Controller



Contents

Combination Motor Controllers

Product Description

Eaton's ***XT*** line includes IEC contactors, starters and combination motor controllers (CMCs). Designed to meet international standards, the enclosed control ***XT*** line (ECX), carries UL and cUL certifications.

Features and Benefits

- ON/OFF rotary handle with lockout provision
- Visible trip indication
- Test trip function
- Motor applications from 0.11 A to 32 A
- Class 10 overload protection
- Built-in heater and magnetic trip elements to protect the motor
- Phase loss sensitivity
- Type 2 coordination
- Ambient compensated up to 55 °C [140 °F]
- Control inputs located at front of starter for easy access and wiring
- Wide range of coils
- DIN rail mount—XTSC…BB_
- Mounting plates—XTSC…BC_, XTSC…D motor controllers
- Adjustment dial for setting motor FLA
- Short-circuit trip at 14 times the maximum setting of the FLA adjustment dial
- UL 508 Type F CMC high fault short-circuit ratings; refer to manual motor protectors in **CA08102001E**
- Non-metallic and metallic enclosures in Types 1 (IP23), 4 (IP66), 4X (IP66) and 12 (IP65)
- Opaque (standard) or clear covers available on non-metallic Halyester enclosure

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL Listed
- cUL Listed (indicates appropriate CSA Standard investigation)

Short-Circuit Ratings

- 0–12 A / B-frame MMP with B-frame contactor
  - 50K AIC at 600 V
- 13–32A/B-frame MMP with C-frame contactor
  - 18K AIC at 600 V

Additional Reference

Dimensions	**Tab 14**
Accessories and Modifications	**Tab 15**
Renewal Parts	**Tab 16**
Technical Data and Specifications	**Tab 17**

3

Catalog Number Selection

Combination Motor Controllers—Enclosed Control

EC X 76 D 4 B A A - __ __

Design
X = *XT* IEC

Class		Page
76 =	Combination motor controller (CMC)—non-reversing starter	**V10-T3-46**
77 =	Combination motor controller (CMC)—non-reversing starter with CPT	**V10-T3-46**
78 =	Combination motor controller (CMC)—reversing starter	**V10-T3-47**

Size
D = 12 A
H = 32 A

Enclosure Type/IP Ratings ①
1 = Type 1—General purpose/IP23
3 = Type 4—Painted steel/IP66
4 = Type 4X—Watertight (304-Grade stainless steel)/IP66
5 = Type 4X—Watertight (non-metallic)/IP66
8 = Type 12—Dust-tight/IP65

Coil Voltage
A = 120 V
B = 240 V
C = 480 V
D = 600 V
E = 208 V
L = 380 V / 50 Hz

Cover Control
See **Page V10-T3-45**

Disconnect Ratings
A = None

MMP Overload Range
See table below

Modification Codes
See **Tab 15**

XTPR MMP Amperage Ranges

XT MMP Catalog Number	Overload Amp Range	Enclosed Control Suffix Code
Frame B Rotary MMP		
XTPRP16BC1	0.1–0.16	**A**
XTPRP25BC1	0.16–0.25	**B**
XTPRP40BC1	0.25–0.4	**C**
XTPRP63BC1	0.4–0.63	**D**
XTPR001BC1	0.63–1	**E**
XTPR1P6BC1	1–1.6	**F**
XTPR2P5BC1	1.6–2.5	**G**
XTPR004BC1	2.5–4	**H**
XTPR6P3BC1	4–6.3	**J**
XTPR010BC1	6.3–10	**K**
XTPR012BC1	8–12.0	**L**
XTPR016BC1	10–16.0	**M**
XTPR020BC1	16–20	**N**
XTPR025BC1	20–25	**Q**
XTPR032BC1	25–32	**R**

Note

① See **Tab 1** for enclosure type/IP rating cross-reference.

Cover Control

- Cover control for combination motor control starters uses the 10250T (30 mm) family
- Selector switches are maintained with lever operators
- Pushbuttons are momentary type with extended pushbutton
- The kit includes hardware and connecting wires (where possible)
- For factory installed control devices other than shown below, refer to modification codes, **Tab 15**

Product Selection

10250T Style Combination Cover Control

Description	Factory Installed Flange Control Position 9 Alpha	Field Installation Kits Combination Catalog Number
Non-Reversing		
No cover mounted pilot devices	**A**	—
START/STOP pushbuttons	**B**	**C400T1**
With red RUN pilot light	**C**	—
With red RUN/green OFF lights	**D**	—
ON/OFF pushbuttons	**E**	**C400T2**
With red RUN pilot light	**F**	—
With red RUN/green OFF lights	**G**	—
HAND/OFF/AUTO selector switch	**H**	**C400T12**
With red RUN pilot light	**J**	—
With red RUN/green OFF lights	**K**	—
START pushbutton	**L**	**C400T3**
ON pushbutton	**M**	**C400T4**
OFF pushbutton	**N**	**C400T5**
Red RUN pilot light	**P**	**C400T9** ①
Green OFF	**Q**	**C400T10** ①
Red RUN/green OFF pilot lights	**R**	**C400T11** ①
START/STOP selector switch	**S**	**C400T13**
With red RUN pilot light	**T**	—
With red RUN/green OFF lights	**U**	—
ON/OFF selector switch	**V**	**C400T14**
With red RUN pilot light	**W**	—
With red RUN/green OFF lights	**X**	—

Description	Factory Installed Flange Control Position 9 Alpha	Field Installation Kits Combination Catalog Number
Reversing		
No cover mounted pilot devices	**A**	—
FOR/REV/STOP pushbuttons	**B**	**C400T6**
With two red pilot lights	**C**	—
With two red/one green pilot lights	**D**	—
UP/STOP/DOWN pushbuttons	**E**	—
With two red pilot lights	**F**	—
FOR/OFF/REV selector switch	**H**	**C400T15**
With two red pilot lights	**J**	—
With two red/one green pilot lights	**K**	—
Two red pilot lights	**P**	②
One green pilot light	**Q**	**C400T10** ①
Two red/one green pilot lights	**R**	—
OPEN/OFF/CLOSE selector switch	**V**	**C400T16**
With two red pilot lights	**W**	—
With two red/one green pilot lights	**X**	—

Notes

① Add code letter from the table below to catalog number for voltage—kits only. Example: C400T9**B**.

Rating	Code Letter	Rating	Code Letter	Rating	Code Letter
120 V 60 Hz	**A**	240 V 60 Hz	**B**	480 V 60 Hz	**C**
208 V 60 Hz	**E**	380 V 50 Hz	**L**	600 V 60 Hz	**D**

② Order quantity (2) of **C400T10**.

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Product Selection

Non-Reversing Starters

Class ECX76—Combination Motor Controller (CMC)—Non-Reversing Starter

	Maximum hp ①				Type 1/IP23 General Purpose	Type 4X/IP66 ③④ Watertight	Type 4X Non-Metallic/IP66 Watertight ④	Type 12/IP65 Dust-Tight	Component ⑤
Amps	Motor Voltage	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ②	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
Size D									
12	115	1/2	—	120	**ECX76D1AAA-_**	**ECX76D4AAA-_**	**ECX76D5AAA-_**	**ECX76D8AAA-_**	**XTPR_ _ _BC1**
	208	1-1/2	3	208	**ECX76D1EAA-_**	**ECX76D4EAA-_**	**ECX76D5EAA-_**	**ECX76D8EAA-_**	
	230	2	3	240	**ECX76D1BAA-_**	**ECX76D4BAA-_**	**ECX76D5BAA-_**	**ECX76D8BAA-_**	
	380	—	5	380/50 Hz	**ECX76D1LAA-_**	**ECX76D4LAA-_**	**ECX76D5LAA-_**	**ECX76D8LAA-_**	
	460	—	7-1/2	480	**ECX76D1CAA-_**	**ECX76D4CAA-_**	**ECX76D5CAA-_**	**ECX76D8CAA-_**	
	575	—	10	600	**ECX76D1DAA-_**	**ECX76D4DAA-_**	**ECX76D5DAA-_**	**ECX76D8DAA-_**	
Size H									
32	115	3	—	120	**ECX76H1AAA-_**	**ECX76H4AAA-_**	**ECX76H5AAA-_**	**ECX76H8AAA-_**	**XTPR_ _ _BC1**
	208	5	10	208	**ECX76H1EAA-_**	**ECX76H4EAA-_**	**ECX76H5EAA-_**	**ECX76H8EAA-_**	
	230	5	10	240	**ECX76H1BAA-_**	**ECX76H4BAA-_**	**ECX76H5BAA-_**	**ECX76H8BAA-_**	
	380	—	15	380/50 Hz	**ECX76H1LAA-_**	**ECX76H4LAA-_**	**ECX76H5LAA-_**	**ECX76H8LAA-_**	
	460	—	20	480	**ECX76H1CAA-_**	**ECX76H4CAA-_**	**ECX76H5CAA-_**	**ECX76H8CAA-_**	
	575	—	25	600	**ECX76H1DAA-_**	**ECX76H4DAA-_**	**ECX76H5DAA-_**	**ECX76H8DAA-_**	

Non-Reversing Starters with CPT

Class ECX77—Combination Motor Controller (CMC)—Non-Reversing Starter with CPT

	Maximum hp ①				Type 1/IP23 General Purpose	Type 4X/IP66 ③④ Watertight	Type 4X Non-Metallic/IP66 Watertight ④	Type 12/IP65 Dust-Tight	Component ⑤
Amps	Motor Voltage	Single-Phase	Three-Phase	Coil Voltage at 60 Hz ②	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
Size D									
12	115	1/2	—	120	**ECX77D1AAA-_**	**ECX77D4AAA-_**	**ECX77D5AAA-_**	**ECX77D8AAA-_**	**XTPR_ _ _BC1**
	208	1-1/2	3	208	**ECX77D1EAA-_**	**ECX77D4EAA-_**	**ECX77D5EAA-_**	**ECX77D8EAA-_**	
	230	2	3	240	**ECX77D1BAA-_**	**ECX77D4BAA-_**	**ECX77D5BAA-_**	**ECX77D8BAA-_**	
	380	—	5	380/50 Hz	**ECX77D1LAA-_**	**ECX77D4LAA-_**	**ECX77D5LAA-_**	**ECX77D8LAA-_**	
	460	—	7-1/2	480	**ECX77D1CAA-_**	**ECX77D4CAA-_**	**ECX77D5CAA-_**	**ECX77D8CAA-_**	
	575	—	10	600	**ECX77D1DAA-_**	**ECX77D4DAA-_**	**ECX77D5DAA-_**	**ECX77D8DAA-_**	
Size H									
32	115	3	—	120	**ECX77H1AAA-_**	**ECX77H4AAA-_**	**ECX77H5AAA-_**	**ECX77H8AAA-_**	**XTPR_ _ _BC1**
	208	5	10	208	**ECX77H1EAA-_**	**ECX77H4EAA-_**	**ECX77H5EAA-_**	**ECX77H8EAA-_**	
	230	5	10	240	**ECX77H1BAA-_**	**ECX77H4BAA-_**	**ECX77H5BAA-_**	**ECX77H8BAA-_**	
	380	—	15	380/50 Hz	**ECX77H1LAA-_**	**ECX77H4LAA-_**	**ECX77H5LAA-_**	**ECX77H8LAA-_**	
	460	—	20	480	**ECX77H1CAA-_**	**ECX77H4CAA-_**	**ECX77H5CAA-_**	**ECX77H8CAA-_**	
	575	—	25	600	**ECX77H1DAA-_**	**ECX77H4DAA-_**	**ECX77H5DAA-_**	**ECX77H8DAA-_**	

Notes

① 1 hp = 0.746 kW.

② Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECX76D**5**AAA-_. To order Type 4 painted steel, change that digit to **3**.

④ Handle mechanism is rated Type 1 or 12. Contact local sales office for availability of Type 4X versions.

⑤ Select proper "XTPR" MMP overload amperage range as per motor FLA, see **Page V10-T3-44**.

Reversing Starters

Class ECX78—Combination Motor Controller (CMC)—Reversing Starter

	Maximum hp ①				Type 1/IP23 General Purpose	Type 4X/IP66 ③④ Watertight	Type 4X Non-Metallic/IP66 Watertight ④	Type 12/IP65 Dust-Tight	Component ⑤
Amps	Motor Voltage	Single-phase	Three-phase	Coil Voltage at 60 Hz ②	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
Size D									
12	115	1/2	—	120	**ECX78D1AAA-_**	**ECX78D4AAA-_**	**ECX78D5AAA-_**	**ECX78D8AAA-_**	**XTPR_ _ _BC1**
	208	1-1/2	3	208	**ECX78D1EAA-_**	**ECX78D4EAA-_**	**ECX78D5EAA-_**	**ECX78D8EAA-_**	
	230	2	3	240	**ECX78D1BAA-_**	**ECX78D4BAA-_**	**ECX78D5BAA-_**	**ECX78D8BAA-_**	
	380	—	5	380/50 Hz	**ECX78D1LAA-_**	**ECX78D4LAA-_**	**ECX78D5LAA-_**	**ECX78D8LAA-_**	
	460	—	7-1/2	480	**ECX78D1CAA-_**	**ECX78D4CAA-_**	**ECX78D5CAA-_**	**ECX78D8CAA-_**	
	575	—	10	600	**ECX78D1DAA-_**	**ECX78D4DAA-_**	**ECX78D5DAA-_**	**ECX78D8DAA-_**	
Size H									
32	115	3	—	120	**ECX78H1AAA-_**	**ECX78H4AAA-_**	**ECX78H5AAA-_**	**ECX78H8AAA-_**	**XTPR_ _ _BC1**
	208	5	10	208	**ECX78H1EAA-_**	**ECX78H4EAA-_**	**ECX78H5EAA-_**	**ECX78H8EAA-_**	
	230	5	10	240	**ECX78H1BAA-_**	**ECX78H4BAA-_**	**ECX78H5BAA-_**	**ECX78H8BAA-_**	
	380	—	15	380/50 Hz	**ECX78H1LAA-_**	**ECX78H4LAA-_**	**ECX78H5LAA-_**	**ECX78H8LAA-_**	
	460	—	20	480	**ECX78H1CAA-_**	**ECX78H4CAA-_**	**ECX78H5CAA-_**	**ECX78H8CAA-_**	
	575	—	25	600	**ECX78H1DAA-_**	**ECX78H4DAA-_**	**ECX78H5DAA-_**	**ECX78H8DAA-_**	

Notes

① 1 hp = 0.746 kW.

② Voltage is listed at 60 Hz unless otherwise noted. Other voltages available upon request.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECX78D**5**AAA-_. To order Type 4 painted steel, change that digit to **3**.

④ Handle mechanism is rated Type 1 or 12. Contact local sales office for availability of Type 4X versions.

⑤ Select proper "XTPR" MMP overload amperage range as per motor FLA, see **Page V10-T3-44**.

Electrically Held Lighting Contactors

Mechanically Held Lighting Contactor

Type 1 Non-Combination Lighting Contactors

4.1 UL Rated AC Contactors

UL Rated AC Contactors

Contents

Product Description

Eaton's lighting contactors are designed to provide a safe, convenient means for local or remote switching of tungsten (incandescent filament) or ballast (fluorescent and mercury arc) lamp loads. They are also suitable for other loads such as low pressure and high pressure sodium lamp loads and other non-motor (resistive) loads. They are not recommended for most sign flashing loads.

These lighting contactors are designed to withstand the large initial inrush currents of tungsten lamp loads without contact welding. They are fully rated and do not require derating.

Application Description

Loads:

Ballast Lamps—Fluorescent, mercury vapor, metal halide sodium vapor, quartz—600 V maximum.

Filament Lamps—Incandescent, infrared, heating—480 V maximum, line to line; 277 V maximum line to neutral.

Resistance Heating—Radiant and convection heating, furnaces and ovens.

Standards and Certifications

Note: See **Tab 17** for additional information on Standards and Certifications that apply to all Enclosed Control products.

- UL Listed
- cUL Listed
- ABS Type Approved
- OSHPD Certified (OSP-0015-10)

Additional Reference

Accessories	**V10-T4-13** and **Tab 15**
Cover Control	**V10-T4-4**
Dimensions	**Tab 14**
Accessories and Modifications	**Tab 15**
Technical Data and Specifications	**Tab 17**

Catalog Number Selection

Enclosed Lighting Contactors

EC L 12 D 1 A 3 E - X

Design
L = CN35 or A202 lighting contactor
C = C30CN lighting contactor

Class		Page
03	Non-combination electrically held lighting contactor	**V10-T4-6**, **V10-T4-7**
04	Non-combination mechanically held/magnetically latched lighting contactor	**V10-T4-6**, **V10-T4-9**
12	Combination electrically held lighting contactor—fusible disconnect	**V10-T4-11**
13	Combination magnetically latched lighting contactor—fusible disconnect	**V10-T4-11**
14	Combination electrically held lighting contactor—thermal magnetic circuit breaker	**V10-T4-12**
15	Combination magnetically latched lighting contactor—thermal magnetic circuit breaker	**V10-T4-12**

Ampere Size ①		
A = 10 A	**D** = 60 A	**G** = 300 A
B = 20 A	**E** = 100 A	**H** = 400 A
C = 30 A	**F** = 200 A	**J** = 600 A

Enclosure Types
1 = Type 1—General purpose
2 = Type 3R—Rainproof
3 = Type 4—Watertight (painted)
4 = Type 4X—Watertight (304-Grade stainless steel)
6 = Type 7/9—Explosion proof
8 = Type 12—Dust-tight
9 = Type 4X—Watertight (316-Grade stainless steel)

Modification Codes
(See **Pages V10-T4-4** and **V10-T4-5** and **Tab 15**)

Disconnect Fuse Clip Ratings	
A = None	**J** = 200 A / 600 V R
B = 30 A / 250 V R	**K** = 400 A / 250 V R
C = 30 A / 600 V R	**L** = 400 A / 600 V R
D = 60 A / 250 V R	**M** = 600 A / 250 V R
E = 30 A / 600 V R	**N** = 600 A / 600 V R
F = 100 A / 250 V R	**P** = 800 A / 600 V R
G = 100 A / 600 V R	**T** = By description
H = 200 A / 250 V R	

Thermal-Magnetic Breaker Ratings			
A = None	**F** = 60 A	**J** = 300 A	**M** = 800 A
D = 20 A	**G** = 100 A	**K** = 400 A	**T** = By description
E = 30 A	**H** = 200 A	**L** = 600 A	

Number of Poles ②
1, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9** = Poles required
A = 10 poles
B = 12 poles
C = 20 poles
Combination Devices = Three-pole only

Coil Voltage		
A = 120/60 110/50	**K** = 240/50	**T** = 24/60
B = 240/60 220/50	**L** = 380/50	**U** = 24/50
C = 480/60 440/50	**M** = 415/50	**V** = 32/50
D = 600/60 550/50	**P** = 12 Vdc	**W** = 48/60
E = 208/60	**Q** = 24 Vdc	**X** = 104–120/60
G = 550/50	**R** = 48 Vdc	**Y** = 48/50
H = 277/60	**S** = 125 Vdc	**Z** = By description
J = 208–240/60		

Enclosures

Lighting contactors are available open or mounted in Type 1, 3R, 4, 4X, 12 or 7/9 enclosures.

Type 1 is for indoor, general purpose for personal protection. Knock-outs are provided in the top and bottom for conduit entry.

Type 3R is for outdoor applications and rated for rain, sleet and external ice buildup. Type 3R enclosures have knockouts in the bottom and provisions for a hub in the top.

Type 4 and 4X are for mounting indoor or outdoor and provide protection from splashing water, hose-directed water and wind-blown dust. Watertight conduit hubs are provided in the top and bottom of Type 4X enclosures. The standard Type 4X enclosures are made of 304-Grade stainless steel, providing corrosion protection. 316-Grade stainless steel construction is available as an upgrade option.

Type 12 enclosures are for indoor mounting and protect from dripping liquids, falling dirt and dust. No knockouts or hubs are provided with Type 12 enclosures.

Type 1, 3R, 4 and 12 enclosures are painted with a polyester urethane powder coat paint meeting UL requirements and the color is ANSI 61 gray. Type 1 enclosures have knockouts for cover controls. All the other types have holes plugged, ready for cover controls. Type 7/9 is also available for explosion proof applications. Please contact the factory for additional details.

Notes

① C30CN available in 30 A only.

② For normally closed poles see **Tab 15**.

Cover Control

Type 1 Non-Combination Cover Control (Box 1 Only) ①

Description	Factory Installed Cover Control Modification Code Suffix	Field Installation Kits Catalog Number
ON/OFF pushbutton	**P8**	**C600M2**
With red RUN pilot light	**P8P23**	**C600M201_** ②
With red RUN/green OFF lights	**P8P23P25**	**C600M202_** ②
HAND/OFF/AUTO selector switch	**S3**	**C600M12**
With red RUN pilot light	**S3P23**	**C600M121_** ②
With red RUN/green OFF lights	**S3P23P25**	**C600M122_** ②
ON/OFF selector switch	**S12**	**C600M14**
With red RUN pilot light	**S12P23**	**C600M141_** ②
With red RUN/green OFF lights	**S12P23P25**	**C600M142_** ②
Red RUN pilot light	**P23**	**C600M9_** ②
Green OFF pilot light	**P25**	**C600M10_** ②
Red RUN/green OFF lights	**P23P25**	**C600M11_** ②

Notes

① Box 1 offering with cover control includes CN35 lighting contactors 10 A 2–4P, 20 A 2–4P, 30 A 2–3P and 60 A 2–4P.

② Add code letter from the table below to catalog number for voltage. Example: C600M101**A**.

Rating	Code Letter
85–264 Vac	**A**
480 Vac	**C**
12–30 Vac/Vdc	**T**

Type 1, 3R, 4X and 12 Cover Control Non-Combination (Non-Box 1) and Combination Cover Control

		Factory Installed Cover Control		Field Installation Kits	
		Type 1, 3R, 4X and 12	Type 7/9	Type 1 ①②	Type 3R, 4X and 12 Non-Combination and Type 1, 3R, 4X and 12 Combination ②
Description	**For Use with Lighting Contactor**	**Modification Code Suffix**	**Modification Code Suffix**	**Catalog Number**	**Catalog Number**
ON/OFF pushbuttons	Electrical three-wire C30CN; CN35; A202	**P8**	**P8**	**C400GK18**	**C400T2**
With red RUN pilot light		**P8P23**	**P8P23**	**C400GK19_**	—
With red RUN/GREEN off lights		**P8P23P25**	**P8P23P25**	**C400GK1A_**	—
ON/OFF Pushbuttons	Mechanical three-wire C30CN	**P8**	**P8**	**C400GK4**	**C400T201**
With red RUN pilot light		**P8P23**	**P8P23**	**C400GK48_**	—
With red RUN/GREEN off lights		**P8P23P25**	**P8P23P25**	**C400GK49_**	—
ON/OFF pushbuttons	Electrical and mechanical two-wire C30CN; CN35; A202	**P8**	**P8**	**C400GK5**	**C400T14** ③
With red RUN pilot light		**P8P23**	**P8P23**	**C400GK52_**	—
With red RUN/GREEN off lights		**P8P23P25**	**P8P23P25**	**C400GK55_**	—
Start/stop pushbuttons	Mechanical three-wire C30CN	**P7**	**P7**	**C400GK7**	**C400T200**
With red RUN pilot light		**P7P23**	**P7P23**	**C400GK72_**	—
With red RUN/GREEN off lights		**P7P23P25**	**P7P23P25**	**C400GK75_**	—
Start/stop pushbuttons	Electrical and mechanical two-wire C30CN	**P7**	**P7**	**C400GK6**	**C400T13** ③
With red RUN pilot light		**P7P23**	**P7P23**	**C400GK62_**	—
With red RUN/GREEN off lights		**P7P23P25**	**P7P23P25**	**C400GK65_**	—
HAND/OFF/AUTO cover control	Electrical and mechanical two-wire C30CN; CN35; A202	**S3**	**S3** ④	**C400GK3**	**C400T12** ③
With red RUN pilot light		**S3P23**	**S3P23** ④	**C400GK32_**	—
With red RUN/GREEN off lights		**S3P23P25**	**S3P23P25** ④	**C400GK35_**	—
Red RUN pilot light	All	**P23**	**P23**	**C400GK42_**	**C400T9_**
Green OFF pilot light		**P25**	**P25**	**C400GK41_**	**C400T10_**
Red RUN/green OFF pilot light		**P23P25**	**P23P25**	**C400GK46_**	**C400T11_**

Notes

① For use with non-combination units (box sizes 2–4).

② Add code letter from table below to catalog number for voltage in place of _.

Rating	Code Letter	Rating	Code Letter	Rating	Code Letter
24 V 60 Hz	**T**	240 V 60 Hz	**B**	480 V 60 Hz	**C**
120 V 60 Hz	**A**	277 V 60 Hz	**H**	600 V 60 Hz	**D**
208 V 60 Hz	**E**	380 V 60 Hz	**L**		

③ Selector switch.

④ With three-position selector switch, Mod **C20** (two-wire control relay) must be used with magnetically latched contactor (ECL04, ECL13, ECL15).

Product Selection

Two-Wire and Three-Wire Control Wiring Options—Two-Wire Control Standard

Class ECC03—Non-Combination Electrically Held Lighting Contactor—Two or Three-Wire Control

Number of Poles	Type 1 Catalog Number ①	Type 3R Catalog Number ①	Type 4X ② Catalog Number ①	Type 7/9 Catalog Number ①	Type 12 Catalog Number ①	Component Contactor (Open) Catalog Number ①
Continuous Amps—30						
2	**ECC03C1_2A**	**ECC03C2_2A**	**ECC03C4_2A**	**ECC03C6_2A**	**ECC03C8_2A**	**C30CNE20_0**
3	**ECC03C1_3A**	**ECC03C2_3A**	**ECC03C4_3A**	**ECC03C6_3A**	**ECC03C8_3A**	**C30CNE30_0**
4	**ECC03C1_4A**	**ECC03C2_4A**	**ECC03C4_4A**	**ECC03C6_4A**	**ECC03C8_4A**	**C30CNE40_0**
5	**ECC03C1_5A**	**ECC03C2_5A**	**ECC03C4_5A**	**ECC03C6_5A**	**ECC03C8_5A**	**C30CNE50_0**
6	**ECC03C1_6A**	**ECC03C2_6A**	**ECC03C4_6A**	**ECC03C6_6A**	**ECC03C8_6A**	**C30CNE60_0**
7	**ECC03C1_7A**	**ECC03C2_7A**	**ECC03C4_7A**	**ECC03C6_7A**	**ECC03C8_7A**	**C30CNE70_0**
8	**ECC03C1_8A**	**ECC03C2_8A**	**ECC03C4_8A**	**ECC03C6_8A**	**ECC03C8_8A**	**C30CNE80_0**
9	**ECC03C1_9A**	**ECC03C2_9A**	**ECC03C4_9A**	**ECC03C6_9A**	**ECC03C8_9A**	**C30CNE90_0**
10	**ECC03C1_AA**	**ECC03C2_AA**	**ECC03C4_AA**	**ECC03C6_AA**	**ECC03C8_AA**	**C30CNE100_0**
12	**ECC03C1_BA**	**ECC03C2_BA**	**ECC03C4_BA**	**ECC03C6_BA**	**ECC03C8_BA**	**C30CNE120_0**

Class ECC04—Non-Combination Mechanically Held Lighting Contactor—Two-Wire Control ③

Number of Poles	Type 1 Catalog Number ①	Type 3R Catalog Number ①	Type 4X ② Catalog Number ①	Type 7/9 Catalog Number ①	Type 12 Catalog Number ①	Component Contactor (Open) Catalog Number ①
Continuous Amps—30						
2	**ECC04C1_2A**	**ECC04C2_2A**	**ECC04C4_2A**	**ECC04C6_2A**	**ECC04C8_2A**	**C30CNM20_**
3	**ECC04C1_3A**	**ECC04C2_3A**	**ECC04C4_3A**	**ECC04C6_3A**	**ECC04C8_3A**	**C30CNM30_**
4	**ECC04C1_4A**	**ECC04C2_4A**	**ECC04C4_4A**	**ECC04C6_4A**	**ECC04C8_4A**	**C30CNM40_**
5	**ECC04C1_5A**	**ECC04C2_5A**	**ECC04C4_5A**	**ECC04C6_5A**	**ECC04C8_5A**	**C30CNM50_**
6	**ECC04C1_6A**	**ECC04C2_6A**	**ECC04C4_6A**	**ECC04C6_6A**	**ECC04C8_6A**	**C30CNM60_**
7	**ECC04C1_7A**	**ECC04C2_7A**	**ECC04C4_7A**	**ECC04C6_7A**	**ECC04C8_7A**	**C30CNM70_**
8	**ECC04C1_8A**	**ECC04C2_8A**	**ECC04C4_8A**	**ECC04C6_8A**	**ECC04C8_8A**	**C30CNM80_**
9	**ECC04C1_9A**	**ECC04C2_9A**	**ECC04C4_9A**	**ECC04C6_9A**	**ECC04C8_9A**	**C30CNM90_**
10	**ECC04C1_AA**	**ECC04C2_AA**	**ECC04C4_AA**	**ECC04C6_AA**	**ECC04C8_AA**	**C30CNM100_**
12	**ECC04C1_BA**	**ECC04C2_BA**	**ECC04C4_BA**	**ECC04C6_BA**	**ECC04C8_BA**	**C30CNM120_**

Notes

① For first open position (coil voltage), use the table below.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECC03C**4**A2A. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Suffix	Coil Voltage	Suffix	Coil Voltage	Suffix	Coil Voltage
A	120/60 or 110/50	**D**	600/60 or 550/50	**T**	24/60
B	240/60 or 220/50	**E**	208/60	**V**	28/60 or 24/50
C	480/60 or 440/50	**H**	277/60 or 240/50	**X**	347/60

③ Add **C18** modification code for three-wire control.
To get the C30CN lighting contactor with normally closed power poles, see **Tab 15**, for modification codes.

Class ECL03—Non-Combination Electrically Held Lighting Contactor

No. of Poles	Frame Size	Type 1 General Purpose Catalog Number ①	Type 3R Rainproof Catalog Number ①	Type 4X ② Watertight and Dust-Tight Stainless Steel Catalog Number ①	Type 7/9 Hazardous Location Catalog Number ①	Type 12 Dust-Tight Industrial Catalog Number ①	Component Contactor (Open) Catalog Number ①
Maximum Ampere Rating—10 ③							
2	45 mm	ECL03A1_2A	ECL03A2_2A	ECL03A4_2A	ECL03A6_2A	ECL03A8_2A	CN35AN2_B
3		ECL03A1_3A	ECL03A2_3A	ECL03A4_3A	ECL03A6_3A	ECL03A8_3A	CN35AN3_B
4		ECL03A1_4A	ECL03A2_4A	ECL03A4_4A	ECL03A6_4A	ECL03A8_4A	CN35AN4_B
5		ECL03A1_5A	ECL03A2_5A	ECL03A4_5A	ECL03A6_5A	ECL03A8_5A	—
6		ECL03A1_6A	ECL03A2_6A	ECL03A4_6A	ECL03A6_6A	ECL03A8_6A	—
9		ECL03A1_9A	ECL03A2_9A	ECL03A4_9A	ECL03A6_9A	ECL03A8_9A	—
10		ECL03A1_AA	ECL03A2_AA	ECL03A4_AA	ECL03A6_AA	ECL03A8_AA	—
12		ECL03A1_BA	ECL03A2_BA	ECL03A4_BA	ECL03A6_BA	ECL03A8_BA	—
20		ECL03A1_CA	ECL03A2_CA	ECL03A4_CA	ECL03A6_CA	ECL03A8_CA	—
Maximum Ampere Rating—20 ③							
2	45 mm	ECL03B1_2A	ECL03B2_2A	ECL03B4_2A	ECL03B6_2A	ECL03B8_2A	CN35BN2_B
3		ECL03B1_3A	ECL03B2_3A	ECL03B4_3A	ECL03B6_3A	ECL03B8_3A	CN35BN3_B
4		ECL03B1_4A	ECL03B2_4A	ECL03B4_4A	ECL03B6_4A	ECL03B8_4A	CN35BN4_B
5		ECL03B1_5A	ECL03B2_5A	ECL03B4_5A	ECL03B6_5A	ECL03B8_5A	—
6		ECL03B1_6A	ECL03B2_6A	ECL03B4_6A	ECL03B6_6A	ECL03B8_6A	CN35BN6_B
9		ECL03B1_9A	ECL03B2_9A	ECL03B4_9A	ECL03B6_9A	ECL03B8_9A	CN35BN9_B
10		ECL03B1_AA	ECL03B2_AA	ECL03B4_AA	ECL03B6_AA	ECL03B8_AA	—
12		ECL03B1_BA	ECL03B2_BA	ECL03B4_BA	ECL03B6_BA	ECL03B8_BA	CN35BN12_B
20		ECL03B1_CA	ECL03B2_CA	ECL03B4_CA	ECL03B6_CA	ECL03B8_CA	—
Maximum Ampere Rating—30 ③							
2	45 mm	ECL03C1_2A	ECL03C2_2A	ECL03C4_2A	ECL03C6_2A	ECL03C8_2A	CN35DN2_B
3		ECL03C1_3A	ECL03C2_3A	ECL03C4_3A	ECL03C6_3A	ECL03C8_3A	CN35DN3_B
4		ECL03C1_4A	ECL03C2_4A	ECL03C4_4A	ECL03C6_4A	ECL03C8_4A	CN35DN4_B
5		ECL03C1_5A	ECL03C2_5A	ECL03C4_5A	ECL03C6_5A	ECL03C8_5A	CN35DN5_B
6		ECL03C1_6A	ECL03C2_6A	ECL03C4_6A	ECL03C6_6A	ECL03C8_6A	CN35DN6_B
9		ECL03C1_9A	ECL03C2_9A	ECL03C4_9A	ECL03C6_9A	ECL03C8_9A	CN35DN9_B
10		ECL03C1_AA	ECL03C2_AA	ECL03C4_AA	ECL03C6_AA	ECL03C8_AA	—
12		ECL03C1_BA	ECL03C2_BA	ECL03C4_BA	ECL03C6_BA	ECL03C8_BA	CN35DN12_B
20		ECL03C1_CA	ECL03C2_CA	ECL03C4_CA	ECL03C6_CA	ECL03C8_CA	—
Maximum Ampere Rating—60 ③							
2	65 mm	ECL03D1_2A	ECL03D2_2A	ECL03D4_2A	ECL03D6_2A	ECL03D8_2A	CN35GN2_B
3		ECL03D1_3A	ECL03D2_3A	ECL03D4_3A	ECL03D6_3A	ECL03D8_3A	CN35GN3_B
4		ECL03D1_4A	ECL03D2_4A	ECL03D4_4A	ECL03D6_4A	ECL03D8_4A	CN35GN4_B
5		ECL03D1_5A	ECL03D2_5A	ECL03D4_5A	ECL03D6_5A	ECL03D8_5A	CN35GN5_B
6		ECL03D1_6A	ECL03D2_6A	ECL03D4_6A	ECL03D6_6A	ECL03D8_6A	—
9		ECL03D1_9A	ECL03D2_9A	ECL03D4_9A	ECL03D6_9A	ECL03D8_9A	—
10		ECL03D1_AA	ECL03D2_AA	ECL03D4_AA	ECL03D6_AA	ECL03D8_AA	—
12		ECL03D1_BA	ECL03D2_BA	ECL03D4_BA	ECL03D6_BA	ECL03D8_BA	—

Notes

① For open position (coil voltage), use the table below:

Suffix	Coil Voltage	Suffix	Coil Voltage	Suffix	Coil Voltage
A	120/60 or 110/5	**C**	480/60 or 440/50	**E**	208/60
B	240/60 or 220/50	**D**	600/60 or 550/50	**H**	277/60

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECL03B**4**A2A. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Ampere ratings are based on a maximum load voltage of 480 V for tungsten lamp applications and 600 V for ballast or mercury vapor type applications.

Class ECL03—Non-Combination Electrically Held Lighting Contactor, continued

No. of Poles	Frame Size	Type 1 General Purpose Catalog Number ①	Type 3R Rainproof Catalog Number ①	Type 4X ② Watertight and Dust-Tight Stainless Steel Catalog Number ①	Type 7/9 Hazardous Location Catalog Number ①	Type 12 Dust-Tight Industrial Catalog Number ①	Component Contactor (Open) Catalog Number ①
Maximum Ampere Rating—100 ③							
2	90 mm	**ECL03E1_2A**	**ECL03E2_2A**	**ECL03E4_2A**	**ECL03E6_2A**	**ECL03E8_2A**	**CN35KN2_**
3		**ECL03E1_3A**	**ECL03E2_3A**	**ECL03E4_3A**	**ECL03E6_3A**	**ECL03E8_3A**	**CN35KN3_**
4		**ECL03E1_4A**	**ECL03E2_4A**	**ECL03E4_4A**	**ECL03E6_4A**	**ECL03E8_4A**	—
5		**ECL03E1_5A**	**ECL03E2_5A**	**ECL03E4_5A**	**ECL03E6_5A**	**ECL03E8_5A**	—
6		**ECL03E1_6A**	**ECL03E2_6A**	**ECL03E4_6A**	**ECL03E6_6A**	**ECL03E8_6A**	—
9		**ECL03E1_9A**	**ECL03E2_9A**	**ECL03E4_9A**	**ECL03E6_9A**	**ECL03E8_9A**	—
Maximum Ampere Rating—200 ③							
2	180 mm	**ECL03F1_2A**	**ECL03F2_2A**	**ECL03F4_2A**	**ECL03F6_2A**	**ECL03F8_2A**	**CN35NN2_**
3		**ECL03F1_3A**	**ECL03F2_3A**	**ECL03F4_3A**	**ECL03F6_3A**	**ECL03F8_3A**	**CN35NN3_**
4		**ECL03F1_4A**	**ECL03F2_4A**	**ECL03F4_4A**	**ECL03F6_4A**	**ECL03F8_4A**	—
5		**ECL03F1_5A**	**ECL03F2_5A**	**ECL03F4_5A**	**ECL03F6_5A**	**ECL03F8_5A**	—
6		**ECL03F1_6A**	**ECL03F2_6A**	**ECL03F4_6A**	**ECL03F6_6A**	**ECL03F8_6A**	—
Maximum Ampere Rating—300 ③							
2	180 mm	**ECL03G1_2A**	**ECL03G2_2A**	**ECL03G4_2A**	**ECL03G6_2A**	**ECL03G8_2A**	**CN35SN2_**
3		**ECL03G1_3A**	**ECL03G2_3A**	**ECL03G4_3A**	**ECL03G6_3A**	**ECL03G8_3A**	**CN35SN3_**
4		**ECL03G1_4A**	**ECL03G2_4A**	**ECL03G4_4A**	**ECL03G6_4A**	**ECL03G8_4A**	—
5		**ECL03G1_5A**	**ECL03G2_5A**	**ECL03G4_5A**	**ECL03G6_5A**	**ECL03G8_5A**	—
6		**ECL03G1_6A**	**ECL03G2_6A**	**ECL03G4_6A**	**ECL03G6_6A**	**ECL03G8_6A**	—
Maximum Ampere Rating—400 ③④							
2	220 mm	**ECL03H1_2A**	**ECL03H2_2A**	**ECL03H4_2A**	**ECL03H6_2A**	**ECL03H8_2A**	**CN35TN2_**
3		**ECL03H1_3A**	**ECL03H2_3A**	**ECL03H4_3A**	**ECL03H6_3A**	**ECL03H8_3A**	**CN35TN3_**

Notes

① For open position (coil voltage), use the table below:

Suffix	Coil Voltage	Suffix	Coil Voltage	Suffix	Coil Voltage
A	120/60 or 110/5	**C**	480/60 or 440/50	**E**	208/60
B	240/60 or 220/50	**D**	600/60 or 550/50	**H**	277/60

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECL03E**4**A2A. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Ampere ratings are based on a maximum load voltage of 480 V for tungsten lamp applications and 600 V for ballast or mercury vapor type applications.

④ UL ballast and resistive ratings only.

Operation

A permanent magnet is built into the contactor structure that will maintain the contactor in its energized state indefinitely without using control power. When energized, a DC current is applied to the latch coil, producing a magnetic field that reinforces the polarity of the permanent magnet, pulling in the contactor. The current to the coil is disconnected by the coil clearing interlock. In order to drop out the contactor, it is necessary to apply a field through the STOP coil in the reverse direction to the permanent magnet. This momentarily cancels the magnetic attraction and the contactor drops out.

Non-Combination Contactors

Class ECL04—Non-Combination Magnetically Latched Lighting Contactor

No. of Poles	Type 1 General Purpose Catalog Number ①	Type 3R Rainproof Catalog Number ①	Type 4X ② Watertight and Dust-Tight Stainless Steel Catalog Number ①	Type 7/9 Hazardous Location Catalog Number ①	Type 12 Dust-Tight Industrial Catalog Number ①	Component Contactor (Open) Catalog Number ①
Maximum Ampere Rating—30 ③						
2	**ECL04C1_2A**	**ECL04C2_2A**	**ECL04C4_2A**	**ECL04C6_2A**	**ECL04C8_2A**	**A202K1B_M**
3	**ECL04C1_3A**	**ECL04C2_3A**	**ECL04C4_3A**	**ECL04C6_3A**	**ECL04C8_3A**	**A202K1C_M**
4	**ECL04C1_4A**	**ECL04C2_4A**	**ECL04C4_4A**	**ECL04C6_4A**	**ECL04C8_4A**	**A202K1D_M**
5	**ECL04C1_5A**	**ECL04C2_5A**	**ECL04C4_5A**	**ECL04C6_5A**	**ECL04C8_5A**	**A202K1E_M**
6	**ECL04C1_6A**	**ECL04C2_6A**	**ECL04C4_6A**	**ECL04C6_6A**	**ECL04C8_6A**	**A202K1F_M**
8	**ECL04C1_8A**	**ECL04C2_8A**	**ECL04C4_8A**	**ECL04C6_8A**	**ECL04C8_8A**	**A202K1G_M**
9	**ECL04C1_9A**	**ECL04C2_9A**	**ECL04C4_9A**	**ECL04C6_9A**	**ECL04C8_9A**	—
10	**ECL04C1_AA**	**ECL04C2_AA**	**ECL04C4_AA**	**ECL04C6_AA**	**ECL04C8_AA**	**A202K1H_M**
12	**ECL04C1_BA**	**ECL04C2_BA**	**ECL04C4_BA**	**ECL04C6_BA**	**ECL04C8_BA**	**A202K1K_M**
20	**ECL04C1_CA**	**ECL04C2_CA**	**ECL04C4_CA**	**ECL04C6_CA**	**ECL04C8_CA**	—
Maximum Ampere Rating—60 ③						
2	**ECL04D1_2A**	**ECL04D2_2A**	**ECL04D4_2A**	**ECL04D6_2A**	**ECL04D8_2A**	**A202K2B_M**
3	**ECL04D1_3A**	**ECL04D2_3A**	**ECL04D4_3A**	**ECL04D6_3A**	**ECL04D8_3A**	**A202K2C_M**
4	**ECL04D1_4A**	**ECL04D2_4A**	**ECL04D4_4A**	**ECL04D6_4A**	**ECL04D8_4A**	**A202K2D_M**
5	**ECL04D1_5A**	**ECL04D2_5A**	**ECL04D4_5A**	**ECL04D6_5A**	**ECL04D8_5A**	**A202K2E_M**
6	**ECL04D1_6A**	**ECL04D2_6A**	**ECL04D4_6A**	**ECL04D6_6A**	**ECL04D8_6A**	**A202K2F_M**
8	**ECL04D1_8A**	**ECL04D2_8A**	**ECL04D4_8A**	**ECL04D6_8A**	**ECL04D8_8A**	**A202K2G_M**
9	**ECL04D1_9A**	**ECL04D2_9A**	**ECL04D4_9A**	**ECL04D6_9A**	**ECL04D8_9A**	—
10	**ECL04D1_AA**	**ECL04D2_AA**	**ECL04D4_AA**	**ECL04D6_AA**	**ECL04D8_AA**	**A202K2H_M**
12	**ECL04D1_BA**	**ECL04D2_BA**	**ECL04D4_BA**	**ECL04D6_BA**	**ECL04D8_BA**	**A202K2K_M**
20	**ECL04D1_CA**	**ECL04D2_CA**	**ECL04D4_CA**	**ECL04D6_CA**	**ECL04D8_CA**	—

Notes

① For open position (coil voltage), use the table below:

Enclosed Suffix	Open Suffix	Coil Voltage	Enclosed Suffix	Open Suffix	Coil Voltage
A	**A**	120/60 or 110/50	**D**	**E**	600/60
B	**W**	240/60 or 220/50	**E**	**B**	208/60
C	**X**	480/60 or 440/50	**H**	**Z**	277/60

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECL04C**4**A2A. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Ampere ratings are based on a maximum load voltage of 480 V for tungsten lamp applications and 600 V for ballast or mercury vapor type applications.

Class ECL04—Non-Combination Magnetically Latched Lighting Contactor, continued

No. of Poles	Type 1 General Purpose Catalog Number ①	Type 3R Rainproof Catalog Number ①	Type 4X ② Watertight and Dust-Tight Stainless Steel Catalog Number ①	Type 7/9 Hazardous Location Catalog Number ①	Type 12 Dust-Tight Industrial Catalog Number ①	Component Contactor (Open) Catalog Number ①
Maximum Ampere Rating—100 ③						
2	**ECL04E1_2A**	**ECL04E2_2A**	**ECL04E4_2A**	**ECL04E6_2A**	**ECL04E8_2A**	**A202K3B_M**
3	**ECL04E1_3A**	**ECL04E2_3A**	**ECL04E4_3A**	**ECL04E6_3A**	**ECL04E8_3A**	**A202K3C_M**
4	**ECL04E1_4A**	**ECL04E2_4A**	**ECL04E4_4A**	**ECL04E6_4A**	**ECL04E8_4A**	**A202K3D_M**
5	**ECL04E1_5A**	**ECL04E2_5A**	**ECL04E4_5A**	**ECL04E6_5A**	**ECL04E8_5A**	**A202K3E_M**
6	**ECL04E1_6A**	**ECL04E2_6A**	**ECL04E4_6A**	**ECL04E6_6A**	**ECL04E8_6A**	**A202K3F_M**
8	**ECL04E1_8A**	**ECL04E2_8A**	**ECL04E4_8A**	**ECL04E6_8A**	**ECL04E8_8A**	**A202K3G_M**
9	**ECL04E1_9A**	**ECL04E2_9A**	**ECL04E4_9A**	**ECL04E6_9A**	**ECL04E8_9A**	—
10	**ECL04E1_AA**	**ECL04E2_AA**	**ECL04E4_AA**	**ECL04E6_AA**	**ECL04E8_AA**	**A202K3H_M**
12	**ECL04E1_BA**	**ECL04E2_BA**	**ECL04E4_BA**	**ECL04E6_BA**	**ECL04E8_BA**	**A202K3K_M**
20	**ECL04E1_CA**	**ECL04E2_CA**	**ECL04E4_CA**	**ECL04E6_CA**	**ECL04E8_CA**	—
Maximum Ampere Rating—200 ③						
2	**ECL04F1_2A**	**ECL04F2_2A**	**ECL04F4_2A**	**ECL04F6_2A**	**ECL04F8_2A**	**A202K4B_M**
3	**ECL04F1_3A**	**ECL04F2_3A**	**ECL04F4_3A**	**ECL04F6_3A**	**ECL04F8_3A**	**A202K4C_M**
4	**ECL04F1_4A**	**ECL04F2_4A**	**ECL04F4_4A**	**ECL04F6_4A**	**ECL04F8_4A**	**A202K4D_M**
5	**ECL04F1_5A**	**ECL04F2_5A**	**ECL04F4_5A**	**ECL04F6_5A**	**ECL04F8_5A**	**A202K4E_M**
6	**ECL04F1_6A**	**ECL04F2_6A**	**ECL04F4_6A**	**ECL04F6_6A**	**ECL04F8_6A**	**A202K4F_M**
8	**ECL04F1_8A**	**ECL04F2_8A**	**ECL04F4_8A**	**ECL04F6_8A**	**ECL04F8_8A**	**A202K4G_M**
9	**ECL04F1_9A**	**ECL04F2_9A**	**ECL04F4_9A**	**ECL04F6_9A**	**ECL04F8_9A**	—
10	**ECL04F1_AA**	**ECL04F2_AA**	**ECL04F4_AA**	**ECL04F6_AA**	**ECL04F8_AA**	**A202K4H_M**
12	**ECL04F1_BA**	**ECL04F2_BA**	**ECL04F4_BA**	**ECL04F6_BA**	**ECL04F8_BA**	**A202K4K_M**
20	**ECL04F1_CA**	**ECL04F2_CA**	**ECL04F4_CA**	**ECL04F6_CA**	**ECL04F8_CA**	—
Maximum Ampere Rating—300 ③						
2	**ECL04G1_2A**	**ECL04G2_2A**	**ECL04G4_2A**	**ECL04G6_2A**	**ECL04G8_2A**	**A202K5B_M** **A202K5C_M**
3	**ECL04G1_3A**	**ECL04G2_3A**	**ECL04G4_3A**	**ECL04G6_3A**	**ECL04G8_3A**	**A202K5C_M**
4	**ECL04G1_4A**	**ECL04G2_4A**	**ECL04G4_4A**	**ECL04G6_4A**	**ECL04G8_4A**	—
5	**ECL04G1_5A**	**ECL04G2_5A**	**ECL04G4_5A**	**ECL04G6_5A**	**ECL04G8_5A**	—
6	**ECL04G1_6A**	**ECL04G2_6A**	**ECL04G4_6A**	**ECL04G6_6A**	**ECL04G8_6A**	—
Maximum Ampere Rating—400 ③						
2	**ECL04H1_2A**	**ECL04H2_2A**	**ECL04H4_2A**	**ECL04H6_2A**	**ECL04H8_2A**	**A202K6B_M**
3	**ECL04H1_3A**	**ECL04H2_3A**	**ECL04H4_3A**	**ECL04H6_3A**	**ECL04H8_3A**	**A202K6C_M**
4	**ECL04H1_4A**	**ECL04H2_4A**	**ECL04H4_4A**	**ECL04H6_4A**	**ECL04H8_4A**	—
5	**ECL04H1_5A**	**ECL04H2_5A**	**ECL04H4_5A**	**ECL04H6_5A**	**ECL04H8_5A**	—
6	**ECL04H1_6A**	**ECL04H2_6A**	**ECL04H4_6A**	**ECL04H6_6A**	**ECL04H8_6A**	—

Notes

① For open position (coil voltage), use the table below:

Enclosed Suffix	Open Suffix	Coil Voltage	Enclosed Suffix	Open Suffix	Coil Voltage
A	**A**	120/60 or 110/50	**D**	**E**	600/60
B	**W**	240/60 or 220/50	**E**	**B**	208/60
C	**X**	480/60 or 440/50	**H**	**Z**	277/60

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECL04E**6**A2A. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Ampere ratings are based on a maximum load voltage of 480 V for tungsten lamp applications and 600 V for ballast or mercury vapor type applications.

Combination Contactors

Class ECL12 and ECL13—Combination Lighting Contactor—Fusible Disconnect

Max. Amp Rating ①	No. of Poles	Fuse Clips Amps/Volts ②	Type 1 General Purpose Catalog Number ③	Type 3R Rainproof Catalog Number ③	Type 4X ④ Watertight and Dust-Tight SS Catalog Number ③	Type 7/9 Hazardous Location Catalog Number ③	Type 12 Dust-Tight Industrial Catalog Number ③	Component Contactor (Open) Catalog Number ③
Electrically Held—Class ECL12								
30	3	30/250	**ECL12C1_3B**	**ECL12C2_3B**	**ECL12C4_3B**	**ECL12C6_3B**	**ECL12C8_3B**	**CN35DN3_B**
		30/600	**ECL12C1_3C**	**ECL12C2_3C**	**ECL12C4_3C**	**ECL12C6_3C**	**ECL12C8_3C**	—
60		60/250	**ECL12D1_3D**	**ECL12D2_3D**	**ECL12D4_3D**	**ECL12D6_3D**	**ECL12D8_3D**	**CN35GN3_B**
		60/600	**ECL12D1_3E**	**ECL12D2_3E**	**ECL12D4_3E**	**ECL12D6_3E**	**ECL12D8_3E**	—
100		100/250	**ECL12E1_3F**	**ECL12E2_3F**	**ECL12E4_3F**	**ECL12E6_3F**	**ECL12E8_3F**	**CN35KN3_**
		100/600	**ECL12E1_3G**	**ECL12E2_3G**	**ECL12E4_3G**	**ECL12E6_3G**	**ECL12E8_3G**	—
200		200/250	**ECL12F1_3H**	**ECL12F2_3H**	**ECL12F4_3H**	**ECL12F6_3H**	**ECL12F8_3H**	**CN35NN3_**
		200/600	**ECL12F1_3J**	**ECL12F2_3J**	**ECL12F4_3J**	**ECL12F6_3J**	**ECL12F8_3J**	—
300		400/250	**ECL12G1_3K**	**ECL12G2_3K**	**ECL12G4_3K**	**ECL12G6_3K**	**ECL12G8_3K**	**CN35SN3_**
		400/600	**ECL12G1_3L**	**ECL12G2_3L**	**ECL12G4_3L**	**ECL12G6_3L**	**ECL12G8_3L**	—
400		400/250	**ECL12H1_3K**	**ECL12H2_3K**	**ECL12H4_3K**	**ECL12H6_3K**	**ECL12H8_3K**	**CN35TN3_**
		400/600	**ECL12H1_3L**	**ECL12H2_3L**	**ECL12H4_3L**	**ECL12H6_3L**	**ECL12H8_3L**	—
Magnetically Latched—Class ECL13								
30	3	30/250	**ECL13C1_3B**	**ECL13C2_3B**	**ECL13C4_3B**	**ECL13C6_3B**	**ECL13C8_3B**	**A202K1C_M**
		30/600	**ECL13C1_3C**	**ECL13C2_3C**	**ECL13C4_3C**	**ECL13C6_3C**	**ECL13C8_3C**	—
60		60/250	**ECL13D1_3D**	**ECL13D2_3D**	**ECL13D4_3D**	**ECL13D6_3D**	**ECL13D8_3D**	**A202K2C_M**
		60/600	**ECL13D1_3E**	**ECL13D2_3E**	**ECL13D4_3E**	**ECL13D6_3E**	**ECL13D8_3E**	—
100		100/250	**ECL13E1_3F**	**ECL13E2_3F**	**ECL13E4_3F**	**ECL13E6_3F**	**ECL13E8_3F**	**A202K3C_M**
		100/600	**ECL13E1_3G**	**ECL13E2_3G**	**ECL13E4_3G**	**ECL13E6_3G**	**ECL13E8_3G**	—
200		200/250	**ECL13F1_3H**	**ECL13F2_3H**	**ECL13F4_3H**	**ECL13F6_3H**	**ECL13F8_3H**	**A202K4C_M**
		200/600	**ECL13F1_3J**	**ECL13F2_3J**	**ECL13F4_3J**	**ECL13F6_3J**	**ECL13F8_3J**	—

Notes

① The listed ampere ratings are based on a maximum load voltage of 480 V for tungsten lamp applications and 600 V for ballasts or mercury vapor type applications.

② Power fuses are not included.

③ The underscore (_) indicates missing code letter for coil selection—see table below. Example: Magnet coils with 120/110 V coils—change the eighth character to **A**. ECL12C1**A**3B.

Rating	Code Letter	Rating	Code Letter	Rating	Code Letter
120 V 60 Hz	**A**	240 V 60 Hz	**B**	480 V 60 Hz	**C**
208 V 60 Hz	**E**	277 V 60 Hz	**H**	600 V 60 Hz	**D**

④ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECL12C**4**A3B. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECL14 and ECL15—Combination Lighting Contactor—Thermal Magnetic Circuit Breaker

Max. Amp Rating ①	No. of Poles	Continuous Ampere Rating at 40°C	Type 1 General Purpose Catalog Number ②	Type 3R Rainproof Catalog Number ②	Type 4X ③ Watertight and Dust-Tight SS Catalog Number ②	Type 7/9 Hazardous Location Catalog Number ②	Type 12 Dust-Tight Industrial Catalog Number ②	Component Contactor (Open) Catalog Number ②
Electrically Held—Class ECL14								
30	3	30	**ECL14C1_3E**	**ECL14C2_3E**	**ECL14C4_3E**	**ECL14C6_3E**	**ECL14C8_3E**	**CN35DN3_B**
60		60	**ECL14D1_3F**	**ECL14D2_3F**	**ECL14D4_3F**	**ECL14D6_3F**	**ECL14D8_3F**	**CN35GN3_B**
100		100	**ECL14E1_3G**	**ECL14E2_3G**	**ECL14E4_3G**	**ECL14E6_3G**	**ECL14E8_3G**	**CN35KN3_**
200		200	**ECL14F1_3H**	**ECL14F2_3H**	**ECL14F4_3H**	**ECL14F6_3H**	**ECL14F8_3H**	**CN35NN3_**
300		300	**ECL14G1_3J**	**ECL14G2_3J**	**ECL14G4_3J**	**ECL14G6_3J**	**ECL14G8_3J**	**CN35SN3_**
400		400	**ECL14H1_3K**	**ECL14H2_3K**	**ECL14H4_3K**	**ECL14H6_3K**	**ECL14H8_3K**	**CN35TN3_**
Magnetically Latched—Class ECL15								
30	3	30	**ECL15C1_3E**	**ECL15C2_3E**	**ECL15C4_3E**	**ECL15C6_3E**	**ECL15C8_3E**	**A202K1C_M**
60		60	**ECL15D1_3F**	**ECL15D2_3F**	**ECL15D4_3F**	**ECL15D6_3F**	**ECL15D8_3F**	**A202K2C_M**
100		100	**ECL15E1_3G**	**ECL15E2_3G**	**ECL15E4_3G**	**ECL15E6_3G**	**ECL15E8_3G**	**A202K3C_M**
200		200	**ECL15F1_3H**	**ECL15F2_3H**	**ECL15F4_3H**	**ECL15F6_3H**	**ECL15F8_3H**	**A202K4C_M**

Notes

① The listed ampere ratings are based on a maximum load voltage of 480 V for tungsten lamp applications and 600 V for ballasts or mercury vapor type applications.

② The underscore (_) indicates missing code letter for coil selection—see table below. Example: Magnet coils with 120/110 V coils—change the eighth character to **A**. ECL14C1**A**3E.

Rating	Code Letter	Rating	Code Letter	Rating	Code Letter
120 V 60 Hz	**A**	240 V 60 Hz	**B**	480 V 60 Hz	**C**
208 V 60 Hz	**E**	277 V 60 Hz	**H**	600 V 60 Hz	**D**

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECL14C**4**A3E. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Additional common modifications are available for outside lighting for ballfields, parks, and so on:

- **E7**—Service entrance
- **E5**—Enclosure with pole mounting brackets
- **P70**—Photocell
- **T1–T25**—Timers

See **Tab 15** for details.

Accessories

Auxiliary Contacts

C30CN Electrically Held Contactors—The base C30CN product line can accept up to four auxiliary contacts (2NO/2NC), which are mounted on the top of the unit. The auxiliary contacts, rated A600, are also suitable for use on low-level circuits down to 12 V, 5 mA.

CN35 Electrically Held Contactors—Include a NO maintaining auxiliary contact mounted on the right side of the contactor or integral to the contactor. The 10–60 A devices will accept additional auxiliary contacts on the top (front) and/or sides. The 100–400 A sizes will accept side-mounted auxiliaries only.

Mechanically Held and Magnetically Latched—Holding circuit auxiliary contact, if needed, is not included and should be added separately as an option.

Power Poles for C30CN

The C30CN can be configured with up to 12 poles (30 A maximum per pole). Power poles are available in single or double pole designs and can be mounted to provide either normally open or normally closed operation with a maximum of 12 NO poles or 8 NC and 4 NO poles. Each pole is capable of accepting up to 8 AWG wire.

Two-Wire or Three-Wire Control Module for C30CN

A mechanical latch with a two- or three-wire electronic control module delivers reliable performance and protection from such application abnormalities as line noise, leakage currents from controller outputs, or short repetitive commands burst from faulty controllers. For enclosed control, units come standard with two-wire control.

IMPORTANT: Add the **C18** modification code to get three-wire control with the C30CN contactor.

Mechanically Held Kit for C30CN

A modification kit allows the conversion of an electrically held lighting contactor into a mechanically held contactor.

Coil Kits for C30CN

The C30CN line comes in a wide range of input voltages and with coils from 24 Vac to 600 Vac.

Two-Wire Control Relay for A202

The two-wire control relay is designed to field convert three-wire magnetically latched lighting contactors to operate controls such as photocells and timers. Terminal blocks included for fast wiring installation.

Enclosed Lighting Contactors

Type 1 Two-Wire Control Relay

Description	Magnetic Coil Voltage	Type 1 Catalog Number	Type 3R Catalog Number
Two-wire control relay	120	**ECLC201A**	**ECLC202A**
	208	**ECLC201E**	**ECLC202E**
	240	**ECLC201B**	**ECLC202B**
	277	**ECLC201H**	**ECLC202H**
	480	**ECLC201C**	**ECLC202C**

Wiring Diagrams

C30CN

COMBINATION MOTOR CONTROLLER

Connections for Control Stations

Local Control

Figure A
START/STOP Pushbuttons

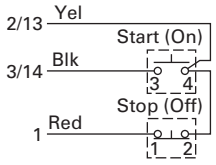


Figure B
START/STOP
Selector Switch

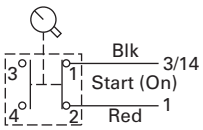


Figure D
Two-Position
Selector Switch

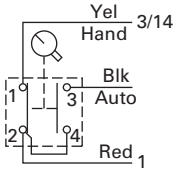


Figure C
Three-Position Selector Switch

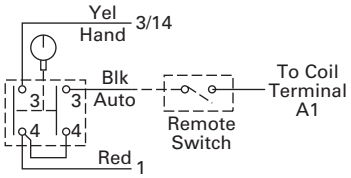


Figure E
Pilot Light (Motor RUN)

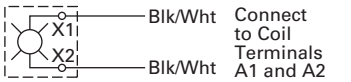
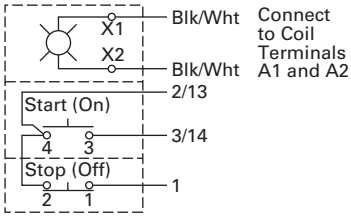
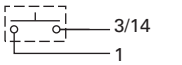


Figure F
START/STOP with Pilot Light



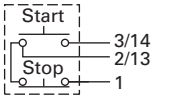
Remote Control

Two-Wire
Control

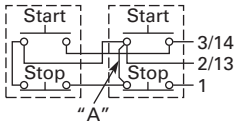


Not for Use with Auto Reset OL Relays

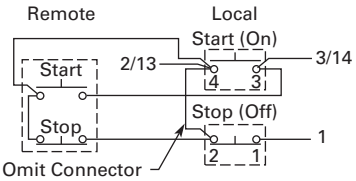
Three-Wire
Control



When More Than One Pushbutton
Station is Used, Omit Connector
"A" and Connect per Sketch Below

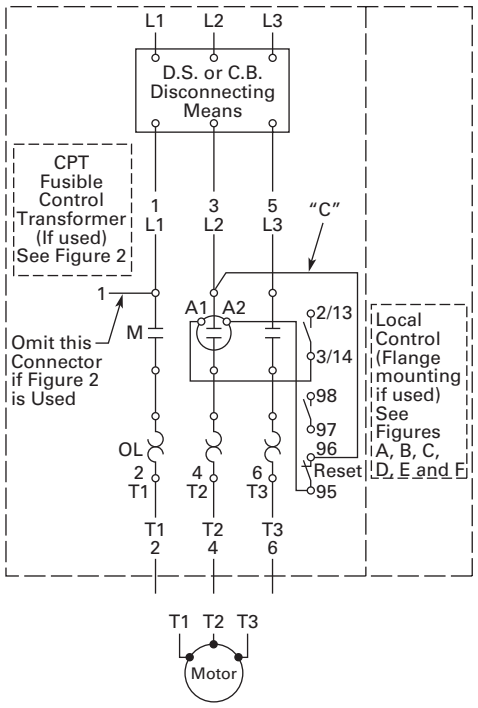


Combined Remote and Local
(For Figures 1 and 2)



Connections for Starters

Figure 1—Front View Diagram

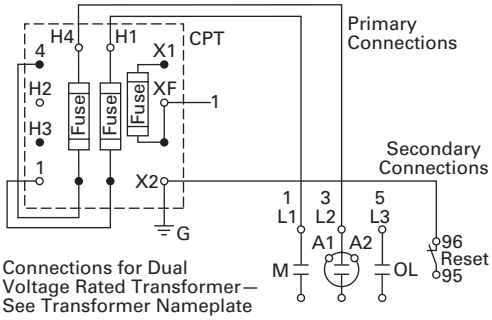


SEPARATE CONTROL

Remove Wire "C" when it is Supplied. Connect Separate Control Lines to #1 Terminal on the Remote Pilot Device, and to the #96 Terminal on the Overload Relay.

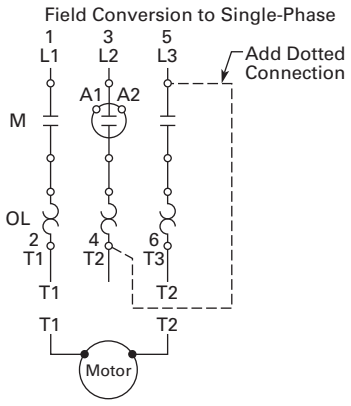
Figure 2—Fusible Control Transformer

Remove Wire "C" (Figure 1) if Used and Connect as Shown Below (All other starter wires remain as shown in Figure 1)



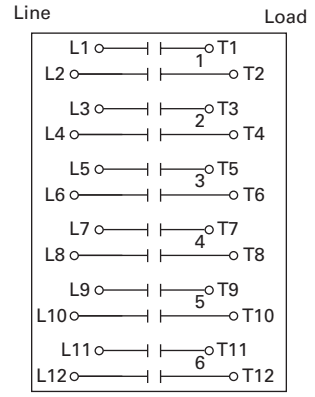
Connections for Dual
Voltage Rated Transformer—
See Transformer Nameplate

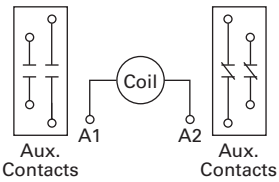
Field Conversion to Single-Phase



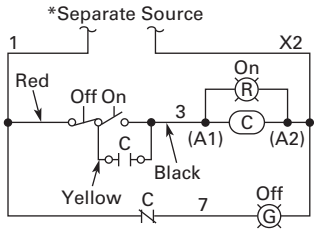
C30CN WIRING DIAGRAM

C30CNE Electrically Held

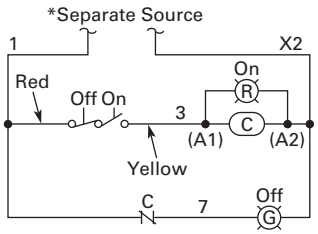




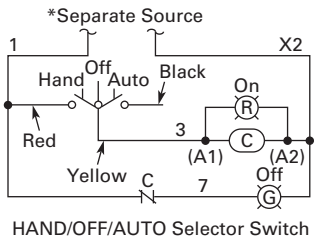
Optional Pilot Devices for
Electrically Held Contactor



ON/OFF Pushbuttons (Momentary)



ON/OFF Pushbuttons (Maintained)

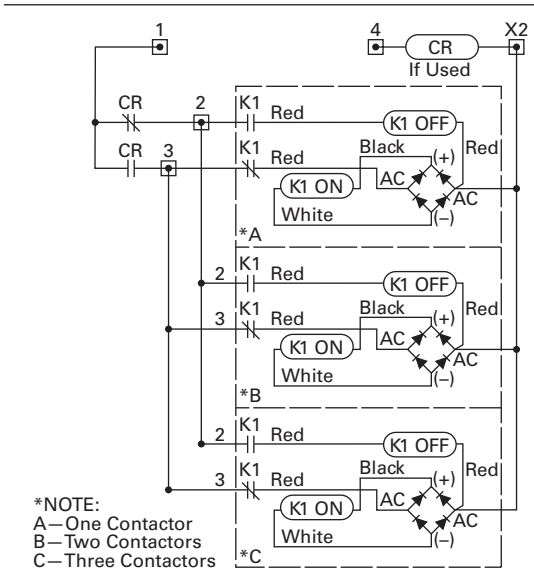


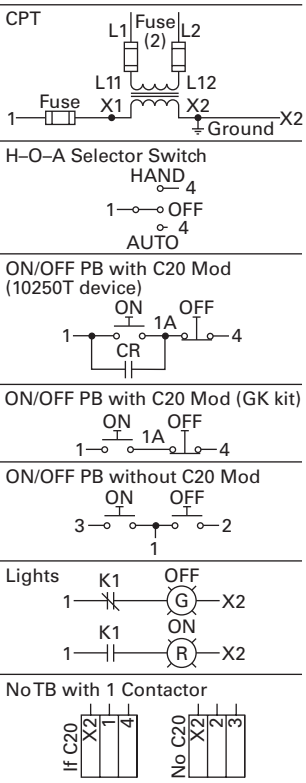
HAND/OFF/AUTO Selector Switch

* If Common Control 1 to L1/X2 to L2. See Pub. 50774 if CPT is Required

Magnetically Latched

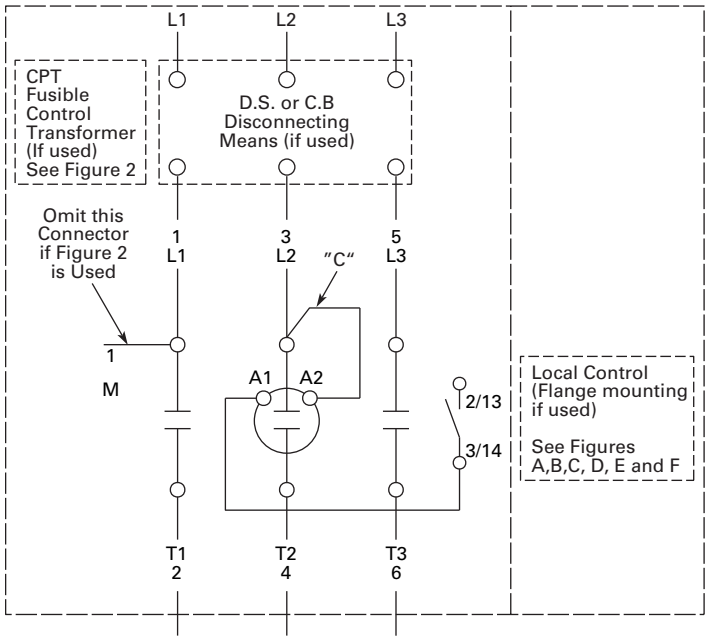
30–200A L04 Contactor 2–12 Pole



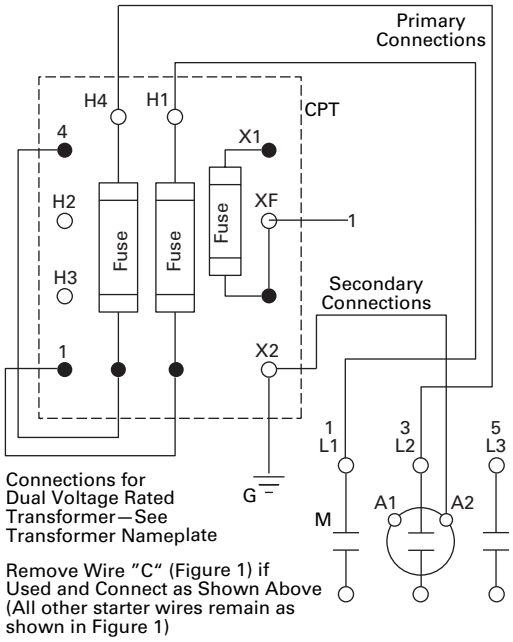


Suitable for Use on a Circuit Capable of Producing Not More Than 5,000 (33–100A) or 10,000 (200A) rms Symmetrical Amperes, 600 Volts Maximum	POWER TERMINATIONS Use 60/75°C Al/Cu Conductors Only		
	Contactor Size	Wire Range (AWG)	Torque (lb-in)
	30A	14–8	18–20
	60A	14–4	45–50
	100A	6–1/0	110–130
	200A	6–300 kcmil	275–375

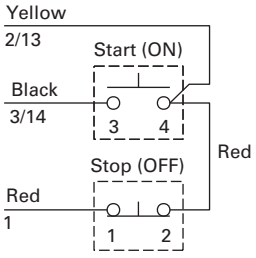
Electrically Held Contactors—CN35 with C400 Control



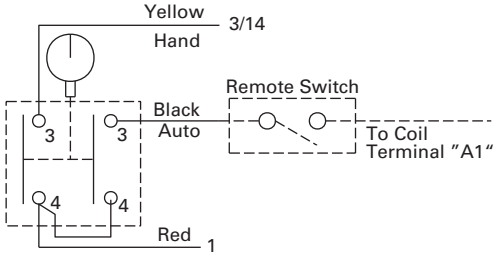
Front View Diagram
Figure 1



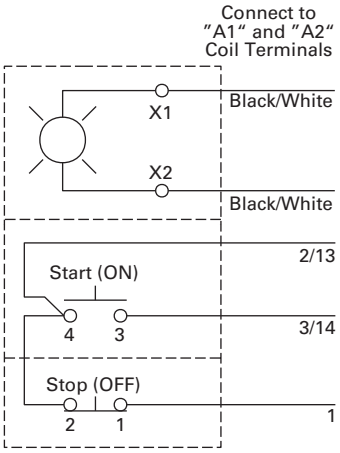
Fusible Control Transformer
Figure 2



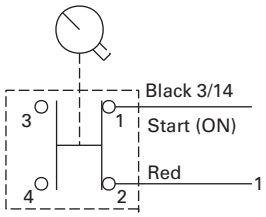
START/STOP Pushbuttons
Figure A



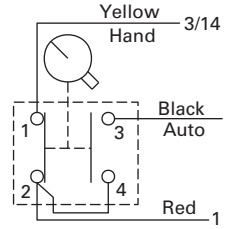
Three-Position Selector Switch
Figure C



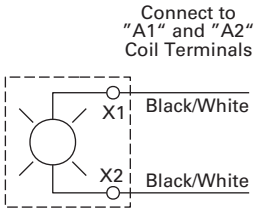
STOP/START with Pilot Light
Figure F



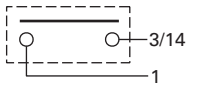
START/STOP Selector Switch
Figure B



Two-Position Selector Switch
Figure D

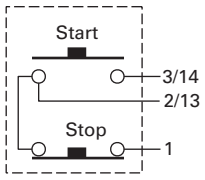


Pilot Light (Motor RUN)
Figure E

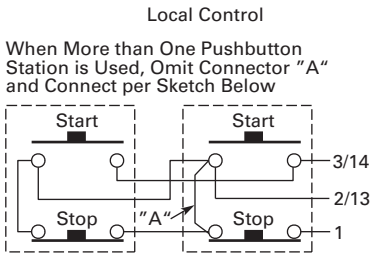


Not for Use with
Auto Reset OL Relays

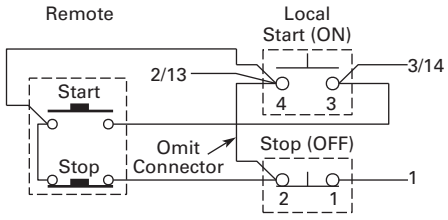
Two-Wire Control



Three-Wire Control



Remote Control



For Figures 1 and 2
Combined Remote and Local

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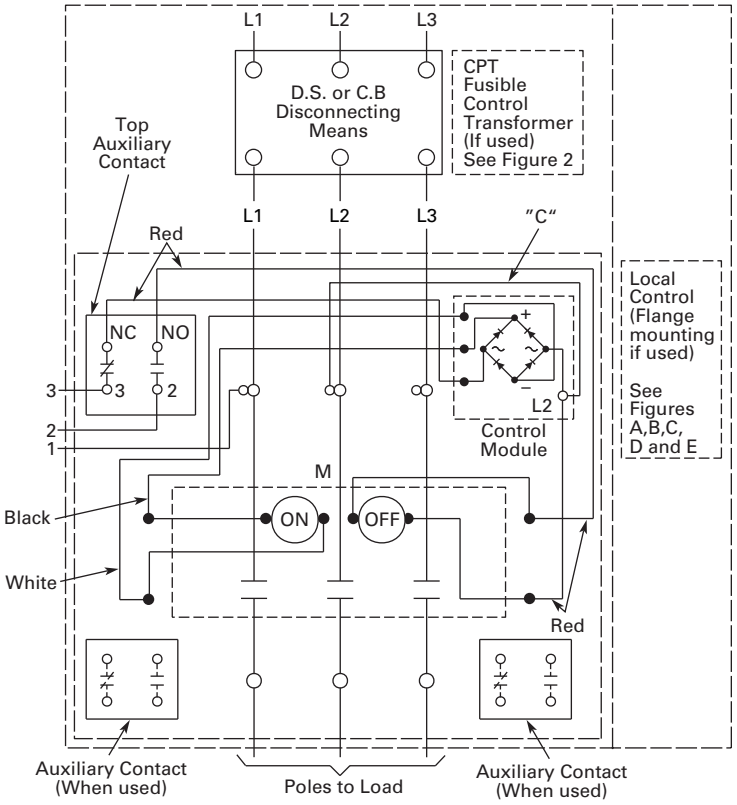
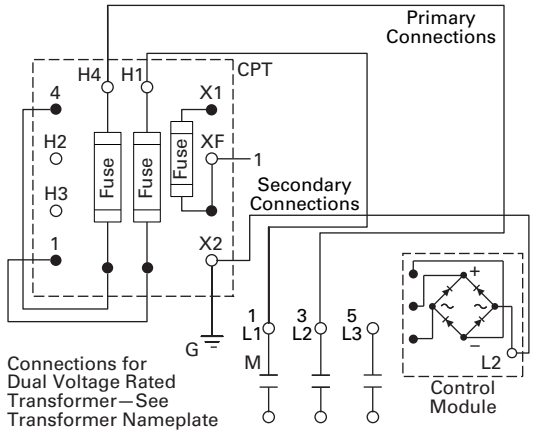
Magnetically Latched Combination Contactors



Front View Diagram

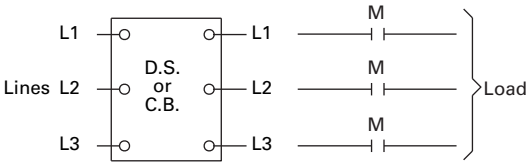
Figure 1

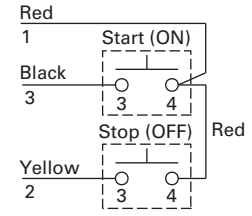
Remove Wire "C" (Figure 1) if Used and Connect as Shown Below (All other starter wires remain as shown in Figure 1)



Fusible Control Transformer

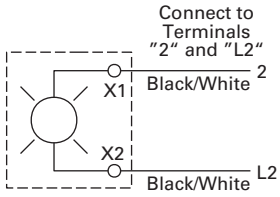
Figure 2





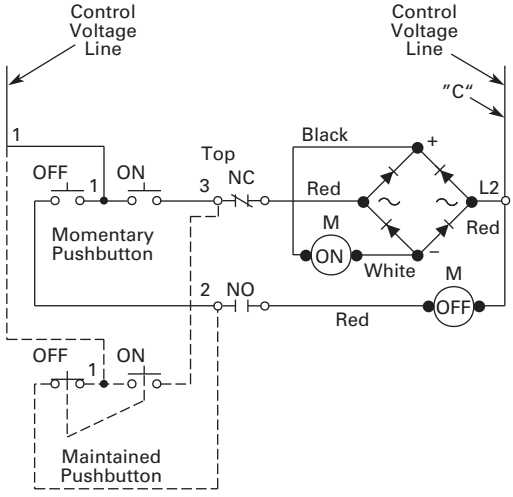
START/STOP Pushbuttons

Figure A

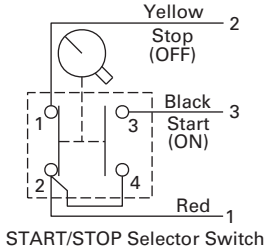


Pilot Light (OFF)

Figure D

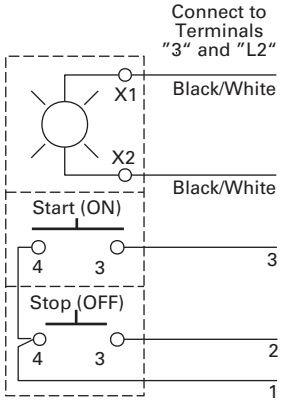


Elementary Diagram



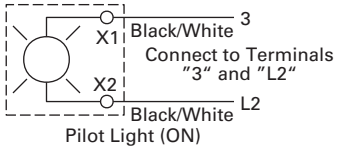
START/STOP Selector Switch

Figure B



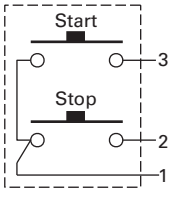
START/STOP with Pilot Light

Figure E



Pilot Light (ON)

Figure C



Three-Wire Control

Remote Control

Local Control

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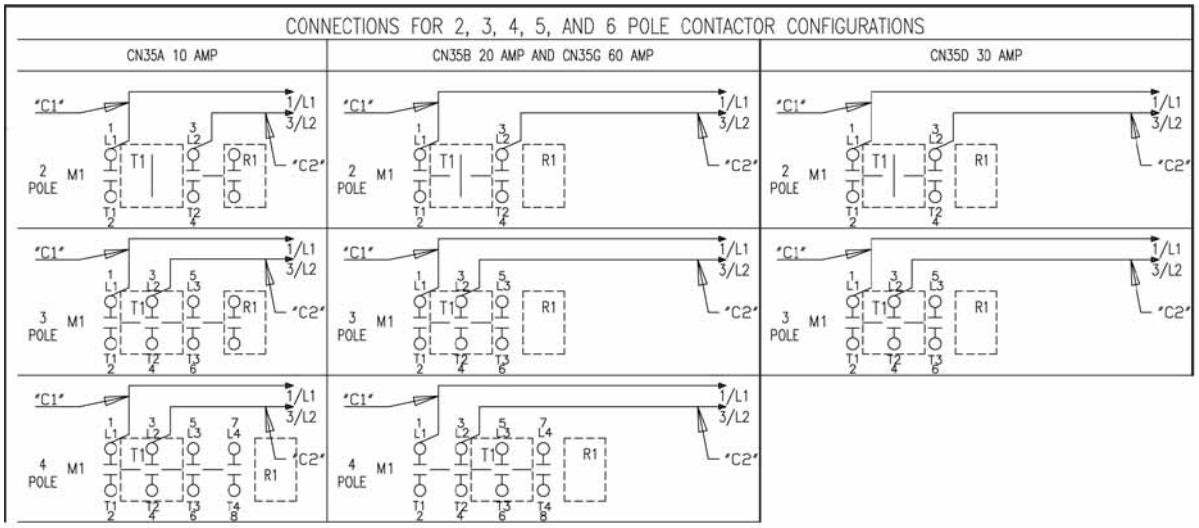
4

Electrically Held Non-Combination Contactors—CN35 with C600 Control



SCHEMATIC SYMBOL LEGEND

2/13 3/14	NORMALLY OPEN AUX.
61 62	NORMALLY CLOSED AUX.
NO4 NO3	NORMALLY OPEN MOMENTARY PB
NC1 NC2	NORMALLY CLOSED MOMENTARY PB
M A1 A2	CONTACTOR COIL
X1 R X2	RED PILOT LIGHT
X1 G X2	GREEN PILOT LIGHT
95 OL 96	NORMALLY CLOSED OVERLOAD AUX.
OL 97 98	NORMALLY OPEN OVERLOAD AUX.
1 2	M22-XLED230-T: USED TO LOWER VOLTAGE FOR PILOT LIGHTS.
STOP/OFF START/ON NO4 NO3	2-POSITION SELECTOR SWITCH (STOP/START, OFF/ON)
HAND 0 AUTO NO4 NO3	3 POSITION SELECTOR SWITCH (HOA)
L1 T1 R1	SIGNIFIES LOCATION OF SIDE AND TOP ADDER AUX. REFERENCED ON DIAGRAM UNDER AUX. SYMBOL

CAUTION

READ AND FOLLOW INSTRUCTIONS PRIOR TO WIRING OR CONNECTING POWER! THIS PRODUCT CAN BE FACTORY OR FIELD CONFIGURED FOR MULTIPLE CONTROL MODES OR CONTROL VOLTAGES. CHECK NAMEPLATE FOR COIL VOLTAGE.

SEPARATE CONTROL POWER

FOR COIL VOLTAGES 120V AND LESS: CONNECT SEPARATE CONTROL LINES TO THE NO. 61 TERMINAL ON THE TOP ADDER AUX. AND TO THE NO. 96 TERMINAL ON THE OVERLOAD RELAY.

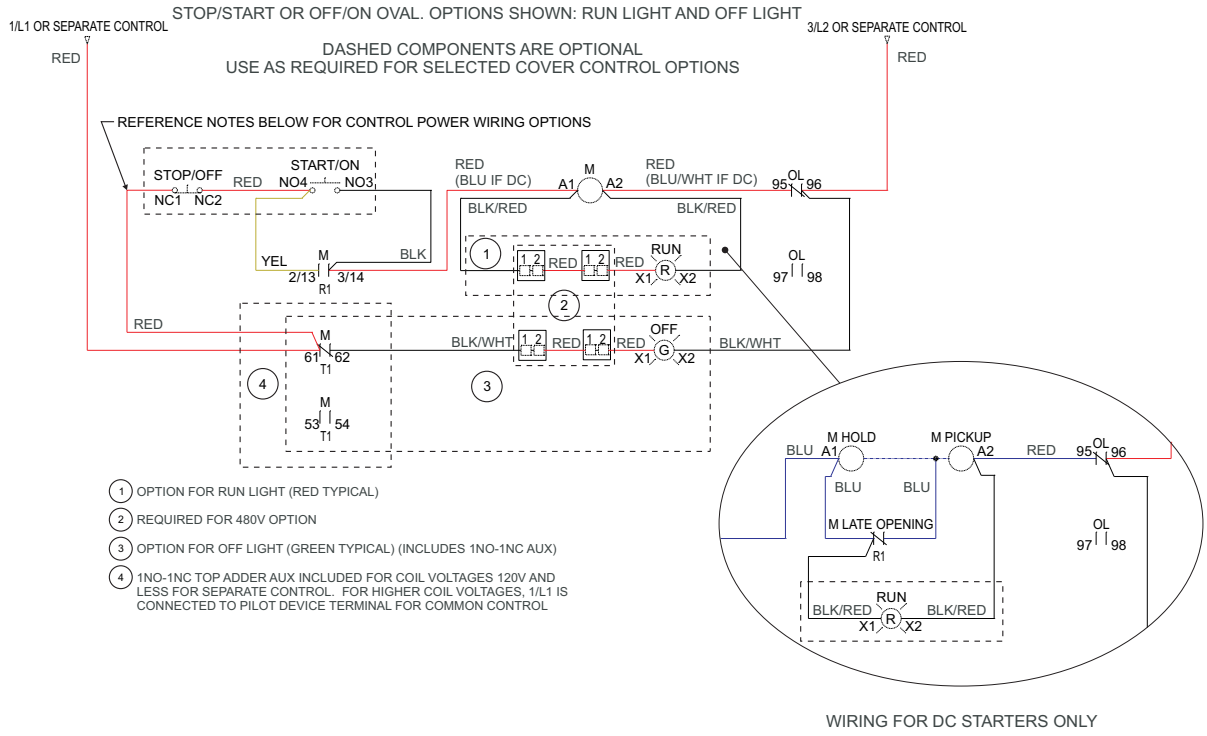
FOR COIL VOLTAGES GREATER THAN 120V: REMOVE WIRE "C2" IF SUPPLIED. IF WIRE "C1" IS TERMINATED ON L1, DISCONNECT FROM L1. CONNECT SEPARATE CONTROL LINES TO THE "C1" WIRE OR APPROPRIATE PILOT DEVICE TERMINAL PER DIAGRAM AND TO THE NO. 96 TERMINAL ON THE OVERLOAD RELAY.

COMMON CONTROL POWER

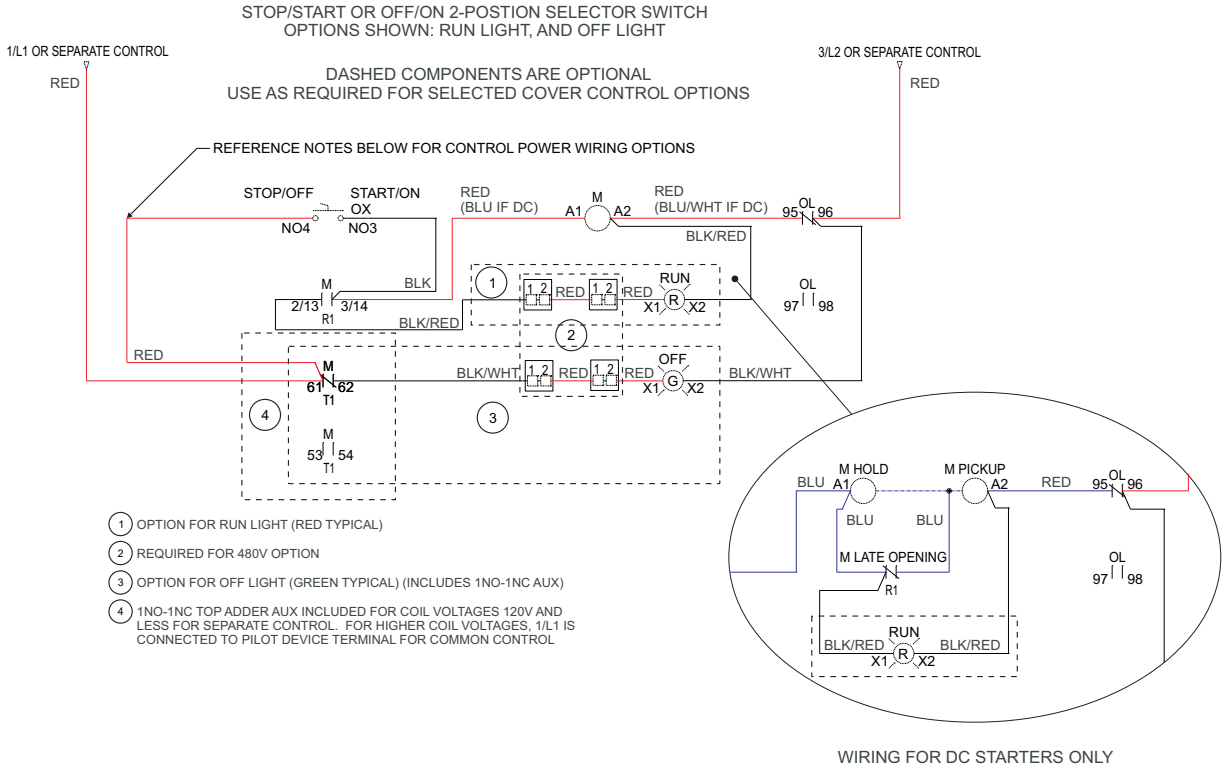
FOR COIL VOLTAGES 120V AND LESS: ADD WIRE "C2" IF NOT SUPPLIED. ADD CONNECTOR BETWEEN L1 TERMINAL AND THE NO. 61 TERMINAL ON THE TOP ADDER AUX. OR APPROPRIATE PILOT DEVICE TERMINAL PER DIAGRAM.

FOR COIL VOLTAGES GREATER THAN 120V: ADD WIRE "C1" AND "C2" IF NOT SUPPLIED.

Electrically Held Non-Combination Contactors—CN35 with C600 Control



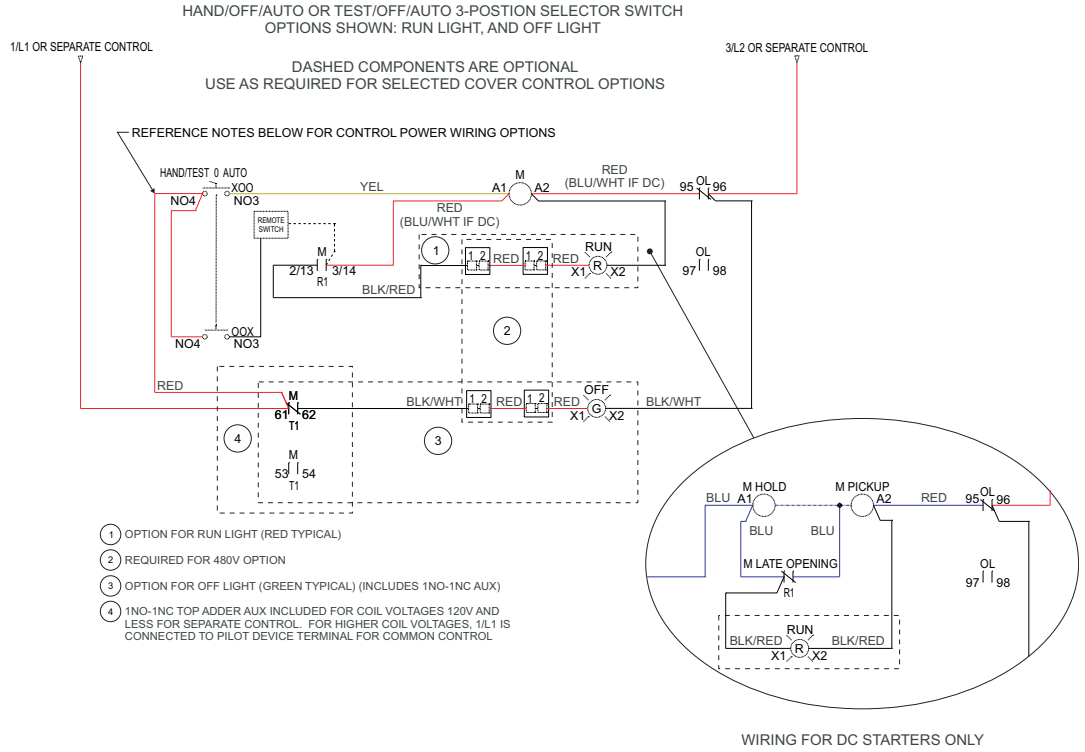
WIRING FOR DC STARTERS ONLY

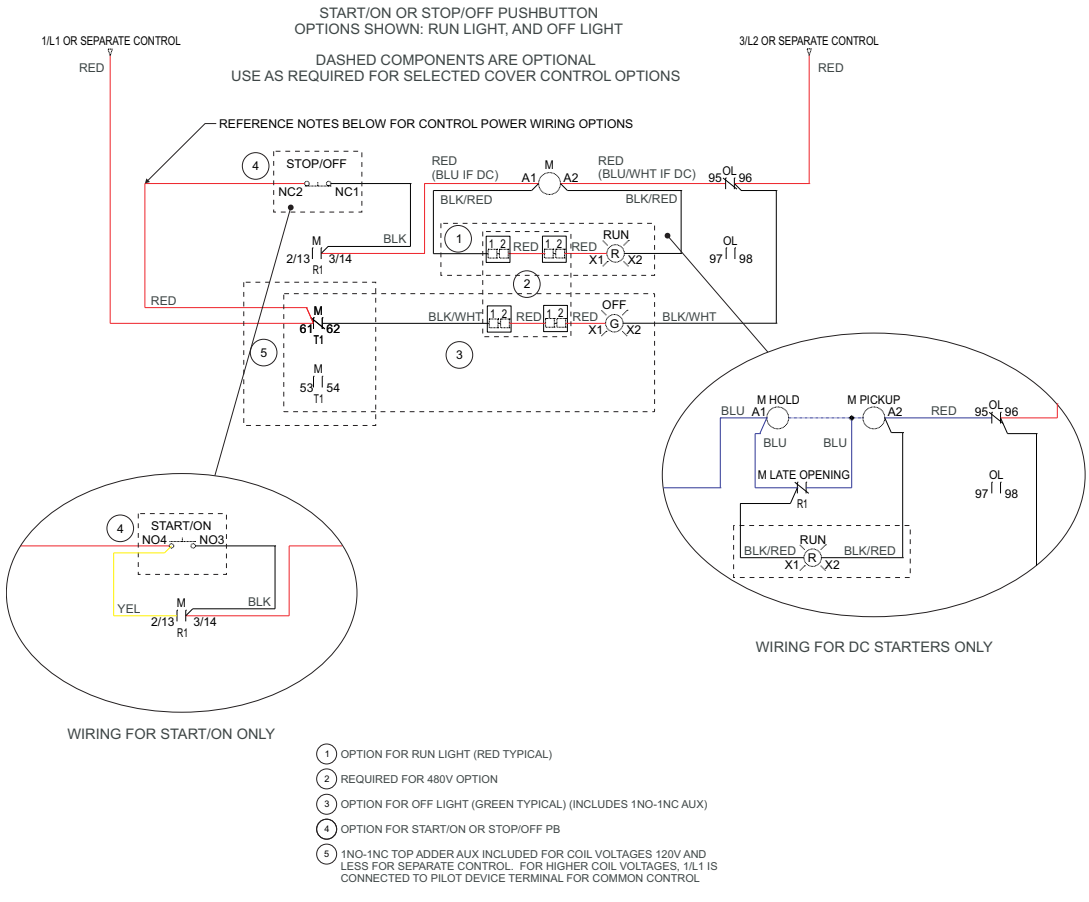


WIRING FOR DC STARTERS ONLY

4

Electrically Held Non-Combination Contactors—CN35 with C600 Control





Enclosed S611 with Breaker Disconnect

Enclosed 40 hp *IT.* Soft Starter

Type 3R Fused S801+ *IT.* Soft Starter

Type 12 HMCP Combination *IT.* Soft Starter

S611 Solid-State Soft Stater

Contents

Product Description

Eaton's line of S611 reduced voltage soft starters is multi-functional, easy to install and easy to program. The S611 soft starter includes advanced feature set and user-friendly interface module to enhance system performance and reduce commissioning time. Easy communication interface, as well as metering, monitoring, and diagnostics are possible with this revolutionary soft starter.

Designed to control acceleration and deceleration of three-phase motors up to 600V, current ratings from 26 to 414 amps, and suitable for mounting in a variety of enclosures including NEMA Type 1, 12, 3R, 4, and 4X.

- Intuitive User Interface Module (UI)
- Internal run bypass
- 120 Vac control voltage
- Open architecture for serviceability (PCBs and contactors can be replaced in the field)
- Built-in overload protection
  - Adjustable trip class 5, 10, 20, 30
  - 50–100% FLA adjustment
- Selectable current limit or ramp start
- Adjustable ramp times
  - 0–180 seconds standard
  - Extended ramps available
- Adjustable torque control
- Adjustable kick start control
- Soft stop control
  - 0–60 seconds standard
  - Extended times available
- Built-in low impedance contactor
- Six SCR control in all units
- Selectable phase reversal protection
- User interface module

Features and Benefits

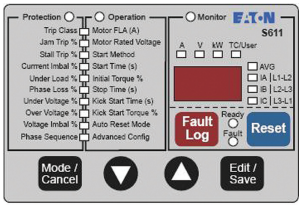
- Mechanical stress on system
  - Reduced wear on belts, gears, chains, clutches, shafts and bearings. You can get up to 2–6 times the life on standard belts by switching to a soft starter
  - Elimination of water-hammer in pumping applications extends component life and helps limit leakage in system
  - Lower shock to product on conveyor lines and material handling gear
  - Able to catch motors and fans on the fly and control their acceleration
- Electrical system improvements
  - Limits the peak inrush current as required by many local codes
  - Helps to eliminate sags on the plant electrical grid when starting large loads, thus avoiding brownout conditions

User Interface Module (UI)

The S611 has an easy to use User Interface Module (UI) that allows the user to configure the device and to read system parameters and values. The UI includes an LED display and keypad to scroll through the various parameters. The UI allows the user to modify control parameters, enable or disable protections, set communication variables, monitor system values such as line voltages and currents and access the fault queue.

The UI can be removed from the S611 and remote mounted. Kits are available to door mount the DIM, enabling users to safely configure, commission, monitor and troubleshoot the system at the electrical panel without opening the enclosure door. Factory assembled units are supplied with door mounted keypad. If door mounted keypad is not needed, consult factory.

User Interface Module (UI)



Options

S611

Description	Modification Code
Pump control option	**Standard**
Door mounted keypad	**Standard**
Extended ramp	**R1**

Pump Control Option

- Designed to reduce "water- hammer" during start-up and stopping sequences
- Stop ramp extended to 120 seconds to help control larger motors and systems with long piping runs

Communications

The S611 has built-in communication capabilities through two communications ports to connect the soft starter to a variety of networks, including Modbus (resident), DeviceNet™, PROFIBUS®, and Ethernet.

The S611 communication parameters can be configured with the UI or through the Fieldbus.

Advanced communication configuration settings provide the system integrator with powerful tools to facilitate system optimization.

Network Communications Reference

Description	Catalog Number
Modbus communication adapter without I/O	**C441M**
Modbus communication adapter with 120 Vac I/O	**C441N**
Modbus communication adapter with 24 Vdc I/O	**C441P**
DeviceNet communication adapter with 120 Vac I/O	**C441K**
DeviceNet communication adapter with 24 Vdc I/O	**C441L**
PROFIBUS communication adapter with 120 Vac I/O	**C441S**
PROFIBUS communication adapter with 24 Vdc I/O	**C441Q**
EtherNet/IP and Modbus TCP communication adapter with 120 Vac I/O	**C441R**
EtherNet/IP and Modbus TCP communication adapter with 24 Vdc I/O	**C441T**
Communication adapter	**C440-COM-ADP**

Standards and Certifications

See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL Listed
- IEC 947-4-2
- EN 60947.2 (for motor controller)
- cUL (indicates appropriate CSA Standard investigation)
- ABS Type Approved

Additional Reference

Dimensions . . . . . **Tab 14**
Accessories and Modifications . . . . . **Tab 15**
Technical Data and Specifications . . . . . **Tab 17**

Catalog Number Selection

S611 Solid-State Soft Starters

ECS 96 R 1 C A A - ____

Class

96	= Non-combination reduced voltage soft starter—S611
97	= Combination reduced voltage soft starter, disconnect switch—S611
98	= Combination reduced voltage soft starter, circuit breaker—S611

Modification Codes

See **table below**

Disconnect Fuse Clip Ratings

A	= None	**L**	= 400A/600V R
G	= 100A/600V R	**N**	= 600A/600V R
J	= 200A/600V R	**T**	= By description

Circuit Breaker Ratings

A	= None	**J**	= 250A
W	= 70A	**K**	= 400A
G	= 100A	**L**	= 600A
H	= 150A		

Amperes

R	= 52A	**Y**	= 180A
S	= 65A	**Z**	= 242A
T	= 77A	**1**	= 302A
V	= 99A	**2**	= 361A
W	= 125A	**3**	= 414A
X	= 156A		

Enclosure Type

1	= Type 1
2	= Type 3R
3	= Type 4—watertight (painted steel)
4	= Type 4X (304, Grade SS)
8	= Type 12
9	= Type 4X (316, Grade SS)

Voltage

B	= 230V	**D**	= 575V
C	= 460V	**E**	= 200V

Cover Control

A	= None

Enclosed S611 Modification Codes

Modification Code	Description
A47	2 N.O. / 2 N.C. auxiliary relay (soft start)
C1	Standard size CPT, 120V/60 Hz,110V 50 Hz secondary w/fuses
C42	With 50 VA extra capacity CPT, 120V/60 Hz, 110V 50 Hz secondary w/fuses
C3	With 100 VA extra capacity CPT, 120V/60 Hz, 110V 50 Hz secondary w/fuses
C5	With 200 VA extra capacity CPT, 120V/60 Hz, 110V 50 Hz secondary w/fuses
C7	With 300 VA extra capacity CPT, 120V/60 Hz, 110V 50 Hz secondary w/fuses
C8	With 400 VA extra capacity CPT, 120V/60 Hz, 110V 50 Hz secondary w/fuses
C9	With 1K VA extra capacity CPT, 120V/60 Hz, 110V 50 Hz secondary w/fuses
C10	With 2K VA extra capacity CPT, 120V/60 Hz, 110V 50 Hz secondary w/fuses
C12	2-pole 120V coil control relay
C47	Bypass starter with SSOL - S611 ONLY
P7	PB - START/STOP
P23	PL - red RUN
P25	PL - green OFF
S3	HAND-OFF-AUTO selector switch
S44	2-position selector switch
T15	Terminal point per customer specification, wired

Note: Door mounted keypad and pump control algorithm are provided as standard.

Product Selection

Non-Combination

Class ECS96—Non-Combination Reduced Voltage Soft Starter—S611

Amps	Motor Voltage	hp ①	Coil Voltage	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ② Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame A								
52A	200V	15	120 Vac	**ECS96R1EAA**	**ECS96R2EAA**	**ECS96R4EAA**	**ECS96R8EAA**	**S611A052P3S**
	230V	15		**ECS96R1BAA**	**ECS96R2BAA**	**ECS96R4BAA**	**ECS96R8BAA**	
	460V	40		**ECS96R1CAA**	**ECS96R2CAA**	**ECS96R4CAA**	**ECS96R8CAA**	
	575V	50		**ECS96R1DAA**	**ECS96R2DAA**	**ECS96R4DAA**	**ECS96R8DAA**	
65A	200V	20	120 Vac	**ECS96S1EAA**	**ECS96S2EAA**	**ECS96S4EAA**	**ECS96S8EAA**	**S611A065P3S**
	230V	20		**ECS96S1BAA**	**ECS96S2BAA**	**ECS96S4BAA**	**ECS96S8BAA**	
	460V	50		**ECS96S1CAA**	**ECS96S2CAA**	**ECS96S4CAA**	**ECS96S8CAA**	
	575V	60		**ECS96S1DAA**	**ECS96S2DAA**	**ECS96S4DAA**	**ECS96S8DAA**	
77A	200V	25	120 Vac	**ECS96T1EAA**	**ECS96T2EAA**	**ECS96T4EAA**	**ECS96T8EAA**	**S611A077P3S**
	230V	25		**ECS96T1BAA**	**ECS96T2BAA**	**ECS96T4BAA**	**ECS96T8BAA**	
	460V	60		**ECS96T1CAA**	**ECS96T2CAA**	**ECS96T4CAA**	**ECS96T8CAA**	
	575V	75		**ECS96T1DAA**	**ECS96T2DAA**	**ECS96T4DAA**	**ECS96T8DAA**	
Frame B								
99A	200V	30	120 Vac	**ECS96V1EAA**	**ECS96V2EAA**	**ECS96V4EAA**	**ECS96V8EAA**	**S611B099P3S**
	230V	30		**ECS96V1BAA**	**ECS96V2BAA**	**ECS96V4BAA**	**ECS96V8BAA**	
	460V	75		**ECS96V1CAA**	**ECS96V2CAA**	**ECS96V4CAA**	**ECS96V8CAA**	
	575V	100		**ECS96V1DAA**	**ECS96V2DAA**	**ECS96V4DAA**	**ECS96V8DAA**	
125A	200V	40	120 Vac	**ECS96W1EAA**	**ECS96W2EAA**	**ECS96W4EAA**	**ECS96W8EAA**	**S611B125P3S**
	230V	40		**ECS96W1BAA**	**ECS96W2BAA**	**ECS96W4BAA**	**ECS96W8BAA**	
	460V	100		**ECS96W1CAA**	**ECS96W2CAA**	**ECS96W4CAA**	**ECS96W8CAA**	
	575V	125		**ECS96W1DAA**	**ECS96W2DAA**	**ECS96W4DAA**	**ECS96W8DAA**	
Frame C								
156A	200V	50	120 Vac	**ECS96X1EAA**	**ECS96X2EAA**	**ECS96X4EAA**	**ECS96X8EAA**	**S611C156P3S**
	230V	60		**ECS96X1BAA**	**ECS96X2BAA**	**ECS96X4BAA**	**ECS96X8BAA**	
	460V	125		**ECS96X1CAA**	**ECS96X2CAA**	**ECS96X4CAA**	**ECS96X8CAA**	
	575V	150		**ECS96X1DAA**	**ECS96X2DAA**	**ECS96X4DAA**	**ECS96X8DAA**	
180A	200V	60	120 Vac	**ECS96Y1EAA**	**ECS96Y2EAA**	**ECS96Y4EAA**	**ECS96Y8EAA**	**S611C180P3S**
	230V	60		**ECS96Y1BAA**	**ECS96Y2BAA**	**ECS96Y4BAA**	**ECS96Y8BAA**	
	460V	150		**ECS96Y1CAA**	**ECS96Y2CAA**	**ECS96Y4CAA**	**ECS96Y8CAA**	
	575V	150		**ECS96Y1DAA**	**ECS96Y2DAA**	**ECS96Y4DAA**	**ECS96Y8DAA**	

Notes

① Standard duty horsepower ratings are for 300% ramp current, 15 seconds ramp time, and 115% continuous. Consult Eaton for other ratings.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS96R**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 12**.

Class ECS96—Non-Combination Reduced Voltage Soft Starter—S611, continued

Amps	Motor Voltage	hp ①	Coil Voltage	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ② Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame D								
242A	200V	75	120 Vac	**ECS96Z1EAA**	**ECS96Z2EAA**	**ECS96Z4EAA**	**ECS96Z8EAA**	**S611D242P3S**
	230V	75		**ECS96Z1BAA**	**ECS96Z2BAA**	**ECS96Z4BAA**	**ECS96Z8BAA**	
	460V	200		**ECS96Z1CAA**	**ECS96Z2CAA**	**ECS96Z4CAA**	**ECS96Z8CAA**	
	575V	250		**ECS96Z1DAA**	**ECS96Z2DAA**	**ECS96Z4DAA**	**ECS96Z8DAA**	
Frame E								
302A	200V	100	120 Vac	**ECS9611EAA**	**ECS9612EAA**	**ECS9614EAA**	**ECS9618EAA**	**S611E302P3S**
	230V	100		**ECS9611BAA**	**ECS9612BAA**	**ECS9614BAA**	**ECS9618BAA**	
	460V	250		**ECS9611CAA**	**ECS9612CAA**	**ECS9614CAA**	**ECS9618CAA**	
	575V	300		**ECS9611DAA**	**ECS9612DAA**	**ECS9614DAA**	**ECS9618DAA**	
361A	200V	125	120 Vac	**ECS9621EAA**	**ECS9622EAA**	**ECS9624EAA**	**ECS9628EAA**	**S611E361P3S**
	230V	150		**ECS9621BAA**	**ECS9622BAA**	**ECS9624BAA**	**ECS9628BAA**	
	460V	300		**ECS9621CAA**	**ECS9622CAA**	**ECS9624CAA**	**ECS9628CAA**	
	575V	350		**ECS9621DAA**	**ECS9622DAA**	**ECS9624DAA**	**ECS9628DAA**	
Frame F								
414A	200V	150	120 Vac	**ECS9631EAA**	**ECS9632EAA**	**ECS9634EAA**	**ECS9638EAA**	**S611F414P3S**
	230V	150		**ECS9631BAA**	**ECS9632BAA**	**ECS9634BAA**	**ECS9638BAA**	
	460V	350		**ECS9631CAA**	**ECS9632CAA**	**ECS9634CAA**	**ECS9638CAA**	
	575V	450		**ECS9631DAA**	**ECS9632DAA**	**ECS9634DAA**	**ECS9638DAA**	

Notes

① Standard duty horsepower ratings are for 300% ramp current, 15 seconds ramp time, and 115% continuous. Consult Eaton for other ratings.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS96Z**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 12**.

Combination—Disconnect Switch

Class ECS97—Combination Reduced Voltage Soft Starter—Disconnect Switch (Non-Fusible)—S611

Amps	Motor Voltage	hp ①	Coil Voltage	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ② Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame A								
52A	200V	15	120 Vac	**ECS97R1EAA**	**ECS97R2EAA**	**ECS97R4EAA**	**ECS97R8EAA**	**S611A052P3S**
	230V	15		**ECS97R1BAA**	**ECS97R2BAA**	**ECS97R4BAA**	**ECS97R8BAA**	
	460V	40		**ECS97R1CAA**	**ECS97R2CAA**	**ECS97R4CAA**	**ECS97R8CAA**	
	575V	50		**ECS97R1DAA**	**ECS97R2DAA**	**ECS97R4DAA**	**ECS97R8DAA**	
65A	200V	20	120 Vac	**ECS97S1EAA**	**ECS97S2EAA**	**ECS97S4EAA**	**ECS97S8EAA**	**S611A065P3S**
	230V	20		**ECS97S1BAA**	**ECS97S2BAA**	**ECS97S4BAA**	**ECS97S8BAA**	
	460V	50		**ECS97S1CAA**	**ECS97S2CAA**	**ECS97S4CAA**	**ECS97S8CAA**	
	575V	60		**ECS97S1DAA**	**ECS97S2DAA**	**ECS97S4DAA**	**ECS97S8DAA**	
77A	200V	25	120 Vac	**ECS97T1EAA**	**ECS97T2EAA**	**ECS97T4EAA**	**ECS97T8EAA**	**S611A077P3S**
	230V	25		**ECS97T1BAA**	**ECS97T2BAA**	**ECS97T4BAA**	**ECS97T8BAA**	
	460V	60		**ECS97T1CAA**	**ECS97T2CAA**	**ECS97T4CAA**	**ECS97T8CAA**	
	575V	75		**ECS97T1DAA**	**ECS97T2DAA**	**ECS97T4DAA**	**ECS97T8DAA**	
Frame B								
99A	200V	30	120 Vac	**ECS97V1EAA**	**ECS97V2EAA**	**ECS97V4EAA**	**ECS97V8EAA**	**S611B099P3S**
	230V	30		**ECS97V1BAA**	**ECS97V2BAA**	**ECS97V4BAA**	**ECS97V8BAA**	
	460V	75		**ECS97V1CAA**	**ECS97V2CAA**	**ECS97V4CAA**	**ECS97V8CAA**	
	575V	100		**ECS97V1DAA**	**ECS97V2DAA**	**ECS97V4DAA**	**ECS97V8DAA**	
125A	200V	40	120 Vac	**ECS97W1EAA**	**ECS97W2EAA**	**ECS97W4EAA**	**ECS97W8EAA**	**S611B125P3S**
	230V	40		**ECS97W1BAA**	**ECS97W2BAA**	**ECS97W4BAA**	**ECS97W8BAA**	
	460V	100		**ECS97W1CAA**	**ECS97W2CAA**	**ECS97W4CAA**	**ECS97W8CAA**	
	575V	125		**ECS97W1DAA**	**ECS97W2DAA**	**ECS97W4DAA**	**ECS97W8DAA**	
Frame C								
156A	200V	50	120 Vac	**ECS97X1EAA**	**ECS97X2EAA**	**ECS97X4EAA**	**ECS97X8EAA**	**S611C156P3S**
	230V	60		**ECS97X1BAA**	**ECS97X2BAA**	**ECS97X4BAA**	**ECS97X8BAA**	
	460V	125		**ECS97X1CAA**	**ECS97X2CAA**	**ECS97X4CAA**	**ECS97X8CAA**	
	575V	150		**ECS97X1DAA**	**ECS97X2DAA**	**ECS97X4DAA**	**ECS97X8DAA**	
180A	200V	60	120 Vac	**ECS97Y1EAA**	**ECS97Y2EAA**	**ECS97Y4EAA**	**ECS97Y8EAA**	**S611C180P3S**
	230V	60		**ECS97Y1BAA**	**ECS97Y2BAA**	**ECS97Y4BAA**	**ECS97Y8BAA**	
	460V	150		**ECS97Y1CAA**	**ECS97Y2CAA**	**ECS97Y4CAA**	**ECS97Y8CAA**	
	575V	150		**ECS97Y1DAA**	**ECS97Y2DAA**	**ECS97Y4DAA**	**ECS97Y8DAA**	

Notes

① Standard duty horsepower ratings are for 300% ramp current, 15 seconds ramp time, and 115% continuous. Consult Eaton for other ratings.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS97R**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 12**.

Class ECS97—Combination Reduced Voltage Soft Starter—Disconnect Switch (Non-Fusible)—S611, continued

Amps	Motor Voltage	hp ①	Coil Voltage	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ② Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame D								
242A	200V	75	120 Vac	**ECS97Z1EAA**	**ECS97Z2EAA**	**ECS97Z4EAA**	**ECS97Z8EAA**	**S611D242P3S**
	230V	75		**ECS97Z1BAA**	**ECS97Z2BAA**	**ECS97Z4BAA**	**ECS97Z8BAA**	
	460V	200		**ECS97Z1CAA**	**ECS97Z2CAA**	**ECS97Z4CAA**	**ECS97Z8CAA**	
	575V	250		**ECS97Z1DAA**	**ECS97Z2DAA**	**ECS97Z4DAA**	**ECS97Z8DAA**	
Frame E								
302A	200V	100	120 Vac	**ECS9711EAA**	**ECS9712EAA**	**ECS9714EAA**	**ECS9718EAA**	**S611E302P3S**
	230V	100		**ECS9711BAA**	**ECS9712BAA**	**ECS9714BAA**	**ECS9718BAA**	
	460V	250		**ECS9711CAA**	**ECS9712CAA**	**ECS9714CAA**	**ECS9718CAA**	
	575V	300		**ECS9711DAA**	**ECS9712DAA**	**ECS9714DAA**	**ECS9718DAA**	
361A	200V	125	120 Vac	**ECS9721EAA**	**ECS9722EAA**	**ECS9724EAA**	**ECS9728EAA**	**S611E361P3S**
	230V	150		**ECS9721BAA**	**ECS9722BAA**	**ECS9724BAA**	**ECS9728BAA**	
	460V	300		**ECS9721CAA**	**ECS9722CAA**	**ECS9724CAA**	**ECS9728CAA**	
	575V	350		**ECS9721DAA**	**ECS9722DAA**	**ECS9724DAA**	**ECS9728DAA**	
Frame F								
414A	200V	150	120 Vac	**ECS9731EAA**	**ECS9732EAA**	**ECS9734EAA**	**ECS9738EAA**	**S611F414P3S**
	230V	150		**ECS9731BAA**	**ECS9732BAA**	**ECS9734BAA**	**ECS9738BAA**	
	460V	350		**ECS9731CAA**	**ECS9732CAA**	**ECS9734CAA**	**ECS9738CAA**	
	575V	450		**ECS9731DAA**	**ECS9732DAA**	**ECS9734DAA**	**ECS9738DAA**	

Notes

① Standard duty horsepower ratings are for 300% ramp current, 15 seconds ramp time, and 115% continuous. Consult Eaton for other ratings.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS97Z**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 12**.

Class ECS97—Combination Reduced Voltage Soft Starter—Disconnect Switch (Fusible)—S611

Amps	Motor Voltage	hp ①	Coil Voltage	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ② Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame A								
52A	200V	15	120 Vac	**ECS97R1EAG**	**ECS97R2EAG**	**ECS97R4EAG**	**ECS97R8EAG**	**S611A052P3S**
	230V	15		**ECS97R1BAG**	**ECS97R2BAG**	**ECS97R4BAG**	**ECS97R8BAG**	
	460V	40		**ECS97R1CAG**	**ECS97R2CAG**	**ECS97R4CAG**	**ECS97R8CAG**	
	575V	50		**ECS97R1DAG**	**ECS97R2DAG**	**ECS97R4DAG**	**ECS97R8DAG**	
65A	200V	20	120 Vac	**ECS97S1EAG**	**ECS97S2EAG**	**ECS97S4EAG**	**ECS97S8EAG**	**S611A065P3S**
	230V	20		**ECS97S1BAG**	**ECS97S2BAG**	**ECS97S4BAG**	**ECS97S8BAG**	
	460V	50		**ECS97S1CAG**	**ECS97S2CAG**	**ECS97S4CAG**	**ECS97S8CAG**	
	575V	60		**ECS97S1DAG**	**ECS97S2DAG**	**ECS97S4DAG**	**ECS97S8DAG**	
77A	200V	25	120 Vac	**ECS97T1EAG**	**ECS97T2EAG**	**ECS97T4EAG**	**ECS97T8EAG**	**S611A077P3S**
	230V	25		**ECS97T1BAG**	**ECS97T2BAG**	**ECS97T4BAG**	**ECS97T8BAG**	
	460V	60		**ECS97T1CAG**	**ECS97T2CAG**	**ECS97T4CAG**	**ECS97T8CAG**	
	575V	75		**ECS97T1DAG**	**ECS97T2DAG**	**ECS97T4DAG**	**ECS97T8DAG**	
Frame B								
99A	200V	30	120 Vac	**ECS97V1EAJ**	**ECS97V2EAJ**	**ECS97V4EAJ**	**ECS97V8EAJ**	**S611B099P3S**
	230V	30		**ECS97V1BAJ**	**ECS97V2BAJ**	**ECS97V4BAJ**	**ECS97V8BAJ**	
	460V	75		**ECS97V1CAJ**	**ECS97V2CAJ**	**ECS97V4CAJ**	**ECS97V8CAJ**	
	575V	100		**ECS97V1DAJ**	**ECS97V2DAJ**	**ECS97V4DAJ**	**ECS97V8DAJ**	
125A	200V	40	120 Vac	**ECS97W1EAJ**	**ECS97W2EAJ**	**ECS97W4EAJ**	**ECS97W8EAJ**	**S611B125P3S**
	230V	40		**ECS97W1BAJ**	**ECS97W2BAJ**	**ECS97W4BAJ**	**ECS97W8BAJ**	
	460V	100		**ECS97W1CAJ**	**ECS97W2CAJ**	**ECS97W4CAJ**	**ECS97W8CAJ**	
	575V	125		**ECS97W1DAJ**	**ECS97W2DAJ**	**ECS97W4DAJ**	**ECS97W8DAJ**	
Frame C								
156A	200V	50	120 Vac	**ECS97X1EAL**	**ECS97X2EAL**	**ECS97X4EAL**	**ECS97X8EAL**	**S611C156P3S**
	230V	60		**ECS97X1BAL**	**ECS97X2BAL**	**ECS97X4BAL**	**ECS97X8BAL**	
	460V	125		**ECS97X1CAL**	**ECS97X2CAL**	**ECS97X4CAL**	**ECS97X8CAL**	
	575V	150		**ECS97X1DAL**	**ECS97X2DAL**	**ECS97X4DAL**	**ECS97X8DAL**	
180A	200V	60	120 Vac	**ECS97Y1EAL**	**ECS97Y2EAL**	**ECS97Y4EAL**	**ECS97Y8EAL**	**S611C180P3S**
	230V	60		**ECS97Y1BAL**	**ECS97Y2BAL**	**ECS97Y4BAL**	**ECS97Y8BAL**	
	460V	150		**ECS97Y1CAL**	**ECS97Y2CAL**	**ECS97Y4CAL**	**ECS97Y8CAL**	
	575V	150		**ECS97Y1DAL**	**ECS97Y2DAL**	**ECS97Y4DAL**	**ECS97Y8DAL**	

Notes

① Standard duty horsepower ratings are for 300% ramp current, 15 seconds ramp time, and 115% continuous. Consult Eaton for other ratings.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS97R**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 12**.

Class ECS97—Combination Reduced Voltage Soft Starter—Disconnect Switch (Fusible)—S611, continued

Amps	Motor Voltage	hp ①	Coil Voltage	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ② Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame D								
242A	200V	75	120 Vac	**ECS97Z1EAL**	**ECS97Z2EAL**	**ECS97Z4EAL**	**ECS97Z8EAL**	**S611D242P3S**
	230V	75		**ECS97Z1BAL**	**ECS97Z2BAL**	**ECS97Z4BAL**	**ECS97Z8BAL**	
	460V	200		**ECS97Z1CAL**	**ECS97Z2CAL**	**ECS97Z4CAL**	**ECS97Z8CAL**	
	575V	250		**ECS97Z1DAL**	**ECS97Z2DAL**	**ECS97Z4DAL**	**ECS97Z8DAL**	
Frame E								
302A	200V	100	120 Vac	**ECS9711EAN**	**ECS9712EAN**	**ECS9714EAN**	**ECS9718EAN**	**S611E302P3S**
	230V	100		**ECS9711BAN**	**ECS9712BAN**	**ECS9714BAN**	**ECS9718BAN**	
	460V	250		**ECS9711CAN**	**ECS9712CAN**	**ECS9714CAN**	**ECS9718CAN**	
	575V	300		**ECS9711DAN**	**ECS9712DAN**	**ECS9714DAN**	**ECS9718DAN**	
361A	200V	125	120 Vac	**ECS9721EAN**	**ECS9722EAN**	**ECS9724EAN**	**ECS9728EAN**	**S611E361P3S**
	230V	150		**ECS9721BAN**	**ECS9722BAN**	**ECS9724BAN**	**ECS9728BAN**	
	460V	300		**ECS9721CAN**	**ECS9722CAN**	**ECS9724CAN**	**ECS9728CAN**	
	575V	350		**ECS9721DAN**	**ECS9722DAN**	**ECS9724DAN**	**ECS9728DAN**	
Frame F								
414A	200V	150	120 Vac	**ECS9731EAN**	**ECS9732EAN**	**ECS9734EAN**	**ECS9738EAN**	**S611F414P3S**
	230V	150		**ECS9731BAN**	**ECS9732BAN**	**ECS9734BAN**	**ECS9738BAN**	
	460V	350		**ECS9731CAN**	**ECS9732CAN**	**ECS9734CAN**	**ECS9738CAN**	
	575V	450		**ECS9731DAN**	**ECS9732DAN**	**ECS9734DAN**	**ECS9738DAN**	

Notes

① Standard duty horsepower ratings are for 300% ramp current, 15 seconds ramp time, and 115% continuous. Consult Eaton for other ratings.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS97Z**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 12**.

Combination—Circuit Breaker

Class ECS98—Combination Reduced Voltage Soft Starter—Circuit Breaker—S611

Amps	Motor Voltage	hp ①	Coil Voltage	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ② Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame A								
52A	200V	15	120 Vac	**ECS98R1EAW**	**ECS98R2EAW**	**ECS98R4EAW**	**ECS98R8EAW**	**S611A052P3S**
	230V	15		**ECS98R1BAW**	**ECS98R2BAW**	**ECS98R4BAW**	**ECS98R8BAW**	
	460V	40		**ECS98R1CAW**	**ECS98R2CAW**	**ECS98R4CAW**	**ECS98R8CAW**	
	575V	50		**ECS98R1DAW**	**ECS98R2DAW**	**ECS98R4DAW**	**ECS98R8DAW**	
65A	200V	20	120 Vac	**ECS98S1EAG**	**ECS98S2EAG**	**ECS98S4EAG**	**ECS98S8EAG**	**S611A065P3S**
	230V	20		**ECS98S1BAG**	**ECS98S2BAG**	**ECS98S4BAG**	**ECS98S8BAG**	
	460V	50		**ECS98S1CAG**	**ECS98S2CAG**	**ECS98S4CAG**	**ECS98S8CAG**	
	575V	60		**ECS98S1DAG**	**ECS98S2DAG**	**ECS98S4DAG**	**ECS98S8DAG**	
77A	200V	25	120 Vac	**ECS98T1EAG**	**ECS98T2EAG**	**ECS98T4EAG**	**ECS98T8EAG**	**S611A077P3S**
	230V	25		**ECS98T1BAG**	**ECS98T2BAG**	**ECS98T4BAG**	**ECS98T8BAG**	
	460V	60		**ECS98T1CAG**	**ECS98T2CAG**	**ECS98T4CAG**	**ECS98T8CAG**	
	575V	75		**ECS98T1DAG**	**ECS98T2DAG**	**ECS98T4DAG**	**ECS98T8DAG**	
Frame B								
99A	200V	30	120 Vac	**ECS98V1EAH**	**ECS98V2EAH**	**ECS98V4EAH**	**ECS98V8EAH**	**S611B099P3S**
	230V	30		**ECS98V1BAH**	**ECS98V2BAH**	**ECS98V4BAH**	**ECS98V8BAH**	
	460V	75		**ECS98V1CAH**	**ECS98V2CAH**	**ECS98V4CAH**	**ECS98V8CAH**	
	575V	100		**ECS98V1DAH**	**ECS98V2DAH**	**ECS98V4DAH**	**ECS98V8DAH**	
125A	200V	40	120 Vac	**ECS98W1EAH**	**ECS98W2EAH**	**ECS98W4EAH**	**ECS98W8EAH**	**S611B125P3S**
	230V	40		**ECS98W1BAH**	**ECS98W2BAH**	**ECS98W4BAH**	**ECS98W8BAH**	
	460V	100		**ECS98W1CAH**	**ECS98W2CAH**	**ECS98W4CAH**	**ECS98W8CAH**	
	575V	125		**ECS98W1DAH**	**ECS98W2DAH**	**ECS98W4DAH**	**ECS98W8DAH**	
Frame C								
156A	200V	50	120 Vac	**ECS98X1EAJ**	**ECS98X2EAJ**	**ECS98X4EAJ**	**ECS98X8EAJ**	**S611C156P3S**
	230V	60		**ECS98X1BAJ**	**ECS98X2BAJ**	**ECS98X4BAJ**	**ECS98X8BAJ**	
	460V	125		**ECS98X1CAJ**	**ECS98X2CAJ**	**ECS98X4CAJ**	**ECS98X8CAJ**	
	575V	150		**ECS98X1DAJ**	**ECS98X2DAJ**	**ECS98X4DAJ**	**ECS98X8DAJ**	
180A	200V	60	120 Vac	**ECS98Y1EAJ**	**ECS98Y2EAJ**	**ECS98Y4EAJ**	**ECS98Y8EAJ**	**S611C180P3S**
	230V	60		**ECS98Y1BAJ**	**ECS98Y2BAJ**	**ECS98Y4BAJ**	**ECS98Y8BAJ**	
	460V	150		**ECS98Y1CAJ**	**ECS98Y2CAJ**	**ECS98Y4CAJ**	**ECS98Y8CAJ**	
	575V	150		**ECS98Y1DAJ**	**ECS98Y2DAJ**	**ECS98Y4DAJ**	**ECS98Y8DAJ**	

Notes

① Standard duty horsepower ratings are for 300% ramp current, 15 seconds ramp time, and 115% continuous. Consult Eaton for other ratings.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS98R**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 12**.

Class ECS98—Combination Reduced Voltage Soft Starter—Circuit Breaker—S611, continued

Amps	Motor Voltage	hp ①	Coil Voltage	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ② Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame D								
242A	200V	75	120 Vac	**ECS98Z1EAK**	**ECS98Z2EAK**	**ECS98Z4EAK**	**ECS98Z8EAK**	**S611D242P3S**
	230V	75		**ECS98Z1BAK**	**ECS98Z2BAK**	**ECS98Z4BAK**	**ECS98Z8BAK**	
	460V	200		**ECS98Z1CAK**	**ECS98Z2CAK**	**ECS98Z4CAK**	**ECS98Z8CAK**	
	575V	250		**ECS98Z1DAK**	**ECS98Z2DAK**	**ECS98Z4DAK**	**ECS98Z8DAK**	
Frame E								
302A	200V	100	120 Vac	**ECS9811EAK**	**ECS9812EAK**	**ECS9814EAK**	**ECS9818EAK**	**S611E302P3S**
	230V	100		**ECS9811BAK**	**ECS9812BAK**	**ECS9814BAK**	**ECS9818BAK**	
	460V	250		**ECS9811CAK**	**ECS9812CAK**	**ECS9814CAK**	**ECS9818CAK**	
	575V	300		**ECS9811DAK**	**ECS9812DAK**	**ECS9814DAK**	**ECS9818DAK**	
361A	200V	125	120 Vac	**ECS9821EAL**	**ECS9822EAL**	**ECS9824EAL**	**ECS9828EAL**	**S611E361P3S**
	230V	150		**ECS9821BAL**	**ECS9822BAL**	**ECS9824BAL**	**ECS9828BAL**	
	460V	300		**ECS9821CAL**	**ECS9822CAL**	**ECS9824CAL**	**ECS9828CAL**	
	575V	350		**ECS9821DAL**	**ECS9822DAL**	**ECS9824DAL**	**ECS9828DAL**	
Frame F								
414A	200V	150	120 Vac	**ECS9831EAL**	**ECS9832EAL**	**ECS9834EAL**	**ECS9838EAL**	**S611F414P3S**
	230V	150		**ECS9831BAL**	**ECS9832BAL**	**ECS9834BAL**	**ECS9838BAL**	
	460V	350		**ECS9831CAL**	**ECS9832CAL**	**ECS9834CAL**	**ECS9838CAL**	
	575V	450		**ECS9831DAL**	**ECS9832DAL**	**ECS9834DAL**	**ECS9838DAL**	

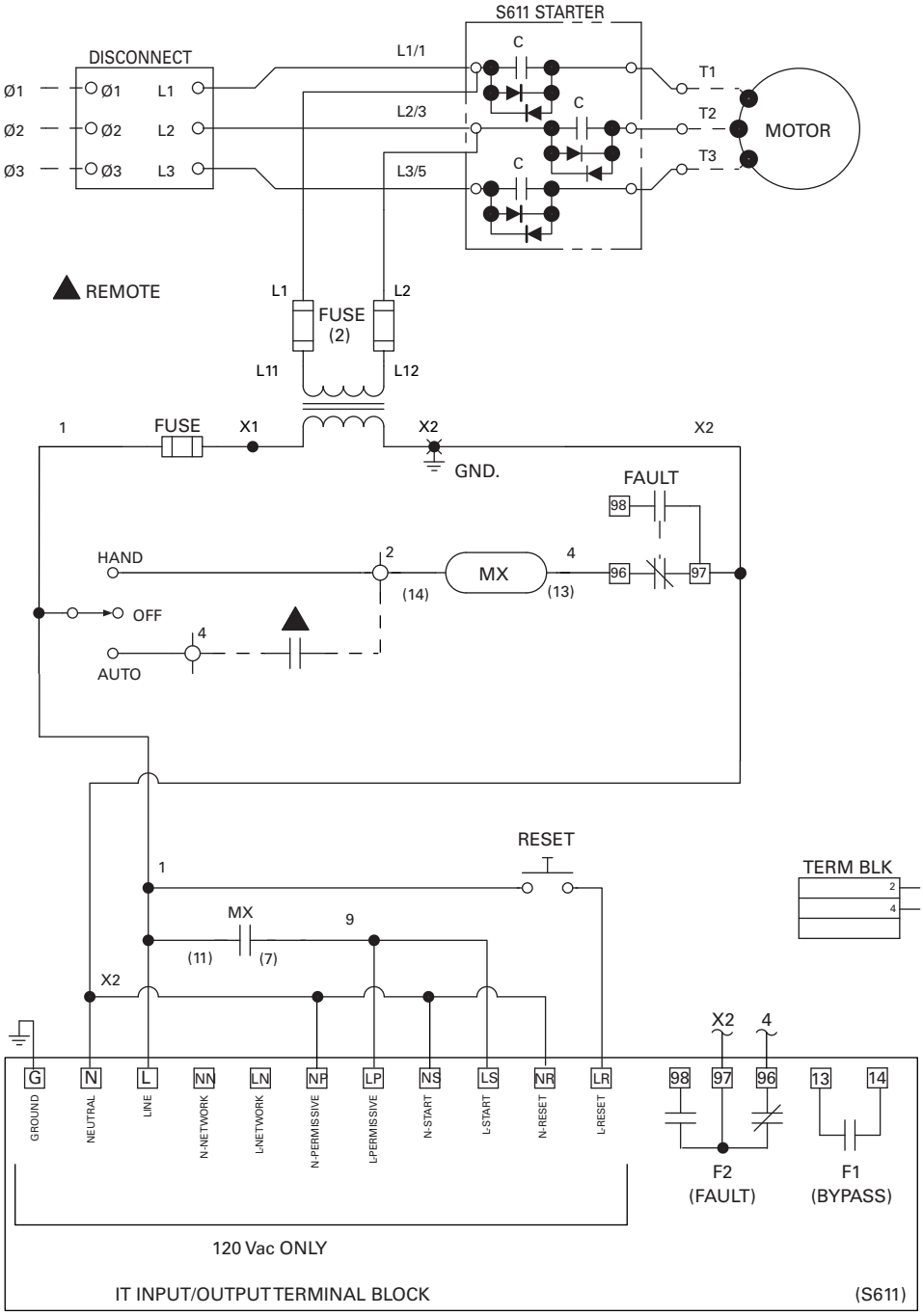
Notes

① Standard duty horsepower ratings are for 300% ramp current, 15 seconds ramp time, and 115% continuous. Consult Eaton for other ratings.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS98Z**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 12**.

Wiring Diagram

Sample—S611 with CPT and HOA Selector Switch



Dimensions

See **Tab 14** for box dimensions for Type 1, 3R, 4X and 12.

Minimum Enclosure Box Numbers

Rating	SSRV	Non-Combination Box No. ①	Combination with Disconnect Switch Box No. ①	Combination with Circuit Breaker Box No. ①
52A	S611	D	D	D
65A	S611	D	D	D
77A	S611	D	D	D
99A	S611	D	D	D
125A	S611	D	D	D
156A	S611	E	F1E	E
180A	S611	E	F1E	E
242A	S611	E	F1E	E
302A	S611	F1E	F2E	F1E
361A	S611	F1E	F2E	F1E
414A	S611	F1E	F2E	F1E

Lug Kits

Description	S611 Current Rating	Accessory Kit Part Number
Lug kit—mechanical	52–77A	**S611-LUG-M01**
	99–125A	**S611-LUG-M02**
	156–242A	**S611-LUG-M03**
	302–414A	**S611-LUG-M04**

Note

① Enclosure space will also accommodate two four-pole relays, CPT, and terminal blocks.

Reduced Voltage Starter

Contents

5

Product Description

Eaton's revolutionary design for soft starters is shown in the S801+ and S811+ soft starter products that are members of the Intelligent Technologies (***IT.***) family of products. These reduced voltage soft starters are the most compact, multi-functional, easy-to-install products on the market. Their superiority begins with the control package, which features 24 Vdc control, onboard Digital Signal Processor (DSP), and use of a low impedance run contactor, all of which contribute to the ***IT.*** soft starter's safety, advanced functionality and compact size.

Designed to control acceleration and deceleration of three-phase motors, products are available from 11 to 1000 amps and are suitable for mounting in a variety of enclosures including Type 1, 12, 3R, 4, 4X and 7/9.

- Built-in overload protection
  - Adjustable trip class 5, 10, 20, 30
  - Programmable, 31–100% FLA (3.2:1)
  - Selectable phase loss protection
- Selectable current limit or ramp start
- Adjustable ramp times
  - 0–180 seconds standard
  - Extended ramps available
- Adjustable torque control
- Adjustable kick start control
- Soft stop control
  - 0–60 seconds standard
  - Extended times available
- Built-in low impedance contactor
- Six SCR control in all units
- Selectable phase reversal protection
- Digital interface module

Features and Benefits

- Mechanical stress on system
  - Reduced wear on belts, gears, chains, clutches, shafts and bearings. You can get up to 2–6 times the life on standard belts by switching to a soft starter
  - Elimination of water-hammer in pumping applications extends component life and helps limit leakage in system
  - Lower shock to product on conveyor lines and material handling gear
  - Able to catch motors and fans on the fly and control their acceleration
- Electrical system improvements
  - Limits the peak inrush current as required by many local codes
  - Helps to eliminate sags on the plant electrical grid when starting large loads, thus avoiding brownout conditions
- 24 Vdc advantages
  - Offers improved personnel safety by eliminating the need for 120 Vac in the enclosure
  - Soft starter able to ride through 50% voltage conditions indefinitely due to 24 Vdc power supply and 0% for up to 100 mS
- 690V option available on 180A ratings and larger

Digital Interface Module

The S811+ has an easy to use Digital Interface Module (DIM) that allows the user to configure the device and to read system parameters. The DIM includes an LCD display and keypad to scroll through the various menus. The DIM allows the user to modify control parameters, enable or disable protections, set communication variables, monitor system parameters such as line voltages and currents, and access the fault queue.

The DIM can be removed from the S811+ and remote mounted. Kits are available to door mount the DIM, enabling users to safely configure, commission, monitor and troubleshoot the system at the electrical panel without opening the enclosure door.

Options

LCD Display

- 2 line x 20 character LED back-lit LCD display
- NEMA 4 rated
- Parameters
  - Voltage L-L (AB, BC, AC)
  - Phase current
  - Average current
  - Overload current setting
  - Pole temperature
  - Relay trip class
  - Thermal pile
  - Average line current as % of FLA
  - DC control voltage
  - Start count
  - Fault history
- English or Spanish version

Options

Description	Modification Code
Pump control option	**P42**
Door mount keypad	**K5**
Extended ramp	**R1**

Pump Control Option

- Designed to reduce "water- hammer" during start-up and stopping sequences
- Stop ramp extended to 120 seconds to help control larger motors and systems with long piping runs

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL Listed
- IEC 947-4-2
- EN 60947.2 (for motor controller)
- cUL (indicates appropriate CSA Standard investigation)
- ABS Type Approved
- OSHPD Certified (OSP-0015-10)

Additional Reference

Cover Control **V10-T5-18**
Dimensions . . . . . **Tab 14**
Accessories and Modifications . . . . . **Tab 15**
Technical Data and Specifications . . . . . **Tab 17**

Catalog Number Selection

IT. Solid-State Soft Starters

EC S 90 S 1 C A A - ____

Type

S = Solid-state

Class

90 = Non-combination reduced voltage soft starter—S801+	**V10-T5-19**
91 = Combination reduced voltage soft starter—fusible disconnect—S801+	**V10-T5-23**
92 = Combination reduced voltage soft starter—circuit breaker—S801+	**V10-T5-27**
93 = Non-combination reduced voltage soft starter—S811+	**V10-T5-21**
94 = Combination reduced voltage soft starter—fusible disconnect—S811+	**V10-T5-25**
95 = Combination reduced voltage soft starter—circuit breaker—S811+	**V10-T5-29**

Amps

S801+/S811+

Q = 37	**Z** = 240	**5** = 650
S = 66	**1** = 304	**6** = 720
V = 105	**2** = 360	**7** = 850
W = 135	**3** = 420	**8** = 1000
Y = 180	**4** = 500	

Enclosure Type

1 = Type 1
2 = Type 3R
3 = Type 4
4 = Type 4X (304-Grade SS)
6 = Type 7/9
8 = Type 12
9 = Type 4X 316-Grade SS)

Voltage

B = 230V	**E** = 200V
C = 460V	**Q** = 24 Vdc
D = 575V	

Cover Control

See **Page V10-T5-18** for options

Disconnect Fuse Clip Ratings

A = None	**G** = 100A/600V R	**N** = 600A/600V R
B = 30A/250V R	**H** = 200A/250V R	**P** = 800A/600V L
C = 30A/600V R	**J** = 200A/600V R	**Q** = 1200A/600V L
D = 60A/250V R	**K** = 400A/250V R	**R** = 1600A/600V L
E = 60A/600V R	**L** = 400A/600V R	**S** = 2000A/600V L
F = 100A/250V R	**M** = 600A/250V R	**T** = By description

Breaker

A = None	**F** = 50A	**K** = 400A
B = 3A	**W** = 70A	**L** = 600A
C = 7A	**G** = 100A	**P** = 1200A
D = 15A	**H** = 150A	**Q** = 1600A
E = 30A	**J** = 250A	

Modification Codes

See **Tab 15**

Cover Control

Flange Control Kits

For on-the-job conversion of Type 1, 3R, 4, 4X and 12 enclosed starters. Knockouts are provided on the Type 1 flange. Type 3R, 4, 4X and 12 have prepunched holes with removable hole plugs.

Factory Installed Pilot Devices

To order factory installed pilot devices, change the ninth character of the catalog number to the alpha shown in the table below. Example: To order an **ECS90J4CAA** with START/STOP pushbuttons and a red pilot light, change the **A** to a **C**, that is, ECS90J4C**C**A.

10250T Cover Control Kits

Non-Reversing Pilot Devices

Description	Factory Installed Flange Control Position 9 Alpha	Field Installation Kits Catalog Number
No cover mounted pilot devices	**A**	—
START/STOP pushbuttons	**B**	**C400T1**
With red RUN pilot light	**C**	—
With red RUN/green OFF lights	**D**	—
ON/OFF pushbuttons	**E**	**C400T2**
With red RUN pilot light	**F**	—
With red RUN/green OFF lights	**G**	—
HAND/OFF/AUTO selector switch	**H**	**C400T12**
With red RUN pilot light	**J**	—
With red RUN/green OFF lights	**K**	—
START pushbutton	**L**	**C400T3**
ON pushbutton	**M**	**C400T4**
OFF pushbutton	**N**	**C400T5**
Red RUN pilot light	**P**	**C400T9** ①
Green OFF	**Q**	**C400T10** ①
Red RUN/green OFF pilot lights	**R**	**C400T11** ①
START/STOP selector switch	**S**	**C400T13**
With red RUN pilot light	**T**	—
With red RUN/green OFF lights	**U**	—
ON/OFF selector switch	**V**	**C400T14**
With red RUN pilot light	**W**	—
With red RUN/green OFF lights	**X**	—

Note

① Add code letter from the table below to catalog number for voltage—kits only. Example: C400T9**B**.

Rating	Code Letter	Rating	Code Letter	Rating	Code Letter
120V 60 Hz	**A**	240V 60 Hz	**B**	480V 60 Hz	**C**
208V 60 Hz	**E**	380V 50 Hz	**L**	600V 60 Hz	**D**

Product Selection

Non-Combination

Class ECS90—Non-Combination Reduced Voltage Soft Starter—S801+

Amps	Motor Voltage	hp ①②	Coil Voltage ③	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ④ Catalog Number	Type 7/9 Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame Size—65 mm									
37A	200V	10	24 Vdc	**ECS90Q1EAA**	**ECS90Q2EAA**	**ECS90Q4EAA**	**ECS90Q6EAA**	**ECS90Q8EAA**	**S801+N37N3S**
	230V	10		**ECS90Q1BAA**	**ECS90Q2BAA**	**ECS90Q4BAA**	**ECS90Q6BAA**	**ECS90Q8BAA**	
	460V	20		**ECS90Q1CAA**	**ECS90Q2CAA**	**ECS90Q4CAA**	**ECS90Q6CAA**	**ECS90Q8CAA**	
	575V	30		**ECS90Q1DAA**	**ECS90Q2DAA**	**ECS90Q4DAA**	**ECS90Q6DAA**	**ECS90Q8DAA**	
66A	200V	15	24 Vdc	**ECS90S1EAA**	**ECS90S2EAA**	**ECS90S4EAA**	**ECS90S6EAA**	**ECS90S8EAA**	**S801+N66N3S**
	230V	20		**ECS90S1BAA**	**ECS90S2BAA**	**ECS90S4BAA**	**ECS90S6BAA**	**ECS90S8BAA**	
	460V	40		**ECS90S1CAA**	**ECS90S2CAA**	**ECS90S4CAA**	**ECS90S6CAA**	**ECS90S8CAA**	
	575V	50		**ECS90S1DAA**	**ECS90S2DAA**	**ECS90S4DAA**	**ECS90S6DAA**	**ECS90S8DAA**	
Frame Size—110 mm									
105A	200V	25	24 Vdc	**ECS90V1EAA**	**ECS90V2EAA**	**ECS90V4EAA**	**ECS90V6EAA**	**ECS90V8EAA**	**S801+R10N3S**
	230V	30		**ECS90V1BAA**	**ECS90V2BAA**	**ECS90V4BAA**	**ECS90V6BAA**	**ECS90V8BAA**	
	460V	60		**ECS90V1CAA**	**ECS90V2CAA**	**ECS90V4CAA**	**ECS90V6CAA**	**ECS90V8CAA**	
	575V	75		**ECS90V1DAA**	**ECS90V2DAA**	**ECS90V4DAA**	**ECS90V6DAA**	**ECS90V8DAA**	
135A	200V	30	24 Vdc	**ECS90W1EAA**	**ECS90W2EAA**	**ECS90W4EAA**	**ECS90W6EAA**	**ECS90W8EAA**	**S801+R13N3S**
	230V	40		**ECS90W1BAA**	**ECS90W2BAA**	**ECS90W4BAA**	**ECS90W6BAA**	**ECS90W8BAA**	
	460V	75		**ECS90W1CAA**	**ECS90W2CAA**	**ECS90W4CAA**	**ECS90W6CAA**	**ECS90W8CAA**	
	575V	100		**ECS90W1DAA**	**ECS90W2DAA**	**ECS90W4DAA**	**ECS90W6DAA**	**ECS90W8DAA**	
Frame Size—200 mm									
180A	200V	50	24 Vdc	**ECS90Y1EAA**	**ECS90Y2EAA**	**ECS90Y4EAA**	**ECS90Y6EAA**	**ECS90Y8EAA**	**S801+T18N3S**
	230V	60		**ECS90Y1BAA**	**ECS90Y2BAA**	**ECS90Y4BAA**	**ECS90Y6BAA**	**ECS90Y8BAA**	
	460V	125		**ECS90Y1CAA**	**ECS90Y2CAA**	**ECS90Y4CAA**	**ECS90Y6CAA**	**ECS90Y8CAA**	
	575V	150		**ECS90Y1DAA**	**ECS90Y2DAA**	**ECS90Y4DAA**	**ECS90Y6DAA**	**ECS90Y8DAA**	
240A	200V	60	24 Vdc	**ECS90Z1EAA**	**ECS90Z2EAA**	**ECS90Z4EAA**	**ECS90Z6EAA**	**ECS90Z8EAA**	**S801+T24N3S**
	230V	75		**ECS90Z1BAA**	**ECS90Z2BAA**	**ECS90Z4BAA**	**ECS90Z6BAA**	**ECS90Z8BAA**	
	460V	150		**ECS90Z1CAA**	**ECS90Z2CAA**	**ECS90Z4CAA**	**ECS90Z6CAA**	**ECS90Z8CAA**	
	575V	200		**ECS90Z1DAA**	**ECS90Z2DAA**	**ECS90Z4DAA**	**ECS90Z6DAA**	**ECS90Z8DAA**	
304A	200V	75	24 Vdc	**ECS9011EAA**	**ECS9012EAA**	**ECS9014EAA**	**ECS9016EAA**	**ECS9018EAA**	**S801+T30N3S**
	230V	100		**ECS9011BAA**	**ECS9012BAA**	**ECS9014BAA**	**ECS9016BAA**	**ECS9018BAA**	
	460V	200		**ECS9011CAA**	**ECS9012CAA**	**ECS9014CAA**	**ECS9016CAA**	**ECS9018CAA**	
	575V	250		**ECS9011DAA**	**ECS9012DAA**	**ECS9014DAA**	**ECS9016DAA**	**ECS9018DAA**	

Notes

① Standard duty horsepower ratings are for 300% ramp current, 30 seconds ramp time, and three starts per hour. Consult Eaton for other ratings.

② Based on 1.15 service factor.

③ All ***IT.*** soft starters are furnished with 24 Vdc coils and control power supplies. For 24 Vdc separate control, use modification code C35 and change the eighth digit to **Q** (that is, ECS90S1**E**AA becomes ECS90S1**Q**AA-C35).

④ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS90S**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECS90—Non-Combination Reduced Voltage Soft Starter—S801+, continued

Amps	Motor Voltage	hp ①②	Coil Voltage ③	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ④ Catalog Number	Type 7/9 Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame Size—290 mm									
360A	200V	100	24 Vdc	**ECS9021EAA**	**ECS9022EAA**	**ECS9024EAA**	**ECS9026EAA**	**ECS9028EAA**	**S801+V36N3S**
	230V	125		**ECS9021BAA**	**ECS9022BAA**	**ECS9024BAA**	**ECS9026BAA**	**ECS9028BAA**	
	460V	250		**ECS9021CAA**	**ECS9022CAA**	**ECS9024CAA**	**ECS9026CAA**	**ECS9028CAA**	
	575V	300		**ECS9021DAA**	**ECS9022DAA**	**ECS9024DAA**	**ECS9026DAA**	**ECS9028DAA**	
420A	200V	125	24 Vdc	**ECS9031EAA**	**ECS9032EAA**	**ECS9034EAA**	**ECS9036EAA**	**ECS9038EAA**	**S801+V42N3S**
	230V	150		**ECS9031BAA**	**ECS9032BAA**	**ECS9034BAA**	**ECS9036BAA**	**ECS9038BAA**	
	460V	300		**ECS9031CAA**	**ECS9032CAA**	**ECS9034CAA**	**ECS9036CAA**	**ECS9038CAA**	
	575V	350		**ECS9031DAA**	**ECS9032DAA**	**ECS9034DAA**	**ECS9036DAA**	**ECS9038DAA**	
500A	200V	150	24 Vdc	**ECS9041EAA**	**ECS9042EAA**	**ECS9044EAA**	**ECS9046EAA**	**ECS9048EAA**	**S801+V50N3S**
	230V	150		**ECS9041BAA**	**ECS9042BAA**	**ECS9044BAA**	**ECS9046BAA**	**ECS9048BAA**	
	460V	350		**ECS9041CAA**	**ECS9042CAA**	**ECS9044CAA**	**ECS9046CAA**	**ECS9048CAA**	
	575V	450		**ECS9041DAA**	**ECS9042DAA**	**ECS9044DAA**	**ECS9046DAA**	**ECS9048DAA**	
650A	200V	200	24 Vdc	**ECS9051EAA**	**ECS9052EAA**	**ECS9054EAA**	**ECS9056EAA**	**ECS9058EAA**	**S801+V65N3S**
	230V	200		**ECS9051BAA**	**ECS9052BAA**	**ECS9054BAA**	**ECS9056BAA**	**ECS9058BAA**	
	460V	450		**ECS9051CAA**	**ECS9052CAA**	**ECS9054CAA**	**ECS9056CAA**	**ECS9058CAA**	
	575V	500		**ECS9051DAA**	**ECS9052DAA**	**ECS9054DAA**	**ECS9056DAA**	**ECS9058DAA**	
720A	230V	250	24 Vdc	**ECS9061BAA**	**ECS9062BAA**	**ECS9064BAA**	**ECS9066BAA**	**ECS9068BAA**	**S801+V72N3S**
	460V	500		**ECS9061CAA**	**ECS9062CAA**	**ECS9064CAA**	**ECS9066CAA**	**ECS9068CAA**	
	575V	600		**ECS9061DAA**	**ECS9062DAA**	**ECS9064DAA**	**ECS9066DAA**	**ECS9068DAA**	
850A	230V	300	24 Vdc	**ECS9071BAA**	**ECS9072BAA**	**ECS9074BAA**	**ECS9076BAA**	**ECS9078BAA**	**S801+V85N3S**
	460V	600		**ECS9071CAA**	**ECS9072CAA**	**ECS9074CAA**	**ECS9076CAA**	**ECS9078CAA**	
	575V	700		**ECS9071DAA**	**ECS9072DAA**	**ECS9074DAA**	**ECS9076DAA**	**ECS9078DAA**	
1000A	230V	350	24 Vdc	**ECS9081BAA**	**ECS9082BAA**	**ECS9084BAA**	**ECS9086BAA**	**ECS9088BAA**	**S801+V10N3S**
	460V	700		**ECS9081CAA**	**ECS9082CAA**	**ECS9084CAA**	**ECS9086CAA**	**ECS9088CAA**	
	575V	800		**ECS9081DAA**	**ECS9082DAA**	**ECS9084DAA**	**ECS9086DAA**	**ECS9088DAA**	

Notes

① Standard duty horsepower ratings are for 300% ramp current, 30 seconds ramp time, and three starts per hour. Consult Eaton for other ratings.

② Based on 1.15 service factor.

③ All *IT.* soft starters are furnished with 24 Vdc coils and control power supplies. For 24 Vdc separate control, use modification code **C35** and change the eighth digit to **0** (that is, ECS90S1**E**AA becomes ECS90S1**0**AA-C35).

④ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECS90S**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECS93—Non-Combination Reduced Voltage Soft Starter—S811+ ①

Amps	Motor Voltage	hp ②③	Coil Voltage ④	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ⑤ Catalog Number	Type 7/9 Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame Size—65 mm									
37A	200V	10	24 Vdc	**ECS93Q1EAA**	**ECS93Q2EAA**	**ECS93Q4EAA**	**ECS93Q6EAA**	**ECS93Q8EAA**	**S811+N37N3S**
	230V	10		**ECS93Q1BAA**	**ECS93Q2BAA**	**ECS93Q4BAA**	**ECS93Q6BAA**	**ECS93Q8BAA**	
	460V	20		**ECS93Q1CAA**	**ECS93Q2CAA**	**ECS93Q4CAA**	**ECS93Q6CAA**	**ECS93Q8CAA**	
	575V	30		**ECS93Q1DAA**	**ECS93Q2DAA**	**ECS93Q4DAA**	**ECS93Q6DAA**	**ECS93Q8DAA**	
66A	200V	15	24 Vdc	**ECS93S1EAA**	**ECS93S2EAA**	**ECS93S4EAA**	**ECS93S6EAA**	**ECS93S8EAA**	**S811+N66N3S**
	230V	20		**ECS93S1BAA**	**ECS93S2BAA**	**ECS93S4BAA**	**ECS93S6BAA**	**ECS93S8BAA**	
	460V	40		**ECS93S1CAA**	**ECS93S2CAA**	**ECS93S4CAA**	**ECS93S6CAA**	**ECS93S8CAA**	
	575V	50		**ECS93S1DAA**	**ECS93S2DAA**	**ECS93S4DAA**	**ECS93S6DAA**	**ECS93S8DAA**	
Frame Size—110 mm									
105A	200V	25	24 Vdc	**ECS93V1EAA**	**ECS93V2EAA**	**ECS93V4EAA**	**ECS93V6EAA**	**ECS93V8EAA**	**S811+R10N3S**
	230V	30		**ECS93V1BAA**	**ECS93V2BAA**	**ECS93V4BAA**	**ECS93V6BAA**	**ECS93V8BAA**	
	460V	60		**ECS93V1CAA**	**ECS93V2CAA**	**ECS93V4CAA**	**ECS93V6CAA**	**ECS93V8CAA**	
	575V	75		**ECS93V1DAA**	**ECS93V2DAA**	**ECS93V4DAA**	**ECS93V6DAA**	**ECS93V8DAA**	
135A	200V	30	24 Vdc	**ECS93W1EAA**	**ECS93W2EAA**	**ECS93W4EAA**	**ECS93W6EAA**	**ECS93W8EAA**	**S811+R13N3S**
	230V	40		**ECS93W1BAA**	**ECS93W2BAA**	**ECS93W4BAA**	**ECS93W6BAA**	**ECS93W8BAA**	
	460V	75		**ECS93W1CAA**	**ECS93W2CAA**	**ECS93W4CAA**	**ECS93W6CAA**	**ECS93W8CAA**	
	575V	100		**ECS93W1DAA**	**ECS93W2DAA**	**ECS93W4DAA**	**ECS93W6DAA**	**ECS93W8DAA**	
Frame Size—200 mm									
180A	200V	50	24 Vdc	**ECS93Y1EAA**	**ECS93Y2EAA**	**ECS93Y4EAA**	**ECS93Y6EAA**	**ECS93Y8EAA**	**S811+T18N3S**
	230V	60		**ECS93Y1BAA**	**ECS93Y2BAA**	**ECS93Y4BAA**	**ECS93Y6BAA**	**ECS93Y8BAA**	
	460V	125		**ECS93Y1CAA**	**ECS93Y2CAA**	**ECS93Y4CAA**	**ECS93Y6CAA**	**ECS93Y8CAA**	
	575V	150		**ECS93Y1DAA**	**ECS93Y2DAA**	**ECS93Y4DAA**	**ECS93Y6DAA**	**ECS93Y8DAA**	
240A	200V	60	24 Vdc	**ECS93Z1EAA**	**ECS93Z2EAA**	**ECS93Z4EAA**	**ECS93Z6EAA**	**ECS93Z8EAA**	**S811+T24N3S**
	230V	75		**ECS93Z1BAA**	**ECS93Z2BAA**	**ECS93Z4BAA**	**ECS93Z6BAA**	**ECS93Z8BAA**	
	460V	150		**ECS93Z1CAA**	**ECS93Z2CAA**	**ECS93Z4CAA**	**ECS93Z6CAA**	**ECS93Z8CAA**	
	575V	200		**ECS93Z1DAA**	**ECS93Z2DAA**	**ECS93Z4DAA**	**ECS93Z6DAA**	**ECS93Z8DAA**	
304A	200V	75	24 Vdc	**ECS9311EAA**	**ECS9312EAA**	**ECS9314EAA**	**ECS9316EAA**	**ECS9318EAA**	**S811+T30N3S**
	230V	100		**ECS9311BAA**	**ECS9312BAA**	**ECS9314BAA**	**ECS9316BAA**	**ECS9318BAA**	
	460V	200		**ECS9311CAA**	**ECS9312CAA**	**ECS9314CAA**	**ECS9316CAA**	**ECS9318CAA**	
	575V	250		**ECS9311DAA**	**ECS9312DAA**	**ECS9314DAA**	**ECS9316DAA**	**ECS9318DAA**	

Notes

① Digital Interface Module (DIM) is mounted on door as option.

② Standard duty horsepower ratings are for 300% ramp current, 30 seconds ramp time, and three starts per hour. Consult Eaton for other ratings.

③ Based on 1.15 service factor.

④ All ***IT.*** soft starters are furnished with 24 Vdc coils and control power supplies. For 24 Vdc separate control, use modification code **C35** and change the eighth digit to **Q** (that is, ECS90S1**E**AA becomes ECS90S1**Q**AA-C35).

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS93S**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECS93—Non-Combination Reduced Voltage Soft Starter—S811+, continued ①

Amps	Motor Voltage	hp ②③	Coil Voltage ④	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ⑤ Catalog Number	Type 7/9 Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame Size—290 mm									
360A	200V	100	24 Vdc	**ECS9321EAA**	**ECS9322EAA**	**ECS9324EAA**	**ECS9326EAA**	**ECS9328EAA**	**S811+V36N3S**
	230V	125		**ECS9321BAA**	**ECS9322BAA**	**ECS9324BAA**	**ECS9326BAA**	**ECS9328BAA**	
	460V	250		**ECS9321CAA**	**ECS9322CAA**	**ECS9324CAA**	**ECS9326CAA**	**ECS9328CAA**	
	575V	300		**ECS9321DAA**	**ECS9322DAA**	**ECS9324DAA**	**ECS9326DAA**	**ECS9328DAA**	
420A	200V	125	24 Vdc	**ECS9331EAA**	**ECS9332EAA**	**ECS9334EAA**	**ECS9336EAA**	**ECS9338EAA**	**S811+V42N3S**
	230V	150		**ECS9331BAA**	**ECS9332BAA**	**ECS9334BAA**	**ECS9336BAA**	**ECS9338BAA**	
	460V	300		**ECS9331CAA**	**ECS9332CAA**	**ECS9334CAA**	**ECS9336CAA**	**ECS9338CAA**	
	575V	350		**ECS9331DAA**	**ECS9332DAA**	**ECS9334DAA**	**ECS9336DAA**	**ECS9338DAA**	
500A	200V	150	24 Vdc	**ECS9341EAA**	**ECS9342EAA**	**ECS9344EAA**	**ECS9346EAA**	**ECS9348EAA**	**S811+V50N3S**
	230V	150		**ECS9341BAA**	**ECS9342BAA**	**ECS9344BAA**	**ECS9346BAA**	**ECS9348BAA**	
	460V	350		**ECS9341CAA**	**ECS9342CAA**	**ECS9344CAA**	**ECS9346CAA**	**ECS9348CAA**	
	575V	450		**ECS9341DAA**	**ECS9342DAA**	**ECS9344DAA**	**ECS9346DAA**	**ECS9348DAA**	
650A	200V	200	24 Vdc	**ECS9351EAA**	**ECS9352EAA**	**ECS9354EAA**	**ECS9356EAA**	**ECS9358EAA**	**S811+V65N3S**
	230V	200		**ECS9351BAA**	**ECS9352BAA**	**ECS9354BAA**	**ECS9356BAA**	**ECS9358BAA**	
	460V	450		**ECS9351CAA**	**ECS9352CAA**	**ECS9354CAA**	**ECS9356CAA**	**ECS9358CAA**	
	575V	500		**ECS9351DAA**	**ECS9352DAA**	**ECS9354DAA**	**ECS9356DAA**	**ECS9358DAA**	
720A	230V	250	24 Vdc	**ECS9361BAA**	**ECS9362BAA**	**ECS9364BAA**	**ECS9366BAA**	**ECS9368BAA**	**S811+V72N3S**
	460V	500		**ECS9361CAA**	**ECS9362CAA**	**ECS9364CAA**	**ECS9366CAA**	**ECS9368CAA**	
	575V	600		**ECS9361DAA**	**ECS9362DAA**	**ECS9364DAA**	**ECS9366DAA**	**ECS9368DAA**	
850A	230V	300	24 Vdc	**ECS9371BAA**	**ECS9372BAA**	**ECS9374BAA**	**ECS9376BAA**	**ECS9378BAA**	**S811+V85N3S**
	460V	600		**ECS9371CAA**	**ECS9372CAA**	**ECS9374CAA**	**ECS9376CAA**	**ECS9378CAA**	
	575V	700		**ECS9371DAA**	**ECS9372DAA**	**ECS9374DAA**	**ECS9376DAA**	**ECS9378DAA**	
1000A	230V	350	24 Vdc	**ECS9381BAA**	**ECS9382BAA**	**ECS9384BAA**	**ECS9386BAA**	**ECS9388BAA**	**S811+V10N3S**
	460V	700		**ECS9381CAA**	**ECS9382CAA**	**ECS9384CAA**	**ECS9386CAA**	**ECS9388CAA**	
	575V	800		**ECS9381DAA**	**ECS9382DAA**	**ECS9384DAA**	**ECS9386DAA**	**ECS9388DAA**	

Notes

① Digital Interface Module (DIM) is mounted on door as option.

② Standard duty horsepower ratings are for 300% ramp current, 30 seconds ramp time, and three starts per hour. Consult Eaton for other ratings.

③ Based on 1.15 service factor.

④ All *IT.* soft starters are furnished with 24 Vdc coils and control power supplies. For 24 Vdc separate control, use modification code **C35** and change the eighth digit to **0** (that is, ECS90S1**E**AA becomes ECS90S1**0**AA-C35).

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECS93S**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Combination—Fusible Disconnect

Class ECS91—Combination Reduced Voltage Soft Starter—Fusible Disconnect—S801+

Amps	Motor Voltage	hp ①②	Coil Voltage ③	Switch Rating	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ④ Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame Size—65 mm									
37A	200V	3	24 Vdc	30A	**ECS91Q1EAB**	**ECS91Q2EAB**	**ECS91Q4EAB**	**ECS91Q8EAB**	**S801+N37N3S**
		10		60A	**ECS91Q1EAD**	**ECS91Q2EAD**	**ECS91Q4EAD**	**ECS91Q8EAD**	
	230V	7-1/2		30A	**ECS91Q1BAB**	**ECS91Q2BAB**	**ECS91Q4BAB**	**ECS91Q8BAB**	**S801+N37N3S**
		10		60A	**ECS91Q1BAD**	**ECS91Q2BAD**	**ECS91Q4BAD**	**ECS91Q8BAD**	
	460V	15		30A	**ECS91Q1CAC**	**ECS91Q2CAC**	**ECS91Q4CAC**	**ECS91Q8CAC**	**S801+N37N3S**
		20		60A	**ECS91Q1CAE**	**ECS91Q2CAE**	**ECS91Q4CAE**	**ECS91Q8CAE**	
	575V	20		30A	**ECS91Q1DAC**	**ECS91Q2DAC**	**ECS91Q4DAC**	**ECS91Q8DAC**	**S801+N37N3S**
		30		60A	**ECS91Q1DAE**	**ECS91Q2DAE**	**ECS91Q4DAE**	**ECS91Q8DAE**	
66A	200V	15	24 Vdc	100A	**ECS91S1EAF**	**ECS91S2EAF**	**ECS91S4EAF**	**ECS91S8EAF**	**S801+N66N3S**
	230V	15		60A	**ECS91S1BAD**	**ECS91S2BAD**	**ECS91S4BAD**	**ECS91S8BAD**	**S801+N66N3S**
		20		100A	**ECS91S1BAF**	**ECS91S2BAF**	**ECS91S4BAF**	**ECS91S8BAF**	
	460V	40			**ECS91S1CAG**	**ECS91S2CAG**	**ECS91S4CAG**	**ECS91S8CAG**	**S801+N66N3S**
	575V	50			**ECS91S1DAG**	**ECS91S2DAG**	**ECS91S4DAG**	**ECS91S8DAG**	**S801+N66N3S**
Frame Size—110 mm									
105A	200V	25	24 Vdc	200A	**ECS91V1EAH**	**ECS91V2EAH**	**ECS91V4EAH**	**ECS91V8EAH**	**S801+R10N3S**
	230V	30			**ECS91V1BAH**	**ECS91V2BAH**	**ECS91V4BAH**	**ECS91V8BAH**	
	460V	60			**ECS91V1CAJ**	**ECS91V2CAJ**	**ECS91V4CAJ**	**ECS91V8CAJ**	
	575V	75			**ECS91V1DAJ**	**ECS91V2DAJ**	**ECS91V4DAJ**	**ECS91V8DAJ**	
135A	200V	30	24 Vdc	200A	**ECS91W1EAH**	**ECS91W2EAH**	**ECS91W4EAH**	**ECS91W8EAH**	**S801+R13N3S**
	230V	40			**ECS91W1BAH**	**ECS91W2BAH**	**ECS91W4BAH**	**ECS91W8BAH**	
	460V	75			**ECS91W1CAJ**	**ECS91W2CAJ**	**ECS91W4CAJ**	**ECS91W8CAJ**	
	575V	100			**ECS91W1DAJ**	**ECS91W2DAJ**	**ECS91W4DAJ**	**ECS91W8DAJ**	
Frame Size—200 mm									
180A	200V	50	24 Vdc	400A	**ECS91Y1EAK**	**ECS91Y2EAK**	**ECS91Y4EAK**	**ECS91Y8EAK**	**S801+T18N3S**
	230V	60			**ECS91Y1BAK**	**ECS91Y2BAK**	**ECS91Y4BAK**	**ECS91Y8BAK**	
	460V	125			**ECS91Y1CAL**	**ECS91Y2CAL**	**ECS91Y4CAL**	**ECS91Y8CAL**	
	575V	150			**ECS91Y1DAL**	**ECS91Y2DAL**	**ECS91Y4DAL**	**ECS91Y8DAL**	
240A	200V	60	24 Vdc	400A	**ECS91Z1EAK**	**ECS91Z2EAK**	**ECS91Z4EAK**	**ECS91Z8EAK**	**S801+T24N3S**
	230V	75			**ECS91Z1BAK**	**ECS91Z2BAK**	**ECS91Z4BAK**	**ECS91Z8BAK**	
	460V	150			**ECS91Z1CAL**	**ECS91Z2CAL**	**ECS91Z4CAL**	**ECS91Z8CAL**	
	575V	200			**ECS91Z1DAL**	**ECS91Z2DAL**	**ECS91Z4DAL**	**ECS91Z8DAL**	
304A	200V	75	24 Vdc	400A	**ECS9111EAK**	**ECS9112EAK**	**ECS9114EAK**	**ECS9118EAK**	**S801+T30N3S**
	230V	100			**ECS9111BAK**	**ECS9112BAK**	**ECS9114BAK**	**ECS9118BAK**	
	460V	200			**ECS9111CAL**	**ECS9112CAL**	**ECS9114CAL**	**ECS9118CAL**	
	575V	250			**ECS9111DAL**	**ECS9112DAL**	**ECS9114DAL**	**ECS9118DAL**	

Notes

① Standard duty horsepower ratings are for 300% ramp current, 30 seconds ramp time, and three starts per hour. Consult Eaton for other ratings.

② Based on 1.15 service factor.

③ All ***IT.*** soft starters are furnished with 24 Vdc coils and control power supplies. For 24 Vdc separate control, use modification code **C35** and change the eighth digit to **Q** (that is, ECS90S1**E**AA becomes ECS90S1**Q**AA-C35).

④ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECS91S**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECS91—Combination Reduced Voltage Soft Starter—Fusible Disconnect—S801+, continued

Amps	Motor Voltage	hp ①②	Coil Voltage ③	Switch Rating	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ④ Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame Size—290 mm									
360A	200V	100	24 Vdc	600A	**ECS9121EAM**	**ECS9122EAM**	**ECS9124EAM**	**ECS9128EAM**	**S801+V36N3S**
	230V	125			**ECS9121BAM**	**ECS9122BAM**	**ECS9124BAM**	**ECS9128BAM**	
	460V	250			**ECS9121CAN**	**ECS9122CAN**	**ECS9124CAN**	**ECS9128CAN**	
	575V	300			**ECS9121DAN**	**ECS9122DAN**	**ECS9124DAN**	**ECS9128DAN**	
420A	200V	125	24 Vdc	600A	**ECS9131EAM**	**ECS9132EAM**	**ECS9134EAM**	**ECS9138EAM**	**S801+V42N3S**
	230V	150			**ECS9131BAM**	**ECS9132BAM**	**ECS9134BAM**	**ECS9138BAM**	
	460V	300			**ECS9131CAN**	**ECS9132CAN**	**ECS9134CAN**	**ECS9138CAN**	
	575V	350			**ECS9131DAN**	**ECS9132DAN**	**ECS9134DAN**	**ECS9138DAN**	
500A	200V	150	24 Vdc	800A	**ECS9141EAP**	**ECS9142EAP**	**ECS9144EAP**	**ECS9148EAP**	**S801+V50N3S**
	230V	150			**ECS9141BAP**	**ECS9142BAP**	**ECS9144BAP**	**ECS9148BAP**	
	460V	350			**ECS9141CAP**	**ECS9142CAP**	**ECS9144CAP**	**ECS9148CAP**	
	575V	450			**ECS9141DAP**	**ECS9142DAP**	**ECS9144DAP**	**ECS9148DAP**	
650A	460V	450	24 Vdc	800A	**ECS9151CAP**	**ECS9152CAP**	**ECS9154CAP**	**ECS9158CAP**	**S801+V65N3S**
	575V	500			**ECS9151DAP**	**ECS9152DAP**	**ECS9154DAP**	**ECS9158DAP**	
720A	460V	500	24 Vdc	1200A	**ECS9161CAQ**	**ECS9162CAQ**	**ECS9164CAQ**	**ECS9168CAQ**	**S801+V72N3S**
	575V	600			**ECS9161DAQ**	**ECS9162DAQ**	**ECS9164DAQ**	**ECS9168DAQ**	
850A	460V	600	24 Vdc	1600A	**ECS9171CAR**	**ECS9172CAR**	**ECS9174CAR**	**ECS9178CAR**	**S801+V85N3S**
	575V	700			**ECS9171DAR**	**ECS9172DAR**	**ECS9174DAR**	**ECS9178DAR**	
1000A	230V	350	24 Vdc	⑤	**ECS9181BA_** ⑤	**ECS9182BA_** ⑤	**ECS9184BA_** ⑤	**ECS9188BA_** ⑤	**S801+V10N3S**
	460V	700			**ECS9181CA_** ⑤	**ECS9182CA_** ⑤	**ECS9184CA_** ⑤	**ECS9188CA_** ⑤	
	575V	800			**ECS9181DA_** ⑤	**ECS9182DA_** ⑤	**ECS9184DA_** ⑤	**ECS9188DA_** ⑤	

Notes

① Standard duty horsepower ratings are for 300% ramp current, 30 seconds ramp time, and three starts per hour. Consult Eaton for other ratings.

② Based on 1.15 service factor.

③ All *IT.* soft starters are furnished with 24 Vdc coils and control power supplies. For 24 Vdc separate control, use modification code **C35** and change the eighth digit to **Q** (that is, ECS90S1**E**AA becomes ECS90S1**Q**AA-C35).

④ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS91S**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

⑤ Consult Eaton.

Class ECS94—Combination Reduced Voltage Soft Starter—Fusible Disconnect—S811+ ①

Amps	Motor Voltage	hp ②③	Coil Voltage ④	Switch Rating	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ⑤ Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame Size—65 mm									
37A	200V	3	24 Vdc	30A	**ECS94Q1EAB**	**ECS94Q2EAB**	**ECS94Q4EAB**	**ECS94Q8EAB**	**S811+N37N3S**
		10		60A	**ECS94Q1EAD**	**ECS94Q2EAD**	**ECS94Q4EAD**	**ECS94Q8EAD**	
	230V	7-1/2		30A	**ECS94Q1BAB**	**ECS94Q2BAB**	**ECS94Q4BAB**	**ECS94Q8BAB**	**S811+N37N3S**
		10		60A	**ECS94Q1BAD**	**ECS94Q2BAD**	**ECS94Q4BAD**	**ECS94Q8BAD**	
	460V	15		30A	**ECS94Q1CAC**	**ECS94Q2CAC**	**ECS94Q4CAC**	**ECS94Q8CAC**	**S811+N37N3S**
		20		60A	**ECS94Q1CAE**	**ECS94Q2CAE**	**ECS94Q4CAE**	**ECS94Q8CAE**	
	575V	20		30A	**ECS94Q1DAC**	**ECS94Q2DAC**	**ECS94Q4DAC**	**ECS94Q8DAC**	**S811+N37N3S**
		30		60A	**ECS94Q1DAE**	**ECS94Q2DAE**	**ECS94Q4DAE**	**ECS94Q8DAE**	
66A	200V	15	24 Vdc	100A	**ECS94S1EAF**	**ECS94S2EAF**	**ECS94S4EAF**	**ECS94S8EAF**	**S811+N66N3S**
	230V	15		60A	**ECS94S1BAD**	**ECS94S2BAD**	**ECS94S4BAD**	**ECS94S8BAD**	**S811+N66N3S**
		20		100A	**ECS94S1BAF**	**ECS94S2BAF**	**ECS94S4BAF**	**ECS94S8BAF**	
	460V	40			**ECS94S1CAG**	**ECS94S2CAG**	**ECS94S4CAG**	**ECS94S8CAG**	**S811+N66N3S**
	575V	50			**ECS94S1DAG**	**ECS94S2DAG**	**ECS94S4DAG**	**ECS94S8DAG**	**S811+N66N3S**
Frame Size—110 mm									
105A	200V	25	24 Vdc	200A	**ECS94V1EAH**	**ECS94V2EAH**	**ECS94V4EAH**	**ECS94V8EAH**	**S811+R10N3S**
	230V	30			**ECS94V1BAH**	**ECS94V2BAH**	**ECS94V4BAH**	**ECS94V8BAH**	
	460V	60			**ECS94V1CAJ**	**ECS94V2CAJ**	**ECS94V4CAJ**	**ECS94V8CAJ**	
	575V	75			**ECS94V1DAJ**	**ECS94V2DAJ**	**ECS94V4DAJ**	**ECS94V8DAJ**	
135A	200V	30	24 Vdc	200A	**ECS94W1EAH**	**ECS94W2EAH**	**ECS94W4EAH**	**ECS94W8EAH**	**S811+R13N3S**
	230V	40			**ECS94W1BAH**	**ECS94W2BAH**	**ECS94W4BAH**	**ECS94W8BAH**	
	460V	75			**ECS94W1CAJ**	**ECS94W2CAJ**	**ECS94W4CAJ**	**ECS94W8CAJ**	
	575V	100			**ECS94W1DAJ**	**ECS94W2DAJ**	**ECS94W4DAJ**	**ECS94W8DAJ**	
Frame Size—200 mm									
180A	200V	50	24 Vdc	400A	**ECS94Y1EAK**	**ECS94Y2EAK**	**ECS94Y4EAK**	**ECS94Y8EAK**	**S811+T18N3S**
	230V	60			**ECS94Y1BAK**	**ECS94Y2BAK**	**ECS94Y4BAK**	**ECS94Y8BAK**	
	460V	125			**ECS94Y1CAL**	**ECS94Y2CAL**	**ECS94Y4CAL**	**ECS94Y8CAL**	
	575V	150			**ECS94Y1DAL**	**ECS94Y2DAL**	**ECS94Y4DAL**	**ECS94Y8DAL**	
240A	200V	60	24 Vdc	400A	**ECS94Z1EAK**	**ECS94Z2EAK**	**ECS94Z4EAK**	**ECS94Z8EAK**	**S811+T24N3S**
	230V	75			**ECS94Z1BAK**	**ECS94Z2BAK**	**ECS94Z4BAK**	**ECS94Z8BAK**	
	460V	150			**ECS94Z1CAL**	**ECS94Z2CAL**	**ECS94Z4CAL**	**ECS94Z8CAL**	
	575V	200			**ECS94Z1DAL**	**ECS94Z2DAL**	**ECS94Z4DAL**	**ECS94Z8DAL**	
304A	200V	75	24 Vdc	400A	**ECS9411EAK**	**ECS9412EAK**	**ECS9414EAK**	**ECS9418EAK**	**S811+T30N3S**
	230V	100			**ECS9411BAK**	**ECS9412BAK**	**ECS9414BAK**	**ECS9418BAK**	
	460V	200			**ECS9411CAL**	**ECS9412CAL**	**ECS9414CAL**	**ECS9418CAL**	
	575V	250			**ECS9411DAL**	**ECS9412DAL**	**ECS9414DAL**	**ECS9418DAL**	

Notes

① Digital Interface Module (DIM) is mounted on door as option.

② Standard duty horsepower ratings are for 300% ramp current, 30 seconds ramp time, and three starts per hour. Consult Eaton for other ratings.

③ Based on 1.15 service factor.

④ All ***IT.*** soft starters are furnished with 24 Vdc coils and control power supplies. For 24 Vdc separate control, use modification code **C35** and change the eighth digit to **Q** (that is, ECS90S1**E**AA becomes ECS90S1**Q**AA-C35).

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS94S**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECS94—Combination Reduced Voltage Soft Starter—Fusible Disconnect—S811+, continued [1]

Amps	Motor Voltage	hp [2][3]	Coil Voltage [4]	Switch Rating	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X [5] Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame Size—290 mm									
360A	200V	100	24 Vdc	600A	**ECS9421EAM**	**ECS9422EAM**	**ECS9424EAM**	**ECS9428EAM**	**S811+V36N3S**
	230V	125			**ECS9421BAM**	**ECS9422BAM**	**ECS9424BAM**	**ECS9428BAM**	
	460V	250			**ECS9421CAN**	**ECS9422CAN**	**ECS9424CAN**	**ECS9428CAN**	
	575V	300			**ECS9421DAN**	**ECS9422DAN**	**ECS9424DAN**	**ECS9428DAN**	
420A	200V	125	24 Vdc	600A	**ECS9431EAM**	**ECS9432EAM**	**ECS9434EAM**	**ECS9438EAM**	**S811+V42N3S**
	230V	150			**ECS9431BAM**	**ECS9432BAM**	**ECS9434BAM**	**ECS9438BAM**	
	460V	300			**ECS9431CAN**	**ECS9432CAN**	**ECS9434CAN**	**ECS9438CAN**	
	575V	350			**ECS9431DAN**	**ECS9432DAN**	**ECS9434DAN**	**ECS9438DAN**	
500A	200V	150	24 Vdc	800A	**ECS9441EAP**	**ECS9442EAP**	**ECS9444EAP**	**ECS9448EAP**	**S811+V50N3S**
	230V	150			**ECS9441BAP**	**ECS9442BAP**	**ECS9444BAP**	**ECS9448BAP**	
	460V	350			**ECS9441CAP**	**ECS9442CAP**	**ECS9444CAP**	**ECS9448CAP**	
	575V	450			**ECS9441DAP**	**ECS9442DAP**	**ECS9444DAP**	**ECS9448DAP**	
650A	460V	450	24 Vdc	800A	**ECS9451CAP**	**ECS9452CAP**	**ECS9454CAP**	**ECS9458CAP**	**S811+V65N3S**
	575V	500			**ECS9451DAP**	**ECS9452DAP**	**ECS9454DAP**	**ECS9458DAP**	
720A	460V	500	24 Vdc	1200A	**ECS9461CAQ**	**ECS9462CAQ**	**ECS9464CAQ**	**ECS9468CAQ**	**S811+V72N3S**
	575V	600			**ECS9461DAQ**	**ECS9462DAQ**	**ECS9464DAQ**	**ECS9468DAQ**	
850A	460V	600	24 Vdc	1600A	**ECS9471CAR**	**ECS9472CAR**	**ECS9474CAR**	**ECS9478CAR**	**S811+V85N3S**
	575V	700			**ECS9471DAR**	**ECS9472DAR**	**ECS9474DAR**	**ECS9478DAR**	
1000A	230V	350	24 Vdc	[6]	**ECS9481BA_** [6]	**ECS9482BA_** [6]	**ECS9484BA_** [6]	**ECS9488BA_** [6]	**S811+V10N3S**
	460V	700			**ECS9481CA_** [6]	**ECS9482CA_** [6]	**ECS9484CA_** [6]	**ECS9488CA_** [6]	
	575V	800			**ECS9481DA_** [6]	**ECS9482DA_** [6]	**ECS9484DA_** [6]	**ECS9488DA_** [6]	

Notes

[1] Digital Interface Module (DIM) is mounted on door as option.

[2] Standard duty horsepower ratings are for 300% ramp current, 30 seconds ramp time, and three starts per hour. Consult Eaton for other ratings.

[3] Based on 1.15 service factor.

[4] All *IT.* soft starters are furnished with 24 Vdc coils and control power supplies. For 24 Vdc separate control, use modification code **C35** and change the eighth digit to **0** (that is, ECS90S1**E**AA becomes ECS90S1**0**AA-C35).

[5] The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS94S**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

[6] Consult Eaton.

Combination—Circuit Breaker

Class ECS92—Combination Reduced Voltage Soft Starter—Circuit Breaker—S801+

Amps	Motor Voltage	hp ①②	Coil Voltage ③	Circuit Breaker Rating	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ④ Catalog Number	Type 7/9 Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame Size—65 mm										
37A	200V	1/2	24 Vdc	7A	**ECS92Q1EAC**	**ECS92Q2EAC**	**ECS92Q4EAC**	**ECS92Q6EAC**	**ECS92Q8EAC**	**S801+N37N3S**
		1		15A	**ECS92Q1EAD**	**ECS92Q2EAD**	**ECS92Q4EAD**	**ECS92Q6EAD**	**ECS92Q8EAD**	
		3		30A	**ECS92Q1EAE**	**ECS92Q2EAE**	**ECS92Q4EAE**	**ECS92Q6EAE**	**ECS92Q8EAE**	
		10		50A	**ECS92Q1EAF**	**ECS92Q2EAF**	**ECS92Q4EAF**	**ECS92Q6EAF**	**ECS92Q8EAF**	
	230V	1	24 Vdc	7A	**ECS92Q1BAC**	**ECS92Q2BAC**	**ECS92Q4BAC**	**ECS92Q6BAC**	**ECS92Q8BAC**	**S801+N37N3S**
		2		15A	**ECS92Q1BAD**	**ECS92Q2BAD**	**ECS92Q4BAD**	**ECS92Q6BAD**	**ECS92Q8BAD**	
		3		30A	**ECS92Q1BAE**	**ECS92Q2BAE**	**ECS92Q4BAE**	**ECS92Q6BAE**	**ECS92Q8BAE**	
		10		50A	**ECS92Q1BAF**	**ECS92Q2BAF**	**ECS92Q4BAF**	**ECS92Q6BAF**	**ECS92Q8BAF**	
	460V	3/4	24 Vdc	3A	**ECS92Q1CAB**	**ECS92Q2CAB**	**ECS92Q4CAB**	**ECS92Q6CAB**	**ECS92Q8CAB**	**S801+N37N3S**
		2		7A	**ECS92Q1CAC**	**ECS92Q2CAC**	**ECS92Q4CAC**	**ECS92Q6CAC**	**ECS92Q8CAC**	
		5		15A	**ECS92Q1CAD**	**ECS92Q2CAD**	**ECS92Q4CAD**	**ECS92Q6CAD**	**ECS92Q8CAD**	
		10		30A	**ECS92Q1CAE**	**ECS92Q2CAE**	**ECS92Q4CAE**	**ECS92Q6CAE**	**ECS92Q8CAE**	
		20		50A	**ECS92Q1CAF**	**ECS92Q2CAF**	**ECS92Q4CAF**	**ECS92Q6CAF**	**ECS92Q8CAF**	
	575V	1	24 Vdc	3A	**ECS92Q1DAB**	**ECS92Q2DAB**	**ECS92Q4DAB**	**ECS92Q6DAB**	**ECS92Q8DAB**	**S801+N37N3S**
		3		7A	**ECS92Q1DAC**	**ECS92Q2DAC**	**ECS92Q4DAC**	**ECS92Q6DAC**	**ECS92Q8DAC**	
		7-1/2		15A	**ECS92Q1DAD**	**ECS92Q2DAD**	**ECS92Q4DAD**	**ECS92Q6DAD**	**ECS92Q8DAD**	
		15		30A	**ECS92Q1DAE**	**ECS92Q2DAE**	**ECS92Q4DAE**	**ECS92Q6DAE**	**ECS92Q8DAE**	
		30		50A	**ECS92Q1DAF**	**ECS92Q2DAF**	**ECS92Q4DAF**	**ECS92Q6DAF**	**ECS92Q8DAF**	
66A	200V	15	24 Vdc	100A	**ECS92S1EAG**	**ECS92S2EAG**	**ECS92S4EAG**	**ECS92S6EAG**	**ECS92S8EAG**	**S801+N66N3S**
	230V	15		70A	**ECS92S1BAW**	**ECS92S2BAW**	**ECS92S4BAW**	**ECS92S6BAW**	**ECS92S8BAW**	
		20		100A	**ECS92S1BAG**	**ECS92S2BAG**	**ECS92S4BAG**	**ECS92S6BAG**	**ECS92S8BAG**	
	460V	40		100A	**ECS92S1CAG**	**ECS92S2CAG**	**ECS92S4CAG**	**ECS92S6CAG**	**ECS92S8CAG**	**S801+N66N3S**
	575V	50			**ECS92S1DAG**	**ECS92S2DAG**	**ECS92S4DAG**	**ECS92S6DAG**	**ECS92S8DAG**	**S801+N66N3S**
Frame Size—110 mm										
105A	200V	25	24 Vdc	150A	**ECS92V1EAH**	**ECS92V2EAH**	**ECS92V4EAH**	**ECS92V6EAH**	**ECS92V8EAH**	**S801+R10N3S**
	230V	30			**ECS92V1BAH**	**ECS92V2BAH**	**ECS92V4BAH**	**ECS92V6BAH**	**ECS92V8BAH**	**S801+R10N3S**
	460V	60			**ECS92V1CAH**	**ECS92V2CAH**	**ECS92V4CAH**	**ECS92V6CAH**	**ECS92V8CAH**	**S801+R10N3S**
	575V	75			**ECS92V1DAH**	**ECS92V2DAH**	**ECS92V4DAH**	**ECS92V6DAH**	**ECS92V8DAH**	**S801+R10N3S**
135A	200V	30	24 Vdc	250A	**ECS92W1EAJ**	**ECS92W2EAJ**	**ECS92W4EAJ**	**ECS92W6EAJ**	**ECS92W8EAJ**	**S801+R13N3S**
	230V	40		150A	**ECS92W1BAH**	**ECS92W2BAH**	**ECS92W4BAH**	**ECS92W6BAH**	**ECS92W8BAH**	
	460V	75			**ECS92W1CAH**	**ECS92W2CAH**	**ECS92W4CAH**	**ECS92W6CAH**	**ECS92W8CAH**	
	575V	100			**ECS92W1DAH**	**ECS92W2DAH**	**ECS92W4DAH**	**ECS92W6DAH**	**ECS92W8DAH**	

Notes

① Standard duty horsepower ratings are for 300% ramp current, 30 seconds ramp time, and three starts per hour. Consult Eaton for other ratings.

② Based on 1.15 service factor.

③ All ***IT.*** soft starters are furnished with 24 Vdc coils and control power supplies. For 24 Vdc separate control, use modification code **C35** and change the eighth digit to **Q** (that is, ECS90S1**E**AA becomes ECS90S1**Q**AA-C35).

④ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS92S**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECS92—Combination Reduced Voltage Soft Starter—Circuit Breaker—S801+, continued

Amps	Motor Voltage	hp ①②	Coil Voltage ③	Circuit Breaker Rating	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ④ Catalog Number	Type 7/9 Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame Size—200 mm										
180A	200V	50	24 Vdc	250A	**ECS92Y1EAJ**	**ECS92Y2EAJ**	**ECS92Y4EAJ**	**ECS92Y6EAJ**	**ECS92Y8EAJ**	**S801+T18N3S**
	230V	60			**ECS92Y1BAJ**	**ECS92Y2BAJ**	**ECS92Y4BAJ**	**ECS92Y6BAJ**	**ECS92Y8BAJ**	
	460V	125			**ECS92Y1CAJ**	**ECS92Y2CAJ**	**ECS92Y4CAJ**	**ECS92Y6CAJ**	**ECS92Y8CAJ**	
	575V	150			**ECS92Y1DAJ**	**ECS92Y2DAJ**	**ECS92Y4DAJ**	**ECS92Y6DAJ**	**ECS92Y8DAJ**	
240A	200V	60	24 Vdc	400A	**ECS92Z1EAK**	**ECS92Z2EAK**	**ECS92Z4EAK**	**ECS92Z6EAK**	**ECS92Z8EAK**	**S801+T24N3S**
	230V	75			**ECS92Z1BAK**	**ECS92Z2BAK**	**ECS92Z4BAK**	**ECS92Z6BAK**	**ECS92Z8BAK**	
	460V	150		250A	**ECS92Z1CAJ**	**ECS92Z2CAJ**	**ECS92Z4CAJ**	**ECS92Z6CAJ**	**ECS92Z8CAJ**	
	575V	200			**ECS92Z1DAJ**	**ECS92Z2DAJ**	**ECS92Z4DAJ**	**ECS92Z6DAJ**	**ECS92Z8DAJ**	
304A	200V	75	24 Vdc	400A	**ECS9211EAK**	**ECS9212EAK**	**ECS9214EAK**	**ECS9216EAK**	**ECS9218EAK**	**S801+T30N3S**
	230V	100			**ECS9211BAK**	**ECS9212BAK**	**ECS9214BAK**	**ECS9216BAK**	**ECS9218BAK**	
	460V	200			**ECS9211CAK**	**ECS9212CAK**	**ECS9214CAK**	**ECS9216CAK**	**ECS9218CAK**	
	575V	250			**ECS9211DAK**	**ECS9212DAK**	**ECS9214DAK**	**ECS9216DAK**	**ECS9218DAK**	
Frame Size—290 mm										
360A	200V	100	24 Vdc	600A	**ECS9221EAL**	**ECS9222EAL**	**ECS9224EAL**	—	**ECS9228EAL**	**S801+V36N3S**
	230V	125		400A	**ECS9221BAK**	**ECS9222BAK**	**ECS9224BAK**	—	**ECS9228BAK**	
	460V	250		600A	**ECS9221CAL**	**ECS9222CAL**	**ECS9224CAL**	—	**ECS9228CAL**	
	575V	300		400A	**ECS9221DAK**	**ECS9222DAK**	**ECS9224DAK**	—	**ECS9228DAK**	
420A	200V	125	24 Vdc	600A	**ECS9231EAL**	**ECS9232EAL**	**ECS9234EAL**	—	**ECS9238EAL**	**S801+V42N3S**
	230V	150			**ECS9231BAL**	**ECS9232BAL**	**ECS9234BAL**	—	**ECS9238BAL**	
	460V	300			**ECS9231CAL**	**ECS9232CAL**	**ECS9234CAL**	—	**ECS9238CAL**	
	575V	350			**ECS9231DAL**	**ECS9232DAL**	**ECS9234DAL**	—	**ECS9238DAL**	
500A	230V	150	24 Vdc	600A	**ECS9241BAL**	**ECS9242BAL**	**ECS9244BAL**	—	**ECS9248BAL**	**S801+V50N3S**
	460V	350			**ECS9241CAL**	**ECS9242CAL**	**ECS9244CAL**	—	**ECS9248CAL**	
	575V	450			**ECS9241DAL**	**ECS9242DAL**	**ECS9244DAL**	—	**ECS9248DAL**	
650A	200V	200	24 Vdc	1200A	**ECS9251EAP**	**ECS9252EAP**	**ECS9254EAP**	—	**ECS9258EAP**	**S801+V65N3S**
	230V	200			**ECS9251BAP**	**ECS9252BAP**	**ECS9254BAP**	—	**ECS9258BAP**	
	460V	450			**ECS9251CAP**	**ECS9252CAP**	**ECS9254CAP**	—	**ECS9258CAP**	
	575V	500			**ECS9251DAP**	**ECS9252DAP**	**ECS9254DAP**	—	**ECS9258DAP**	
720A	230V	250	24 Vdc	1200A	**ECS9261BAP**	**ECS9262BAP**	**ECS9264BAP**	—	**ECS9268BAP**	**S801+V72N3S**
	460V	500			**ECS9261CAP**	**ECS9262CAP**	**ECS9264CAP**	—	**ECS9268CAP**	
	575V	600			**ECS9261DAP**	**ECS9262DAP**	**ECS9264DAP**	—	**ECS9268DAP**	
850A	460V	600	24 Vdc	1200A	**ECS9271CAP**	**ECS9272CAP**	**ECS9274CAP**	—	**ECS9278CAP**	**S801+V85N3S**
	575V	700			**ECS9271DAP**	**ECS9272DAP**	**ECS9274DAP**	—	**ECS9278DAP**	
1000A	230V	350	24 Vdc	1600A	**ECS9281BAQ**	**ECS9282BAQ**	**ECS9284BAQ**	—	**ECS9288BAQ**	**S801+V10N3S**
	460V	700			**ECS9281CAQ**	**ECS9282CAQ**	**ECS9284CAQ**	—	**ECS9288CAQ**	
	575V	800			**ECS9281DAQ**	**ECS9282DAQ**	**ECS9284DAQ**	—	**ECS9288DAQ**	

Notes

① Standard duty horsepower ratings are for 300% ramp current, 30 seconds ramp time, and three starts per hour. Consult Eaton for other ratings.

② Based on 1.15 service factor.

③ All *IT.* soft starters are furnished with 24 Vdc coils and control power supplies. For 24 Vdc separate control, use modification code **C35** and change the eighth digit to **0** (that is, ECS90S1**E**AA becomes ECS90S1**0**AA-C35).

④ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS92S**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECS95—Combination Reduced Voltage Soft Starter—Circuit Breaker—S811+ ①

Amps	Motor Voltage	hp ②③	Coil Voltage ④	Circuit Breaker Rating	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ⑤ Catalog Number	Type 7/9 Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame Size—65 mm										
37A	200V	1/2	24 Vdc	7A	**ECS95Q1EAC**	**ECS95Q2EAC**	**ECS95Q4EAC**	**ECS95Q6EAC**	**ECS95Q8EAC**	**S811+N37N3S**
		1		15A	**ECS95Q1EAD**	**ECS95Q2EAD**	**ECS95Q4EAD**	**ECS95Q6EAD**	**ECS95Q8EAD**	
		3		30A	**ECS95Q1EAE**	**ECS95Q2EAE**	**ECS95Q4EAE**	**ECS95Q6EAE**	**ECS95Q8EAE**	
		10		50A	**ECS95Q1EAF**	**ECS95Q2EAF**	**ECS95Q4EAF**	**ECS95Q6EAF**	**ECS95Q8EAF**	
	230V	1	24 Vdc	7A	**ECS95Q1BAC**	**ECS95Q2BAC**	**ECS95Q4BAC**	**ECS95Q6BAC**	**ECS95Q8BAC**	**S811+N37N3S**
		2		15A	**ECS95Q1BAD**	**ECS95Q2BAD**	**ECS95Q4BAD**	**ECS95Q6BAD**	**ECS95Q8BAD**	
		3		30A	**ECS95Q1BAE**	**ECS95Q2BAE**	**ECS95Q4BAE**	**ECS95Q6BAE**	**ECS95Q8BAE**	
		10		50A	**ECS95Q1BAF**	**ECS95Q2BAF**	**ECS95Q4BAF**	**ECS95Q6BAF**	**ECS95Q8BAF**	
	460V	3/4	24 Vdc	3A	**ECS95Q1CAB**	**ECS95Q2CAB**	**ECS95Q4CAB**	**ECS95Q6CAB**	**ECS95Q8CAB**	**S811+N37N3S**
		2		7A	**ECS95Q1CAC**	**ECS95Q2CAC**	**ECS95Q4CAC**	**ECS95Q6CAC**	**ECS95Q8CAC**	
		5		15A	**ECS95Q1CAD**	**ECS95Q2CAD**	**ECS95Q4CAD**	**ECS95Q6CAD**	**ECS95Q8CAD**	
		10		30A	**ECS95Q1CAE**	**ECS95Q2CAE**	**ECS95Q4CAE**	**ECS95Q6CAE**	**ECS95Q8CAE**	
		20		50A	**ECS95Q1CAF**	**ECS95Q2CAF**	**ECS95Q4CAF**	**ECS95Q6CAF**	**ECS95Q8CAF**	
	575V	1	24 Vdc	3A	**ECS95Q1DAB**	**ECS95Q2DAB**	**ECS95Q4DAB**	**ECS95Q6DAB**	**ECS95Q8DAB**	**S811+N37N3S**
		3		7A	**ECS95Q1DAC**	**ECS95Q2DAC**	**ECS95Q4DAC**	**ECS95Q6DAC**	**ECS95Q8DAC**	
		7-1/2		15A	**ECS95Q1DAD**	**ECS95Q2DAD**	**ECS95Q4DAD**	**ECS95Q6DAD**	**ECS95Q8DAD**	
		15		30A	**ECS95Q1DAE**	**ECS95Q2DAE**	**ECS95Q4DAE**	**ECS95Q6DAE**	**ECS95Q8DAE**	
		30		50A	**ECS95Q1DAF**	**ECS95Q2DAF**	**ECS95Q4DAF**	**ECS95Q6DAF**	**ECS95Q8DAF**	
66A	200V	15	24 Vdc	100A	**ECS95S1EAG**	**ECS95S2EAG**	**ECS95S4EAG**	**ECS95S6EAG**	**ECS95S8EAG**	**S811+N66N3S**
	230V	15		70A	**ECS95S1BAW**	**ECS95S2BAW**	**ECS95S4BAW**	**ECS95S6BAW**	**ECS95S8BAW**	**S811+N66N3S**
		20		100A	**ECS95S1BAG**	**ECS95S2BAG**	**ECS95S4BAG**	**ECS95S6BAG**	**ECS95S8BAG**	
	460V	40			**ECS95S1CAG**	**ECS95S2CAG**	**ECS95S4CAG**	**ECS95S6CAG**	**ECS95S8CAG**	**S811+N66N3S**
	575V	50			**ECS95S1DAG**	**ECS95S2DAG**	**ECS95S4DAG**	**ECS95S6DAG**	**ECS95S8DAG**	**S811+N66N3S**
Frame Size—110 mm										
105A	200V	25	24 Vdc	150A	**ECS95V1EAH**	**ECS95V2EAH**	**ECS95V4EAH**	**ECS95V6EAH**	**ECS95V8EAH**	**S811+R10N3S**
	230V	30			**ECS95V1BAH**	**ECS95V2BAH**	**ECS95V4BAH**	**ECS95V6BAH**	**ECS95V8BAH**	**S811+R10N3S**
	460V	60			**ECS95V1CAH**	**ECS95V2CAH**	**ECS95V4CAH**	**ECS95V6CAH**	**ECS95V8CAH**	**S811+R10N3S**
	575V	75			**ECS95V1DAH**	**ECS95V2DAH**	**ECS95V4DAH**	**ECS95V6DAH**	**ECS95V8DAH**	**S811+R10N3S**
135A	200V	30	24 Vdc	250A	**ECS95W1EAJ**	**ECS95W2EAJ**	**ECS95W4EAJ**	**ECS95W6EAJ**	**ECS95W8EAJ**	**S811+R13N3S**
	230V	40		150A	**ECS95W1BAH**	**ECS95W2BAH**	**ECS95W4BAH**	**ECS95W6BAH**	**ECS95W8BAH**	
	460V	75			**ECS95W1CAH**	**ECS95W2CAH**	**ECS95W4CAH**	**ECS95W6CAH**	**ECS95W8CAH**	
	575V	100			**ECS95W1DAH**	**ECS95W2DAH**	**ECS95W4DAH**	**ECS95W6DAH**	**ECS95W8DAH**	

Notes

① Digital Interface Module (DIM) is mounted on door as option.

② Standard duty horsepower ratings are for 300% ramp current, 30 seconds ramp time, and three starts per hour. Consult Eaton for other ratings.

③ Based on 1.15 service factor.

④ All ***IT.*** soft starters are furnished with 24 Vdc coils and control power supplies. For 24 Vdc separate control, use modification code **C35** and change the eighth digit to **Q** (that is, ECS90S1**E**AA becomes ECS90S1**Q**AA-C35).

⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS95S**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Class ECS95—Combination Reduced Voltage Soft Starter—Circuit Breaker—S811+, continued ①

Amps	Motor Voltage	hp ②③	Coil Voltage ④	Circuit Breaker Type	Type 1 Catalog Number	Type 3R Catalog Number	Type 4X ⑤ Catalog Number	Type 7/9 Catalog Number	Type 12 Catalog Number	Component Soft Starter (Open) Catalog Number
Frame Size—200 mm										
180A	200V	50	24 Vdc	250A	**ECS95Y1EAJ**	**ECS95Y2EAJ**	**ECS95Y4EAJ**	**ECS95Y6EAJ**	**ECS95Y8EAJ**	**S811+T18N3S**
	230V	60			**ECS95Y1BAJ**	**ECS95Y2BAJ**	**ECS95Y4BAJ**	**ECS95Y6BAJ**	**ECS95Y8BAJ**	
	460V	125			**ECS95Y1CAJ**	**ECS95Y2CAJ**	**ECS95Y4CAJ**	**ECS95Y6CAJ**	**ECS95Y8CAJ**	
	575V	150			**ECS95Y1DAJ**	**ECS95Y2DAJ**	**ECS95Y4DAJ**	**ECS95Y6DAJ**	**ECS95Y8DAJ**	
240A	200V	60	24 Vdc	400A	**ECS95Z1EAK**	**ECS95Z2EAK**	**ECS95Z4EAK**	**ECS95Z6EAK**	**ECS95Z8EAK**	**S811+T24N3S**
	230V	75			**ECS95Z1BAK**	**ECS95Z2BAK**	**ECS95Z4BAK**	**ECS95Z6BAK**	**ECS95Z8BAK**	
	460V	150		250A	**ECS95Z1CAJ**	**ECS95Z2CAJ**	**ECS95Z4CAJ**	**ECS95Z6CAJ**	**ECS95Z8CAJ**	
	575V	200			**ECS95Z1DAJ**	**ECS95Z2DAJ**	**ECS95Z4DAJ**	**ECS95Z6DAJ**	**ECS95Z8DAJ**	
304A	200V	75	24 Vdc	400A	**ECS9511EAK**	**ECS9512EAK**	**ECS9514EAK**	**ECS9516EAK**	**ECS9518EAK**	**S811+T30N3S**
	230V	100			**ECS9511BAK**	**ECS9512BAK**	**ECS9514BAK**	**ECS9516BAK**	**ECS9518BAK**	
	460V	200			**ECS9511CAK**	**ECS9512CAK**	**ECS9514CAK**	**ECS9516CAK**	**ECS9518CAK**	
	575V	250			**ECS9511DAK**	**ECS9512DAK**	**ECS9514DAK**	**ECS9516DAK**	**ECS9518DAK**	
Frame Size—290 mm										
360A	200V	100	24 Vdc	600A	**ECS9521EAL**	**ECS9522EAL**	**ECS9524EAL**	—	**ECS9528EAL**	**S811+V36N3S**
	230V	125		400A	**ECS9521BAK**	**ECS9522BAK**	**ECS9524BAK**	—	**ECS9528BAK**	
	460V	250		600A	**ECS9521CAL**	**ECS9522CAL**	**ECS9524CAL**	—	**ECS9528CAL**	
	575V	300		400A	**ECS9521DAK**	**ECS9522DAK**	**ECS9524DAK**	—	**ECS9528DAK**	
420A	200V	125	24 Vdc	600A	**ECS9531EAL**	**ECS9532EAL**	**ECS9534EAL**	—	**ECS9538EAL**	**S811+V42N3S**
	230V	150			**ECS9531BAL**	**ECS9532BAL**	**ECS9534BAL**	—	**ECS9538BAL**	
	460V	300			**ECS9531CAL**	**ECS9532CAL**	**ECS9534CAL**	—	**ECS9538CAL**	
	575V	350			**ECS9531DAL**	**ECS9532DAL**	**ECS9534DAL**	—	**ECS9538DAL**	
500A	230V	150	24 Vdc	600A	**ECS9541BAL**	**ECS9542BAL**	**ECS9544BAL**	—	**ECS9548BAL**	**S811+V50N3S**
	460V	350			**ECS9541CAL**	**ECS9542CAL**	**ECS9544CAL**	—	**ECS9548CAL**	
	575V	450			**ECS9541DAL**	**ECS9542DAL**	**ECS9544DAL**	—	**ECS9548DAL**	
650A	200V	200	24 Vdc	1200A	**ECS9551EAP**	**ECS9552EAP**	**ECS9554EAP**	—	**ECS9558EAP**	**S811+V65N3S**
	230V	200			**ECS9551BAP**	**ECS9552BAP**	**ECS9554BAP**	—	**ECS9558BAP**	
	460V	450			**ECS9551CAP**	**ECS9552CAP**	**ECS9554CAP**	—	**ECS9558CAP**	
	575V	500			**ECS9551DAP**	**ECS9552DAP**	**ECS9554DAP**	—	**ECS9558DAP**	
720A	230V	250	24 Vdc	1200A	**ECS9561BAP**	**ECS9562BAP**	**ECS9564BAP**	—	**ECS9568BAP**	**S811+V72N3S**
	460V	500			**ECS9561CAP**	**ECS9562CAP**	**ECS9564CAP**	—	**ECS9568CAP**	
	575V	600			**ECS9561DAP**	**ECS9562DAP**	**ECS9564DAP**	—	**ECS9568DAP**	
850A	460V	600	24 Vdc	1200A	**ECS9571CAP**	**ECS9572CAP**	**ECS9574CAP**	—	**ECS9578CAP**	**S811+V85N3S**
	575V	700			**ECS9571DAP**	**ECS9572DAP**	**ECS9574DAP**	—	**ECS9578DAP**	
1000A	230V	350	24 Vdc	1600A	**ECS9581BAQ**	**ECS9582BAQ**	**ECS9584BAQ**	—	**ECS9588BAQ**	**S811+V10N3S**
	460V	700			**ECS9581CAQ**	**ECS9582CAQ**	**ECS9584CAQ**	—	**ECS9588CAQ**	
	575V	800			**ECS9581DAQ**	**ECS9582DAQ**	**ECS9584DAQ**	—	**ECS9588DAQ**	

Notes

① Digital Interface Module (DIM) is mounted on door as option.

② Standard duty horsepower ratings are for 300% ramp current, 30 seconds ramp time, and three starts per hour. Consult Eaton for other ratings.

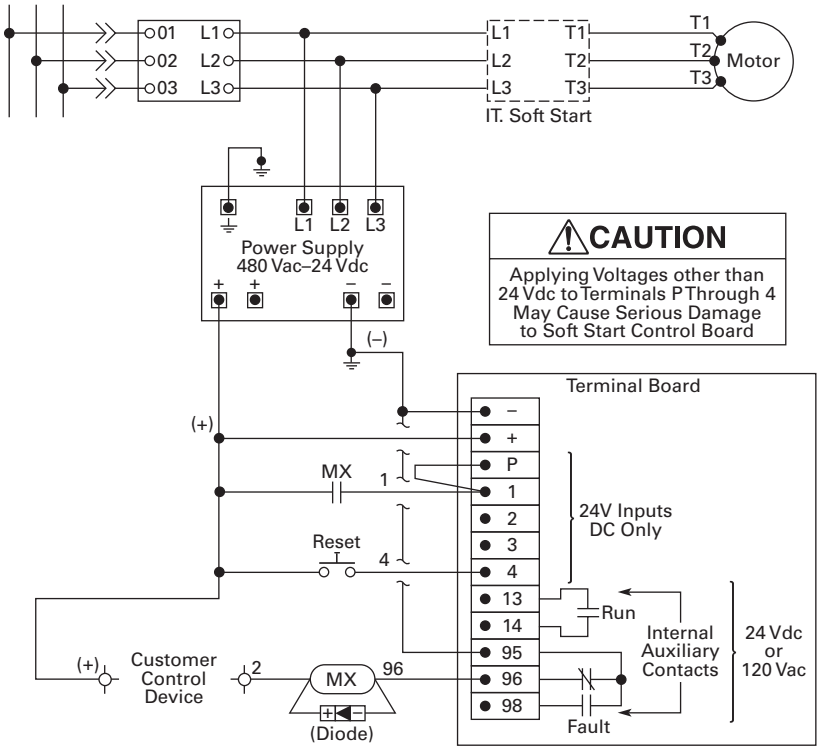
③ Based on 1.15 service factor.

④ All *IT.* soft starters are furnished with 24 Vdc coils and control power supplies. For 24 Vdc separate control, use modification code **C35** and change the eighth digit to **Q** (that is, ECS90S1**E**AA becomes ECS90S1**Q**AA-C35).

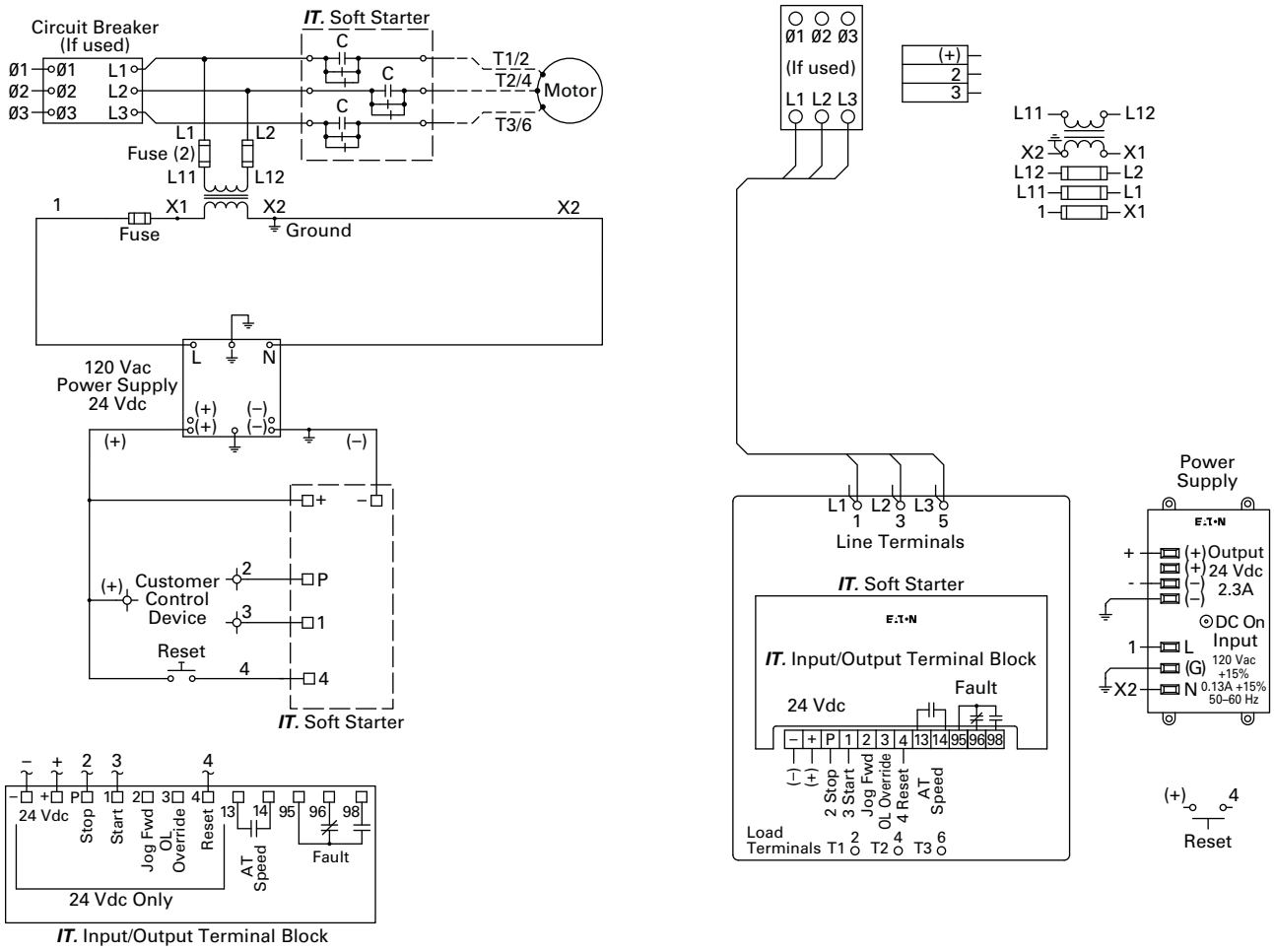
⑤ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECS95S**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

Wiring Diagrams

S801+/S811+



S801+/S811+ with CPT and Power Supply



Dimensions

See **Tab 14** for box dimensions for Type 1, 3R, 4X and 12.
See **Tab 9** for box dimensions for Type 7/9.

Minimum Enclosure Box Numbers

Rating	SSRV	Non-Combination Box No. ①	Combination with Fuses Box No. ①	Combination with HMCP Box No. ①
37A	S801+/S811+	7A	B1	A1 ②
66A	S801+/S811+	7A	C	A1 ②
105A	S801+/S811+	7A	D	B1
135A	S801+/S811+	B1	D	C
180A	S801+/S811+	C	E	E
240A	S801+/S811+	G1	F1E	E
304A	S801+/S811+	G1	F1E	E
360A	S801+/S811+	G1	F1E	E
420A	S801+/S811+	10	F1E	E
500A	S801+/S811+	10	F1E	E
650A	S801+/S811+	10	F1E	F1E
720A	S801+/S811+	10	F1E	F1E
850A	S801+/S811+	10	F1E	F1E
1000A	S801+/S811+	10	F1E	F1E

Notes

① Enclosure space will also accommodate an ***IT*** power supply, two four-pole relays, CPT, and terminal blocks. Also includes space for a DNA module or MOV.

② Same as footnote ①, but CPT is not included. Upsize to B1 enclosure to include space for a CPT and a full voltage bypass contactor.

Contents

Product Description

Eaton's expanded reduced voltage starter solutions include autotransformer, part winding, and wye delta.

Features

- Autotransformer
  - High torque per amp
  - Three starting torques through taps
  - Optimal for slow starts
- Part Winding
  - Small physical size
  - Limits motor torque and current to 50% at start-up
- Wye Delta
  - Optimal for slow starts and high inertia load
  - High torque efficiency
  - Inrush restrictions at start-up

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL Listed
- cUL
  (indicates appropriate CSA standard investigation)
- OSHPD Certified
  (OSP-0015-10)

Additional Reference

Other Magnet Coils	**V10-T5-35**
Cover Control	**V10-T5-36**
Dimensions	**Tab 14**
Accessories and Modifications	**Tab 15**
Technical Data and Specifications	**Tab 17**

Catalog Number Selection

Freedom Three-Phase Magnetic Starters

EC N 42 2 1 A A F - ____

Design
N = Freedom NEMA

Class	Page
42 = Non-combination autotransformer starter	**V10-T5-37**
43 = Combination autotransformer starter—fusible disconnect	**V10-T5-39**
Combination autotransformer starter—non-fusible disconnect	**V10-T5-41**
44 = Combination autotransformer starter—circuit breaker	**V10-T5-43**
45 = Non-combination part winding starter	**V10-T5-45**
46 = Combination part winding starter—fusible disconnect	**V10-T5-46**
Combination part winding starter—non-fusible disconnect	**V10-T5-48**
47 = Combination part winding starter—circuit breaker	**V10-T5-49**
48 = Non-combination open transition wye delta starter	**V10-T5-51**
49 = Combination open transition wye delta starter—fusible disconnect	**V10-T5-52**
Combination open transition wye delta starter—non-fusible disconnect	**V10-T5-56**
50 = Combination open transition wye delta starter—circuit breaker	**V10-T5-60**
51 = Non-combination closed transition wye delta starter	**V10-T5-64**
52 = Combination closed transition wye delta starter—fusible disconnect	**V10-T5-68**
Combination closed transition wye delta starter—non-fusible disconnect	**V10-T5-72**
53 = Combination closed transition wye delta starter—circuit breaker	**V10-T5-76**
64 = Combination part winding pump control starter—fusible	**V10-T5-80**
65 = Combination part winding pump control starter—circuit breaker	**V10-T5-80**

NEMA Size

2 = Size 2	**6** = Size 6
3 = Size 3	**7** = Size 7
4 = Size 4	**8** = Size 8
5 = Size 5	**9** = Size 9

Enclosure Type
1 = Type 1—General purpose
2 = Type 3R—Rainproof
3 = Type 4—Watertight (painted steel)
4 = Type 4X—Watertight (304-Grade stainless steel)
5 = Type 4X—Corrosion (non-metallic)
6 = Type 7/9—Bolted hazardous location
7 = Type 7/9—Threaded hazardous location
8 = Type 12—Dust-tight
9 = Type 4X—316-Grade stainless steel

Coil Voltage and/or Control Transformers
See code tables below

Cover Control
See **Page V10-T5-36** for options

Disconnect Fuse Clip Ratings

A = None	**G** = 100A/600V R	**N** = 600A/600V R
B = 30A/250V R	**H** = 200A/250V R	**P** = 800A/600V L
C = 30A/600V R	**J** = 200A/600V R	**Q** = 1200A/600V L
D = 60A/250V R	**K** = 400A/250V R	**R** = 1600A/600V L
E = 60A/600V R	**L** = 400A/600V R	**S** = 2000A/600V L
F = 100A/250V R	**M** = 600A/250V R	**T** = By description

Circuit Breaker Ratings

A = None	**K** = 400A	**5** = 3A ①
B = 3A	**L** = 600A	**6** = 7A ①
C = 7A	**M** = 800A	**7** = 15A ①
D = 15A	**N** = 1000A	**8** = 30A ①
E = 30A	**P** = 1200A	**9** = 50A ①
F = 50A	**Q** = 2000A	**I** = 100A ①
G = 100A	**R** = 3000A	**2** = 70A
H = 150A	**T** = By description	
J = 250A		

Modification Codes
See **Tab 15**

Magnetic Coil Codes (System Voltage) ②

Code	Magnet Coil	Code	Magnet Coil	Code	Magnet Coil
A	120/60110/50	**K**	240/50	**U**	24/50
B	240/60220/50	**L**	380/50	**V**	32/50
C	460/60440/50	**M**	415/50	**W**	48/60
D	575/60550/50	**P**	12 Vdc	**X**	104–120/60
E	208/60	**Q**	24 Vdc	**Y**	48/50
G	550/50	**R**	48 Vdc	**Z**	By description
H	277/60	**S**	125 Vdc		
J	208–240/60	**T**	24/60		

Control Power Transformer Codes (System Voltage)

Code	Primary	Secondary
B	240/480–220/440 wired for 240V	120/60–110/50
C	240/480–220/440 wired for 480V	120/60–110/50
D	600/60–550/50	120/60–110/50
E	208/60	120/60
H	277/60	120/60
L	380/50	110/50
M	415/50	110/50
Q	208/60	24
R	240/480–220/440 wired for 240V	24
S	240/480–220/440 wired for 480V	24
T	600/60	24
U	277/60	24
V	380/50	24
W	415/50	24
X	240/480/600 wired for 480V	120
Y	240/480/600 wired for 480V	24
Z	By description	—

Notes
① Use for Sizes 0–3, HMCP 600V applications only.
② When control power transformer modification codes (**C1**–**C11**) are used or when starter class includes CPT (that is, ECN07, 18) see table to the right for system voltage code.

Cover Control

Non-Reversing

Flange Control Kits

For on-the-job conversion of Type 1, 3R, 4X and 12 enclosed starters. Knockouts are provided on the Type 1 flange. Type 3R, 4X and 12 have prepunched holes with removable hole plugs.

Factory Installed Cover Control

To order factory installed pilot devices, change the ninth character of the catalog number to the alpha shown in the table below. Example: To order an **ECN0514CAA** with START/STOP pushbuttons and a red pilot light, change the **A** to a **C**, that is, ECN0514C**C**A.

Type 1 Non-Combination

All Others

Non-Reversing Cover Control

Description	Factory Installed Flange Control Position 9 Alpha	Type 1 Non-Combination ①	All Others ②	Field Installation Kits Type 1 Non-Combination ① Catalog Number	All Others ② Catalog Number
No cover mounted pilot devices	**A**	■	■	**C400GK0**	—
START/STOP pushbuttons	**B**	■	■	**C400GK1**	**C400T1**
With red RUN pilot light	**C**	■	■	**C400GK12** ③	—
With red RUN/green OFF lights	**D**	■	■	**C400GK16** ③	—
ON/OFF pushbuttons	**E**	—	■	—	**C400T2**
With red RUN pilot light	**F**	—	■	—	—
With red RUN/green OFF lights	**G**	—	■	—	—
HAND/OFF/AUTO selector switch	**H**	■	■	**C400GK3**	**C400T12**
With red RUN pilot light	**J**	■	■	**C400GK32** ③	—
With red RUN/green OFF lights	**K**	■	■	**C400GK36** ③	—
START pushbutton	**L**	—	■	—	**C400T3**
ON pushbutton	**M**	—	■	—	**C400T4**
OFF pushbutton	**N**	—	■	—	**C400T5**
Red RUN pilot light	**P**	■	■	**C400GK42** ③	**C400T9** ③
Green OFF	**Q**	■	■	**C400GK41** ③	**C400T10** ③
Red RUN/green OFF pilot lights	**R**	■	■	**C400GK46** ③	**C400T11** ③
START/STOP selector switch	**S**	—	■	—	**C400T13**
With red RUN pilot light	**T**	—	■	—	—
With red RUN/green OFF lights	**U**	—	■	—	—
ON/OFF selector switch	**V**	—	■	—	**C400T14**
With red RUN pilot light	**W**	—	■	—	—
With red RUN/green OFF lights	**X**	—	■	—	—

Notes

① Type 1, NEMA Sizes 00–4 non-combination ONLY.
② Type 1, NEMA Sizes 5–9 non-combination PLUS all Type 3R, 4X, 12 non-combination PLUS all combination—NEMA sizes only.
③ Add code letter from the table below to catalog number for voltage—kits only. Example: C400T9**B**.

Rating	Code Letter	Rating	Code Letter	Rating	Code Letter
120V 60 Hz	**A**	240V 60 Hz	**B**	480V 60 Hz	**C**
208V 60 Hz	**E**	380V 50 Hz	**L**	600V 60 Hz	**D**

Product Selection

Autotransformer

Features

- Non-combination and combination designs
- Three-phase magnetic, three-pole
- Interchangeable heater OLR
- 600V maximum

Class ECN42—Non-Combination Autotransformer Starter

NEMA Size	Motor Voltage	hp Rating	Magnet Coil Voltage ①	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4 Water and Dust-Tight Painted Steel Catalog Number	Type 12 Dust-Tight Industrial External Reset ② Catalog Number
2 (45A)	200	10	120	**ECN4221EAA-A8/B1**	**ECN4222EAA-A8/B1**	**ECN4223EAA-A8/B1**	**ECN4228EAA-A8/B1**
	230	10		**ECN4221BAA-A8/B2**	**ECN4222BAA-A8/B2**	**ECN4223BAA-A8/B2**	**ECN4228BAA-A8/B2**
		15		**ECN4221BAA-A8/B7**	**ECN4222BAA-A8/B7**	**ECN4223BAA-A8/B7**	**ECN4228BAA-A8/B7**
	460	10		**ECN4221CAA-A8/B4**	**ECN4222CAA-A8/B4**	**ECN4223CAA-A8/B4**	**ECN4228CAA-A8/B4**
		15		**ECN4221CAA-A8/B9**	**ECN4222CAA-A8/B9**	**ECN4223CAA-A8/B9**	**ECN4228CAA-A8/B9**
		20		**ECN4221CAA-A8/B14**	**ECN4222CAA-A8/B14**	**ECN4223CAA-A8/B14**	**ECN4228CAA-A8/B14**
		25		**ECN4221CAA-A8/B19**	**ECN4222CAA-A8/B19**	**ECN4223CAA-A8/B19**	**ECN4228CAA-A8/B19**
	575	10		**ECN4221DAA-A8/B5**	**ECN4222DAA-A8/B5**	**ECN4223DAA-A8/B5**	**ECN4228DAA-A8/B5**
		15		**ECN4221DAA-A8/B10**	**ECN4222DAA-A8/B10**	**ECN4223DAA-A8/B10**	**ECN4228DAA-A8/B10**
		20		**ECN4221DAA-A8/B15**	**ECN4222DAA-A8/B15**	**ECN4223DAA-A8/B15**	**ECN4228DAA-A8/B15**
		25		**ECN4221DAA-A8/B20**	**ECN4222DAA-A8/B20**	**ECN4223DAA-A8/B20**	**ECN4228DAA-A8/B20**
3 (90A)	200	15	120	**ECN4231EAA-A8/B6**	**ECN4232EAA-A8/B6**	**ECN4233EAA-A8/B6**	**ECN4238EAA-A8/B6**
		20		**ECN4231EAA-A8/B11**	**ECN4232EAA-A8/B11**	**ECN4233EAA-A8/B11**	**ECN4238EAA-A8/B11**
		25		**ECN4231EAA-A8/B16**	**ECN4232EAA-A8/B16**	**ECN4233EAA-A8/B16**	**ECN4238EAA-A8/B16**
	230	20		**ECN4231BAA-A8/B12**	**ECN4232BAA-A8/B12**	**ECN4233BAA-A8/B12**	**ECN4238BAA-A8/B12**
		25		**ECN4231BAA-A8/B17**	**ECN4232BAA-A8/B17**	**ECN4233BAA-A8/B17**	**ECN4238BAA-A8/B17**
		30		**ECN4231BAA-A8/B22**	**ECN4232BAA-A8/B22**	**ECN4233BAA-A8/B22**	**ECN4238BAA-A8/B22**
	460	30		**ECN4231CAA-A8/B24**	**ECN4232CAA-A8/B24**	**ECN4233CAA-A8/B24**	**ECN4238CAA-A8/B24**
		40		**ECN4231CAA-A8/B29**	**ECN4232CAA-A8/B29**	**ECN4233CAA-A8/B29**	**ECN4238CAA-A8/B29**
		50		**ECN4231CAA-A8/B34**	**ECN4232CAA-A8/B34**	**ECN4233CAA-A8/B34**	**ECN4238CAA-A8/B34**
	575	30		**ECN4231DAA-A8/B25**	**ECN4232DAA-A8/B25**	**ECN4233DAA-A8/B25**	**ECN4238DAA-A8/B25**
		40		**ECN4231DAA-A8/B30**	**ECN4232DAA-A8/B30**	**ECN4233DAA-A8/B30**	**ECN4238DAA-A8/B30**
		50		**ECN4231DAA-A8/B35**	**ECN4232DAA-A8/B35**	**ECN4233DAA-A8/B35**	**ECN4238DAA-A8/B35**
4 (135A)	200	30	120	**ECN4241EAA-A8/B21**	**ECN4242EAA-A8/B21**	**ECN4243EAA-A8/B21**	**ECN4248EAA-A8/B21**
		40		**ECN4241EAA-A8/B26**	**ECN4242EAA-A8/B26**	**ECN4243EAA-A8/B26**	**ECN4248EAA-A8/B26**
	230	40		**ECN4241BAA-A8/B27**	**ECN4242BAA-A8/B27**	**ECN4243BAA-A8/B27**	**ECN4248BAA-A8/B27**
		50		**ECN4241BAA-A8/B32**	**ECN4242BAA-A8/B32**	**ECN4243BAA-A8/B32**	**ECN4248BAA-A8/B32**
	460	75		**ECN4241CAA-A8/B39**	**ECN4242CAA-A8/B39**	**ECN4243CAA-A8/B39**	**ECN4248CAA-A8/B39**
		100		**ECN4241CAA-A8/B44**	**ECN4242CAA-A8/B44**	**ECN4243CAA-A8/B44**	**ECN4248CAA-A8/B44**
	575	75		**ECN4241DAA-A8/B40**	**ECN4242DAA-A8/B40**	**ECN4243DAA-A8/B40**	**ECN4248DAA-A8/B40**
		100		**ECN4241DAA-A8/B45**	**ECN4242DAA-A8/B45**	**ECN4243DAA-A8/B45**	**ECN4248DAA-A8/B45**

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary. If modification code **C35** separate control is specified, the control transformer is omitted.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

Class ECN42—Non-Combination Autotransformer Starter, continued

NEMA Size	Motor Voltage	hp Rating	Magnet Coil Voltage ①	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4 Water and Dust-Tight Painted Steel Catalog Number	Type 12 Dust-Tight Industrial External Reset ② Catalog Number
5 (270A)	200	50	120	ECN4251EAA-A8/B31	ECN4252EAA-A8/B31	ECN4253EAA-A8/B31	ECN4258EAA-A8/B31
		75		ECN4251EAA-A8/B36	ECN4252EAA-A8/B36	ECN4253EAA-A8/B36	ECN4258EAA-A8/B36
	230	75		ECN4251BAA-A8/B37	ECN4252BAA-A8/B37	ECN4253BAA-A8/B37	ECN4258BAA-A8/B37
		100		ECN4251BAA-A8/B42	ECN4252BAA-A8/B42	ECN4253BAA-A8/B42	ECN4258BAA-A8/B42
	460	125		ECN4251CAA-A8/B49	ECN4252CAA-A8/B49	ECN4253CAA-A8/B49	ECN4258CAA-A8/B49
		150		ECN4251CAA-A8/B54	ECN4252CAA-A8/B54	ECN4253CAA-A8/B54	ECN4258CAA-A8/B54
		200		ECN4251CAA-A8/B59	ECN4252CAA-A8/B59	ECN4253CAA-A8/B59	ECN4258CAA-A8/B59
	575	125		ECN4251DAA-A8/B50	ECN4252DAA-A8/B50	ECN4253DAA-A8/B50	ECN4258DAA-A8/B50
		150		ECN4251DAA-A8/B55	ECN4252DAA-A8/B55	ECN4253DAA-A8/B55	ECN4258DAA-A8/B55
		200		ECN4251DAA-A8/B60	ECN4252DAA-A8/B60	ECN4253DAA-A8/B60	ECN4258DAA-A8/B60
6 (540A)	200	100	120	ECN4261EAA-A8/B41	ECN4262EAA-A8/B41	ECN4263EAA-A8/B41	ECN4268EAA-A8/B41
		125		ECN4261EAA-A8/B46	ECN4262EAA-A8/B46	ECN4263EAA-A8/B46	ECN4268EAA-A8/B46
		150		ECN4261EAA-A8/B51	ECN4262EAA-A8/B51	ECN4263EAA-A8/B51	ECN4268EAA-A8/B51
	230	125		ECN4261BAA-A8/B47	ECN4262BAA-A8/B47	ECN4263BAA-A8/B47	ECN4268BAA-A8/B47
		150		ECN4261BAA-A8/B52	ECN4262BAA-A8/B52	ECN4263BAA-A8/B52	ECN4268BAA-A8/B52
		200		ECN4261BAA-A8/B57	ECN4262BAA-A8/B57	ECN4263BAA-A8/B57	ECN4268BAA-A8/B57
	460	250		ECN4261CAA-A8/B64	ECN4262CAA-A8/B64	ECN4263CAA-A8/B64	ECN4268CAA-A8/B64
		300		ECN4261CAA-A8/B69	ECN4262CAA-A8/B69	ECN4263CAA-A8/B69	ECN4268CAA-A8/B69
		400		ECN4261CAA-A8/B74	ECN4262CAA-A8/B74	ECN4263CAA-A8/B74	ECN4268CAA-A8/B74
	575	250		ECN4261DAA-A8/B65	ECN4262DAA-A8/B65	ECN4263DAA-A8/B65	ECN4268DAA-A8/B65
		300		ECN4261DAA-A8/B70	ECN4262DAA-A8/B70	ECN4263DAA-A8/B70	ECN4268DAA-A8/B70
		400		ECN4261DAA-A8/B75	ECN4262DAA-A8/B75	ECN4263DAA-A8/B75	ECN4268DAA-A8/B75
7 (810A)	230	250	120	ECN4271BAA-A8/B62	ECN4272BAA-A8/B62	ECN4273BAA-A8/B62	ECN4278BAA-A8/B62
		300		ECN4271BAA-A8/B67	ECN4272BAA-A8/B67	ECN4273BAA-A8/B67	ECN4278BAA-A8/B67
	460	450		ECN4271CAA-A8/B78	ECN4272CAA-A8/B78	ECN4273CAA-A8/B78	ECN4278CAA-A8/B78
		500		ECN4271CAA-A8/B81	ECN4272CAA-A8/B81	ECN4273CAA-A8/B81	ECN4278CAA-A8/B81
		600		ECN4271CAA-A8/B84	ECN4272CAA-A8/B84	ECN4273CAA-A8/B84	ECN4278CAA-A8/B84
	575	450		ECN4271DAA-A8/B79	ECN4272DAA-A8/B79	ECN4273DAA-A8/B79	ECN4278DAA-A8/B79
		500		ECN4271DAA-A8/B82	ECN4272DAA-A8/B82	ECN4273DAA-A8/B82	ECN4278DAA-A8/B82
		600		ECN4271DAA-A8/B85	ECN4272DAA-A8/B85	ECN4273DAA-A8/B85	ECN4278DAA-A8/B85
8 (1215A)	230	400	120	ECN4281BAA-A8/B72	ECN4282BAA-A8/B72	ECN4283BAA-A8/B72	ECN4288BAA-A8/B72
		450		ECN4281BAA-A8/B76	ECN4282BAA-A8/B76	ECN4283BAA-A8/B76	ECN4288BAA-A8/B76
	460	700		ECN4281CAA-A8/B87	ECN4282CAA-A8/B87	ECN4283CAA-A8/B87	ECN4288CAA-A8/B87
		800		ECN4281CAA-A8/B91	ECN4282CAA-A8/B91	ECN4283CAA-A8/B91	ECN4288CAA-A8/B91
		900		ECN4281CAA-A8/B94	ECN4282CAA-A8/B94	ECN4283CAA-A8/B94	ECN4288CAA-A8/B94
	575	700		ECN4281DAA-A8/B88	ECN4282DAA-A8/B88	ECN4283DAA-A8/B88	ECN4288DAA-A8/B88
		800		ECN4281DAA-A8/B92	ECN4282DAA-A8/B92	ECN4283DAA-A8/B92	ECN4288DAA-A8/B92
		900		ECN4281DAA-A8/B95	ECN4282DAA-A8/B95	ECN4283DAA-A8/B95	ECN4288DAA-A8/B95
9 (2250A)	230	800	120	ECN4291BAA-A8/B89	ECN4292BAA-A8/B89	ECN4293BAA-A8/B89	ECN4298BAA-A8/B89
	460	1600		ECN4291CAA-A8/B96	ECN4292CAA-A8/B96	ECN4293CAA-A8/B96	ECN4298CAA-A8/B96
	575	1600		ECN4291DAA-A8/B97	ECN4292DAA-A8/B97	ECN4293DAA-A8/B97	ECN4298DAA-A8/B97

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary. If modification code **C35** separate control is specified, the control transformer is omitted.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

Class ECN43—Non-Combination Autotransformer Starter—Fusible Disconnect

Motor Voltage	hp Rating	Magnet Coil Voltage ①	Fuse Clip Amp.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4 Water and Dust-Tight Painted Steel Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number
NEMA Size 2 (45A)							
200	10	120	60A	ECN4321EAD-A8/B1	ECN4322EAD-A8/B1	ECN4323EAD-A8/B1	ECN4328EAD-A8/B1
230	10			ECN4321BAD-A8/B2	ECN4322BAD-A8/B2	ECN4323BAD-A8/B2	ECN4328BAD-A8/B2
	15			ECN4321BAD-A8/B7	ECN4322BAD-A8/B7	ECN4323BAD-A8/B7	ECN4328BAD-A8/B7
460	10			ECN4321CAE-A8/B4	ECN4322CAE-A8/B4	ECN4323CAE-A8/B4	ECN4328CAE-A8/B4
	15			ECN4321CAE-A8/B9	ECN4322CAE-A8/B9	ECN4323CAE-A8/B9	ECN4328CAE-A8/B9
	20			ECN4321CAE-A8/B14	ECN4322CAE-A8/B14	ECN4323CAE-A8/B14	ECN4328CAE-A8/B14
	25			ECN4321CAE-A8/B19	ECN4322CAE-A8/B19	ECN4323CAE-A8/B19	ECN4328CAE-A8/B19
575	10			ECN4321DAE-A8/B5	ECN4322DAE-A8/B5	ECN4323DAE-A8/B5	ECN4328DAE-A8/B5
	15			ECN4321DAE-A8/B10	ECN4322DAE-A8/B10	ECN4323DAE-A8/B10	ECN4328DAE-A8/B10
	20			ECN4321DAE-A8/B15	ECN4322DAE-A8/B15	ECN4323DAE-A8/B15	ECN4328DAE-A8/B15
	25			ECN4321DAE-A8/B20	ECN4322DAE-A8/B20	ECN4323DAE-A8/B20	ECN4328DAE-A8/B20
NEMA Size 3 (90A)							
200	15	120	100A	ECN4331EAF-A8/B6	ECN4332EAF-A8/B6	ECN4333EAF-A8/B6	ECN4338EAF-A8/B6
	20			ECN4331EAF-A8/B11	ECN4332EAF-A8/B11	ECN4333EAF-A8/B11	ECN4338EAF-A8/B11
	25			ECN4331EAF-A8/B16	ECN4332EAF-A8/B16	ECN4333EAF-A8/B16	ECN4338EAF-A8/B16
230	20			ECN4331BAF-A8/B12	ECN4332BAF-A8/B12	ECN4333BAF-A8/B12	ECN4338BAF-A8/B12
	25			ECN4331BAF-A8/B17	ECN4332BAF-A8/B17	ECN4333BAF-A8/B17	ECN4338BAF-A8/B17
	30			ECN4331BAF-A8/B22	ECN4332BAF-A8/B22	ECN4333BAF-A8/B22	ECN4338BAF-A8/B22
460	30			ECN4331CAG-A8/B24	ECN4332CAG-A8/B24	ECN4333CAG-A8/B24	ECN4338CAG-A8/B24
	40			ECN4331CAG-A8/B29	ECN4332CAG-A8/B29	ECN4333CAG-A8/B29	ECN4338CAG-A8/B29
	50			ECN4331CAG-A8/B34	ECN4332CAG-A8/B34	ECN4333CAG-A8/B34	ECN4338CAG-A8/B34
575	30			ECN4331DAG-A8/B25	ECN4332DAG-A8/B25	ECN4333DAG-A8/B25	ECN4338DAG-A8/B25
	40			ECN4331DAG-A8/B30	ECN4332DAG-A8/B30	ECN4333DAG-A8/B30	ECN4338DAG-A8/B30
	50			ECN4331DAG-A8/B35	ECN4332DAG-A8/B35	ECN4333DAG-A8/B35	ECN4338DAG-A8/B35
NEMA Size 4 (135A)							
200	30	120	200A	ECN4341EAH-A8/B21	ECN4342EAH-A8/B21	ECN4343EAH-A8/B21	ECN4348EAH-A8/B21
	40			ECN4341EAH-A8/B26	ECN4342EAH-A8/B26	ECN4343EAH-A8/B26	ECN4348EAH-A8/B26
230	40			ECN4341BAH-A8/B27	ECN4342BAH-A8/B27	ECN4343BAH-A8/B27	ECN4348BAH-A8/B27
	50			ECN4341BAH-A8/B32	ECN4342BAH-A8/B32	ECN4343BAH-A8/B32	ECN4348BAH-A8/B32
460	75			ECN4341CAJ-A8/B39	ECN4342CAJ-A8/B39	ECN4343CAJ-A8/B39	ECN4348CAJ-A8/B39
	100			ECN4341CAJ-A8/B44	ECN4342CAJ-A8/B44	ECN4343CAJ-A8/B44	ECN4348CAJ-A8/B44
575	75			ECN4341DAJ-A8/B40	ECN4342DAJ-A8/B40	ECN4343DAJ-A8/B40	ECN4348DAJ-A8/B40
	100			ECN4341DAJ-A8/B45	ECN4342DAJ-A8/B45	ECN4343DAJ-A8/B45	ECN4348DAJ-A8/B45
NEMA Size 5 (270A)							
200	50	120	400A	ECN4351EAK-A8/B31	ECN4352EAK-A8/B31	ECN4353EAK-A8/B31	ECN4358EAK-A8/B31
	75			ECN4351EAK-A8/B36	ECN4352EAK-A8/B36	ECN4353EAK-A8/B36	ECN4358EAK-A8/B36
230	75			ECN4351BAK-A8/B37	ECN4352BAK-A8/B37	ECN4353BAK-A8/B37	ECN4358BAK-A8/B37
	100			ECN4351BAK-A8/B42	ECN4352BAK-A8/B42	ECN4353BAK-A8/B42	ECN4358BAK-A8/B42
460	125			ECN4351CAL-A8/B49	ECN4352CAL-A8/B49	ECN4353CAL-A8/B49	ECN4358CAL-A8/B49
	150			ECN4351CAL-A8/B54	ECN4352CAL-A8/B54	ECN4353CAL-A8/B54	ECN4358CAL-A8/B54
	200			ECN4351CAL-A8/B59	ECN4352CAL-A8/B59	ECN4353CAL-A8/B59	ECN4358CAL-A8/B59
575	125			ECN4351DAL-A8/B50	ECN4352DAL-A8/B50	ECN4353DAL-A8/B50	ECN4358DAL-A8/B50
	150			ECN4351DAL-A8/B55	ECN4352DAL-A8/B55	ECN4353DAL-A8/B55	ECN4358DAL-A8/B55
	200			ECN4351DAL-A8/B60	ECN4352DAL-A8/B60	ECN4353DAL-A8/B60	ECN4358DAL-A8/B60

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary. If modification code **C35** separate control is specified, the control transformer is omitted.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door lock.

Class ECN43—Non-Combination Autotransformer Starter—Fusible Disconnect, continued

Motor Voltage	hp Rating	Magnet Coil Voltage ①	Fuse Clip Amp.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4 Water and Dust-Tight Painted Steel Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number
NEMA Size 6 (540A)							
200	100	120	600A	**ECN4361EAM-A8/B41**	**ECN4362EAM-A8/B41**	**ECN4363EAM-A8/B41**	**ECN4368EAM-A8/B41**
	125			**ECN4361EAM-A8/B46**	**ECN4362EAM-A8/B46**	**ECN4363EAM-A8/B46**	**ECN4368EAM-A8/B46**
	150			**ECN4361EAM-A8/B51**	**ECN4362EAM-A8/B51**	**ECN4363EAM-A8/B51**	**ECN4368EAM-A8/B51**
230	125			**ECN4361BAM-A8/B47**	**ECN4362BAM-A8/B47**	**ECN4363BAM-A8/B47**	**ECN4368BAM-A8/B47**
	150			**ECN4361BAM-A8/B52**	**ECN4362BAM-A8/B52**	**ECN4363BAM-A8/B52**	**ECN4368BAM-A8/B52**
	200			**ECN4361BAM-A8/B57**	**ECN4362BAM-A8/B57**	**ECN4363BAM-A8/B57**	**ECN4368BAM-A8/B57**
460	250			**ECN4361CAN-A8/B64**	**ECN4362CAN-A8/B64**	**ECN4363CAN-A8/B64**	**ECN4368CAN-A8/B64**
	300			**ECN4361CAN-A8/B69**	**ECN4362CAN-A8/B69**	**ECN4363CAN-A8/B69**	**ECN4368CAN-A8/B69**
	400			**ECN4361CAN-A8/B74**	**ECN4362CAN-A8/B74**	**ECN4363CAN-A8/B74**	**ECN4368CAN-A8/B74**
575	250			**ECN4361DAN-A8/B65**	**ECN4362DAN-A8/B65**	**ECN4363DAN-A8/B65**	**ECN4368DAN-A8/B65**
	300			**ECN4361DAN-A8/B70**	**ECN4362DAN-A8/B70**	**ECN4363DAN-A8/B70**	**ECN4368DAN-A8/B70**
	400			**ECN4361DAN-A8/B75**	**ECN4362DAN-A8/B75**	**ECN4363DAN-A8/B75**	**ECN4368DAN-A8/B75**
NEMA Size 7 (810A)							
230	250	120	④	**ECN4371BAU-A8/B62**	**ECN4372BAU-A8/B62**	**ECN4373BAU-A8/B62**	**ECN4378BAU-A8/B62**
	300			**ECN4371BAU-A8/B67**	**ECN4372BAU-A8/B67**	**ECN4373BAU-A8/B67**	**ECN4378BAU-A8/B67**
460	450			**ECN4371CAU-A8/B78**	**ECN4372CAU-A8/B78**	**ECN4373CAU-A8/B78**	**ECN4378CAU-A8/B78**
	500			**ECN4371CAU-A8/B81**	**ECN4372CAU-A8/B81**	**ECN4373CAU-A8/B81**	**ECN4378CAU-A8/B81**
	600			**ECN4371CAU-A8/B84**	**ECN4372CAU-A8/B84**	**ECN4373CAU-A8/B84**	**ECN4378CAU-A8/B84**
575	450			**ECN4371DAU-A8/B79**	**ECN4372DAU-A8/B79**	**ECN4373DAU-A8/B79**	**ECN4378DAU-A8/B79**
	500			**ECN4371DAU-A8/B82**	**ECN4372DAU-A8/B82**	**ECN4373DAU-A8/B82**	**ECN4378DAU-A8/B82**
	600			**ECN4371DAU-A8/B85**	**ECN4372DAU-A8/B85**	**ECN4373DAU-A8/B85**	**ECN4378DAU-A8/B85**
NEMA Size 8 (1215A)							
230	400	120	④	**ECN4381BAU-A8/B72**	**ECN4382BAU-A8/B72**	**ECN4383BAU-A8/B72**	**ECN4388BAU-A8/B72**
	450			**ECN4381BAU-A8/B76**	**ECN4382BAU-A8/B76**	**ECN4383BAU-A8/B76**	**ECN4388BAU-A8/B76**
460	700			**ECN4381CAU-A8/B87**	**ECN4382CAU-A8/B87**	**ECN4383CAU-A8/B87**	**ECN4388CAU-A8/B87**
	800			**ECN4381CAU-A8/B91**	**ECN4382CAU-A8/B91**	**ECN4383CAU-A8/B91**	**ECN4388CAU-A8/B91**
	900			**ECN4381CAU-A8/B94**	**ECN4382CAU-A8/B94**	**ECN4383CAU-A8/B94**	**ECN4388CAU-A8/B94**
575	700			**ECN4381DAU-A8/B88**	**ECN4382DAU-A8/B88**	**ECN4383DAU-A8/B88**	**ECN4388DAU-A8/B88**
	800			**ECN4381DAU-A8/B92**	**ECN4382DAU-A8/B92**	**ECN4383DAU-A8/B92**	**ECN4388DAU-A8/B92**
	900			**ECN4381DAU-A8/B95**	**ECN4382DAU-A8/B95**	**ECN4383DAU-A8/B95**	**ECN4388DAU-A8/B95**
NEMA Size 9 (2250A)							
230	800	120	④	**ECN4391BAU-A8/B89**	**ECN4392BAU-A8/B89**	**ECN4393BAU-A8/B89**	**ECN4398BAU-A8/B89**
460	1600			**ECN4391CAU-A8/B96**	**ECN4392CAU-A8/B96**	**ECN4393CAU-A8/B96**	**ECN4398CAU-A8/B96**
575	1600			**ECN4391DAU-A8/B97**	**ECN4392DAU-A8/B97**	**ECN4393DAU-A8/B97**	**ECN4398DAU-A8/B97**

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary. If modification code **C35** separate control is specified, the control transformer is omitted.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door lock.

④ Supply hp, voltage, FLA and whether motor is design E or not when ordering the starter.

Class ECN43—Combination Autotransformer Starter—Non-Fusible Disconnect

Motor Voltage	hp Rating	Magnet Coil Voltage ①	Fuse Clip Amp.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4 Water and Dust-Tight Painted Steel Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number
NEMA Size 2 (45A)							
200	10	120	60A	ECN4321EAA-A8/B1	ECN4322EAA-A8/B1	ECN4323EAA-A8/B1	ECN4328EAA-A8/B1
230	10			ECN4321BAA-A8/B2	ECN4322BAA-A8/B2	ECN4323BAA-A8/B2	ECN4328BAA-A8/B2
	15			ECN4321BAA-A8/B7	ECN4322BAA-A8/B7	ECN4323BAA-A8/B7	ECN4328BAA-A8/B7
460	10			ECN4321CAA-A8/B4	ECN4322CAA-A8/B4	ECN4323CAA-A8/B4	ECN4328CAA-A8/B4
	15			ECN4321CAA-A8/B9	ECN4322CAA-A8/B9	ECN4323CAA-A8/B9	ECN4328CAA-A8/B9
	20			ECN4321CAA-A8/B14	ECN4322CAA-A8/B14	ECN4323CAA-A8/B14	ECN4328CAA-A8/B14
	25			ECN4321CAA-A8/B19	ECN4322CAA-A8/B19	ECN4323CAA-A8/B19	ECN4328CAA-A8/B19
575	10			ECN4321DAA-A8/B5	ECN4322DAA-A8/B5	ECN4323DAA-A8/B5	ECN4328DAA-A8/B5
	15			ECN4321DAA-A8/B10	ECN4322DAA-A8/B10	ECN4323DAA-A8/B10	ECN4328DAA-A8/B10
	20			ECN4321DAA-A8/B15	ECN4322DAA-A8/B15	ECN4323DAA-A8/B15	ECN4328DAA-A8/B15
	25			ECN4321DAA-A8/B20	ECN4322DAA-A8/B20	ECN4323DAA-A8/B20	ECN4328DAA-A8/B20
NEMA Size 3 (90A)							
200	15	120	100A	ECN4331EAA-A8/B6	ECN4332EAA-A8/B6	ECN4333EAA-A8/B6	ECN4338EAA-A8/B6
	20			ECN4331EAA-A8/B11	ECN4332EAA-A8/B11	ECN4333EAA-A8/B11	ECN4338EAA-A8/B11
	25			ECN4331EAA-A8/B16	ECN4332EAA-A8/B16	ECN4333EAA-A8/B16	ECN4338EAA-A8/B16
230	20			ECN4331BAA-A8/B12	ECN4332BAA-A8/B12	ECN4333BAA-A8/B12	ECN4338BAA-A8/B12
	25			ECN4331BAA-A8/B17	ECN4332BAA-A8/B17	ECN4333BAA-A8/B17	ECN4338BAA-A8/B17
	30			ECN4331BAA-A8/B22	ECN4332BAA-A8/B22	ECN4333BAA-A8/B22	ECN4338BAA-A8/B22
460	30			ECN4331CAA-A8/B24	ECN4332CAA-A8/B24	ECN4333CAA-A8/B24	ECN4338CAA-A8/B24
	40			ECN4331CAA-A8/B29	ECN4332CAA-A8/B29	ECN4333CAA-A8/B29	ECN4338CAA-A8/B29
	50			ECN4331CAA-A8/B34	ECN4332CAA-A8/B34	ECN4333CAA-A8/B34	ECN4338CAA-A8/B34
575	30			ECN4331DAA-A8/B25	ECN4332DAA-A8/B25	ECN4333DAA-A8/B25	ECN4338DAA-A8/B25
	40			ECN4331DAA-A8/B30	ECN4332DAA-A8/B30	ECN4333DAA-A8/B30	ECN4338DAA-A8/B30
	50			ECN4331DAA-A8/B35	ECN4332DAA-A8/B35	ECN4333DAA-A8/B35	ECN4338DAA-A8/B35
NEMA Size 4 (135A)							
200	30	120	200A	ECN4341EAA-A8/B21	ECN4342EAA-A8/B21	ECN4343EAA-A8/B21	ECN4348EAA-A8/B21
	40			ECN4341EAA-A8/B26	ECN4342EAA-A8/B26	ECN4343EAA-A8/B26	ECN4348EAA-A8/B26
230	40			ECN4341BAA-A8/B27	ECN4342BAA-A8/B27	ECN4343BAA-A8/B27	ECN4348BAA-A8/B27
	50			ECN4341BAA-A8/B32	ECN4342BAA-A8/B32	ECN4343BAA-A8/B32	ECN4348BAA-A8/B32
460	75			ECN4341CAA-A8/B39	ECN4342CAA-A8/B39	ECN4343CAA-A8/B39	ECN4348CAA-A8/B39
	100			ECN4341CAA-A8/B44	ECN4342CAA-A8/B44	ECN4343CAA-A8/B44	ECN4348CAA-A8/B44
575	75			ECN4341DAA-A8/B40	ECN4342DAA-A8/B40	ECN4343DAA-A8/B40	ECN4348DAA-A8/B40
	100			ECN4341DAA-A8/B45	ECN4342DAA-A8/B45	ECN4343DAA-A8/B45	ECN4348DAA-A8/B45
NEMA Size 5 (270A)							
200	50	120	400A	ECN4351EAA-A8/B31	ECN4352EAA-A8/B31	ECN4353EAA-A8/B31	ECN4358EAA-A8/B31
	75			ECN4351EAA-A8/B36	ECN4352EAA-A8/B36	ECN4353EAA-A8/B36	ECN4358EAA-A8/B36
230	75			ECN4351BAA-A8/B37	ECN4352BAA-A8/B37	ECN4353BAA-A8/B37	ECN4358BAA-A8/B37
	100			ECN4351BAA-A8/B42	ECN4352BAA-A8/B42	ECN4353BAA-A8/B42	ECN4358BAA-A8/B42
460	125			ECN4351CAA-A8/B49	ECN4352CAA-A8/B49	ECN4353CAA-A8/B49	ECN4358CAA-A8/B49
	150			ECN4351CAA-A8/B54	ECN4352CAA-A8/B54	ECN4353CAA-A8/B54	ECN4358CAA-A8/B54
	200			ECN4351CAA-A8/B59	ECN4352CAA-A8/B59	ECN4353CAA-A8/B59	ECN4358CAA-A8/B59
575	125			ECN4351DAA-A8/B50	ECN4352DAA-A8/B50	ECN4353DAA-A8/B50	ECN4358DAA-A8/B50
	150			ECN4351DAA-A8/B55	ECN4352DAA-A8/B55	ECN4353DAA-A8/B55	ECN4358DAA-A8/B55
	200			ECN4351DAA-A8/B60	ECN4352DAA-A8/B60	ECN4353DAA-A8/B60	ECN4358DAA-A8/B60

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary. If modification code **C35** separate control is specified, the control transformer is omitted.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door lock.

Class ECN43—Non-Combination Autotransformer Starter—Fusible Disconnect, continued

Motor Voltage	hp Rating	Magnet Coil Voltage ①	Fuse Clip Amp.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4 Water and Dust-Tight Painted Steel Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number
NEMA Size 6 (540A)							
200	100	120	600A	**ECN4361EAA-A8/B41**	**ECN4362EAA-A8/B41**	**ECN4363EAA-A8/B41**	**ECN4368EAA-A8/B41**
	125			**ECN4361EAA-A8/B46**	**ECN4362EAA-A8/B46**	**ECN4363EAA-A8/B46**	**ECN4368EAA-A8/B46**
	150			**ECN4361EAA-A8/B51**	**ECN4362EAA-A8/B51**	**ECN4363EAA-A8/B51**	**ECN4368EAA-A8/B51**
230	125			**ECN4361BAA-A8/B47**	**ECN4362BAA-A8/B47**	**ECN4363BAA-A8/B47**	**ECN4368BAA-A8/B47**
	150			**ECN4361BAA-A8/B52**	**ECN4362BAA-A8/B52**	**ECN4363BAA-A8/B52**	**ECN4368BAA-A8/B52**
	200			**ECN4361BAA-A8/B57**	**ECN4362BAA-A8/B57**	**ECN4363BAA-A8/B57**	**ECN4368BAA-A8/B57**
460	250			**ECN4361CAA-A8/B64**	**ECN4362CAA-A8/B64**	**ECN4363CAA-A8/B64**	**ECN4368CAA-A8/B64**
	300			**ECN4361CAA-A8/B69**	**ECN4362CAA-A8/B69**	**ECN4363CAA-A8/B69**	**ECN4368CAA-A8/B69**
	400			**ECN4361CAA-A8/B74**	**ECN4362CAA-A8/B74**	**ECN4363CAA-A8/B74**	**ECN4368CAA-A8/B74**
575	250			**ECN4361DAA-A8/B65**	**ECN4362DAA-A8/B65**	**ECN4363DAA-A8/B65**	**ECN4368DAA-A8/B65**
	300			**ECN4361DAA-A8/B70**	**ECN4362DAA-A8/B70**	**ECN4363DAA-A8/B70**	**ECN4368DAA-A8/B70**
	400			**ECN4361DAA-A8/B75**	**ECN4362DAA-A8/B75**	**ECN4363DAA-A8/B75**	**ECN4368DAA-A8/B75**
NEMA Size 7 (810A)							
230	250	120	④	**ECN4371BAA-A8/B62**	**ECN4372BAA-A8/B62**	**ECN4373BAA-A8/B62**	**ECN4378BAA-A8/B62**
	300			**ECN4371BAA-A8/B67**	**ECN4372BAA-A8/B67**	**ECN4373BAA-A8/B67**	**ECN4378BAA-A8/B67**
460	450			**ECN4371CAA-A8/B78**	**ECN4372CAA-A8/B78**	**ECN4373CAA-A8/B78**	**ECN4378CAA-A8/B78**
	500			**ECN4371CAA-A8/B81**	**ECN4372CAA-A8/B81**	**ECN4373CAA-A8/B81**	**ECN4378CAA-A8/B81**
	600			**ECN4371CAA-A8/B84**	**ECN4372CAA-A8/B84**	**ECN4373CAA-A8/B84**	**ECN4378CAA-A8/B84**
575	450			**ECN4371DAA-A8/B79**	**ECN4372DAA-A8/B79**	**ECN4373DAA-A8/B79**	**ECN4378DAA-A8/B79**
	500			**ECN4371DAA-A8/B82**	**ECN4372DAA-A8/B82**	**ECN4373DAA-A8/B82**	**ECN4378DAA-A8/B82**
	600			**ECN4371DAA-A8/B85**	**ECN4372DAA-A8/B85**	**ECN4373DAA-A8/B85**	**ECN4378DAA-A8/B85**
NEMA Size 8 (1215A)							
230	400	120	④	**ECN4381BAA-A8/B72**	**ECN4382BAA-A8/B72**	**ECN4383BAA-A8/B72**	**ECN4388BAA-A8/B72**
	450			**ECN4381BAA-A8/B76**	**ECN4382BAA-A8/B76**	**ECN4383BAA-A8/B76**	**ECN4388BAA-A8/B76**
460	700			**ECN4381CAA-A8/B87**	**ECN4382CAA-A8/B87**	**ECN4383CAA-A8/B87**	**ECN4388CAA-A8/B87**
	800			**ECN4381CAA-A8/B91**	**ECN4382CAA-A8/B91**	**ECN4383CAA-A8/B91**	**ECN4388CAA-A8/B91**
	900			**ECN4381CAA-A8/B94**	**ECN4382CAA-A8/B94**	**ECN4383CAA-A8/B94**	**ECN4388CAA-A8/B94**
575	700			**ECN4381DAA-A8/B88**	**ECN4382DAA-A8/B88**	**ECN4383DAA-A8/B88**	**ECN4388DAA-A8/B88**
	800			**ECN4381DAA-A8/B92**	**ECN4382DAA-A8/B92**	**ECN4383DAA-A8/B92**	**ECN4388DAA-A8/B92**
	900			**ECN4381DAA-A8/B95**	**ECN4382DAA-A8/B95**	**ECN4383DAA-A8/B95**	**ECN4388DAA-A8/B95**
NEMA Size 9 (2250A)							
230	800	120	④	**ECN4391BAA-A8/B89**	**ECN4392BAA-A8/B89**	**ECN4393BAA-A8/B89**	**ECN4398BAA-A8/B89**
460	1600			**ECN4391CAA-A8/B96**	**ECN4392CAA-A8/B96**	**ECN4393CAA-A8/B96**	**ECN4398CAA-A8/B96**
575	1600			**ECN4391DAA-A8/B97**	**ECN4392DAA-A8/B97**	**ECN4393DAA-A8/B97**	**ECN4398DAA-A8/B97**

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary. If modification code **C35** separate control is specified, the control transformer is omitted.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door lock.

④ Supply hp, voltage, FLA and whether motor is design E or not when ordering the starter.

Class ECN44—Combination Autotransformer Starter—Circuit Breaker

Motor Voltage	hp Rating	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4 Water and Dust-Tight Painted Steel Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number
NEMA Size 2 (45A)							
200	10	120	50A	ECN4421EAF-A8/B1	ECN4422EAF-A8/B1	ECN4423EAF-A8/B1	ECN4428EAF-A8/B1
230	10			ECN4421BAF-A8/B2	ECN4422BAF-A8/B2	ECN4423BAF-A8/B2	ECN4428BAF-A8/B2
	15			ECN4421BAF-A8/B7	ECN4422BAF-A8/B7	ECN4423BAF-A8/B7	ECN4428BAF-A8/B7
460	10			ECN4421CAF-A8/B4	ECN4422CAF-A8/B4	ECN4423CAF-A8/B4	ECN4428CAF-A8/B4
	15			ECN4421CAF-A8/B9	ECN4422CAF-A8/B9	ECN4423CAF-A8/B9	ECN4428CAF-A8/B9
	20			ECN4421CAF-A8/B14	ECN4422CAF-A8/B14	ECN4423CAF-A8/B14	ECN4428CAF-A8/B14
	25			ECN4421CAF-A8/B19	ECN4422CAF-A8/B19	ECN4423CAF-A8/B19	ECN4428CAF-A8/B19
575	10			ECN4421DA9-A8/B5	ECN4422DA9-A8/B5	ECN4423DA9-A8/B5	ECN4428DA9-A8/B5
	15			ECN4421DA9-A8/B10	ECN4422DA9-A8/B10	ECN4423DA9-A8/B10	ECN4428DA9-A8/B10
	20			ECN4421DA9-A8/B15	ECN4422DA9-A8/B15	ECN4423DA9-A8/B15	ECN4428DA9-A8/B15
	25			ECN4421DA9-A8/B20	ECN4422DA9-A8/B20	ECN4423DA9-A8/B20	ECN4428DA9-A8/B20
NEMA Size 3 (90A)							
200	15	120	100A	ECN4431EAG-A8/B6	ECN4432EAG-A8/B6	ECN4433EAG-A8/B6	ECN4438EAG-A8/B6
	20			ECN4431EAG-A8/B11	ECN4432EAG-A8/B11	ECN4433EAG-A8/B11	ECN4438EAG-A8/B11
	25			ECN4431EAG-A8/B16	ECN4432EAG-A8/B16	ECN4433EAG-A8/B16	ECN4438EAG-A8/B16
230	20			ECN4431BAG-A8/B12	ECN4432BAG-A8/B12	ECN4433BAG-A8/B12	ECN4438BAG-A8/B12
	25			ECN4431BAG-A8/B17	ECN4432BAG-A8/B17	ECN4433BAG-A8/B17	ECN4438BAG-A8/B17
	30			ECN4431BAG-A8/B22	ECN4432BAG-A8/B22	ECN4433BAG-A8/B22	ECN4438BAG-A8/B22
460	30			ECN4431CAG-A8/B24	ECN4432CAG-A8/B24	ECN4433CAG-A8/B24	ECN4438CAG-A8/B24
	40			ECN4431CAG-A8/B29	ECN4432CAG-A8/B29	ECN4433CAG-A8/B29	ECN4438CAG-A8/B29
	50			ECN4431CAG-A8/B34	ECN4432CAG-A8/B34	ECN4433CAG-A8/B34	ECN4438CAG-A8/B34
575	30			ECN4431DAI-A8/B25	ECN4432DAI-A8/B25	ECN4433DAI-A8/B25	ECN4438DAI-A8/B25
	40			ECN4431DAI-A8/B30	ECN4432DAI-A8/B30	ECN4433DAI-A8/B30	ECN4438DAI-A8/B30
	50			ECN4431DAI-A8/B35	ECN4432DAI-A8/B35	ECN4433DAI-A8/B35	ECN4438DAI-A8/B35
NEMA Size 4 (135A)							
200	30	120	150A	ECN4441EAH-A8/B21	ECN4442EAH-A8/B21	ECN4443EAH-A8/B21	ECN4448EAH-A8/B21
	40			ECN4441EAH-A8/B26	ECN4442EAH-A8/B26	ECN4443EAH-A8/B26	ECN4448EAH-A8/B26
230	40			ECN4441BAH-A8/B27	ECN4442BAH-A8/B27	ECN4443BAH-A8/B27	ECN4448BAH-A8/B27
	50			ECN4441BAH-A8/B32	ECN4442BAH-A8/B32	ECN4443BAH-A8/B32	ECN4448BAH-A8/B32
460	75			ECN4441CAH-A8/B39	ECN4442CAH-A8/B39	ECN4443CAH-A8/B39	ECN4448CAH-A8/B39
	100			ECN4441CAH-A8/B44	ECN4442CAH-A8/B44	ECN4443CAH-A8/B44	ECN4448CAH-A8/B44
575	75			ECN4441DAH-A8/B40	ECN4442DAH-A8/B40	ECN4443DAH-A8/B40	ECN4448DAH-A8/B40
	100			ECN4441DAH-A8/B45	ECN4442DAH-A8/B45	ECN4443DAH-A8/B45	ECN4448DAH-A8/B45
NEMA Size 5 (270A)							
200	50	120	250A	ECN4451EAJ-A8/B31	ECN4452EAJ-A8/B31	ECN4453EAJ-A8/B31	ECN4458EAJ-A8/B31
	75		400A	ECN4451EAK-A8/B36	ECN4452EAK-A8/B36	ECN4453EAK-A8/B36	ECN4458EAK-A8/B36
230	75		250A	ECN4451BAJ-A8/B37	ECN4452BAJ-A8/B37	ECN4453BAJ-A8/B37	ECN4458BAJ-A8/B37
	100		400A	ECN4451BAK-A8/B42	ECN4452BAK-A8/B42	ECN4453BAK-A8/B42	ECN4458BAK-A8/B42
460	125		250A	ECN4451CAJ-A8/B49	ECN4452CAJ-A8/B49	ECN4453CAJ-A8/B49	ECN4458CAJ-A8/B49
	150			ECN4451CAJ-A8/B54	ECN4452CAJ-A8/B54	ECN4453CAJ-A8/B54	ECN4458CAJ-A8/B54
	200		400A	ECN4451CAK-A8/B59	ECN4452CAK-A8/B59	ECN4453CAK-A8/B59	ECN4458CAK-A8/B59
575	125		250A	ECN4451DAJ-A8/B50	ECN4452DAJ-A8/B50	ECN4453DAJ-A8/B50	ECN4458DAJ-A8/B50
	150			ECN4451DAJ-A8/B55	ECN4452DAJ-A8/B55	ECN4453DAJ-A8/B55	ECN4458DAJ-A8/B55
	200			ECN4451DAJ-A8/B60	ECN4452DAJ-A8/B60	ECN4453DAJ-A8/B60	ECN4458DAJ-A8/B60

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary. If modification code **C35** separate control is specified, the control transformer is omitted.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door lock.

Class ECN44—Combination Autotransformer Starter—Circuit Breaker, continued

Motor Voltage	hp Rating	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4 Water and Dust-Tight Painted Steel Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number
NEMA Size 6 (540A)							
200	100	120	600A	**ECN4461EAL-A8/B41**	**ECN4462EAL-A8/B41**	**ECN4463EAL-A8/B41**	**ECN4468EAL-A8/B41**
	125			**ECN4461EAL-A8/B46**	**ECN4462EAL-A8/B46**	**ECN4463EAL-A8/B46**	**ECN4468EAL-A8/B46**
	150			**ECN4461EAL-A8/B51**	**ECN4462EAL-A8/B51**	**ECN4463EAL-A8/B51**	**ECN4468EAL-A8/B51**
230	125			**ECN4461BAL-A8/B47**	**ECN4462BAL-A8/B47**	**ECN4463BAL-A8/B47**	**ECN4468BAL-A8/B47**
	150			**ECN4461BAL-A8/B52**	**ECN4462BAL-A8/B52**	**ECN4463BAL-A8/B52**	**ECN4468BAL-A8/B52**
	200		800A	**ECN4461BAM-A8/B57**	**ECN4462BAM-A8/B57**	**ECN4463BAM-A8/B57**	**ECN4468BAM-A8/B57**
460	250		600A	**ECN4461CAL-A8/B64**	**ECN4462CAL-A8/B64**	**ECN4463CAL-A8/B64**	**ECN4468CAL-A8/B64**
	300			**ECN4461CAL-A8/B69**	**ECN4462CAL-A8/B69**	**ECN4463CAL-A8/B69**	**ECN4468CAL-A8/B69**
	400		800A	**ECN4461CAM-A8/B74**	**ECN4462CAM-A8/B74**	**ECN4463CAM-A8/B74**	**ECN4468CAM-A8/B74**
575	250		600A	**ECN4461DAL-A8/B65**	**ECN4462DAL-A8/B65**	**ECN4463DAL-A8/B65**	**ECN4468DAL-A8/B65**
	300			**ECN4461DAL-A8/B70**	**ECN4462DAL-A8/B70**	**ECN4463DAL-A8/B70**	**ECN4468DAL-A8/B70**
	400			**ECN4461DAM-A8/B75**	**ECN4462DAM-A8/B75**	**ECN4463DAM-A8/B75**	**ECN4468DAM-A8/B75**
NEMA Size 7 (810A)							
230	250	120	④	**ECN4471BAU-A8/B62**	**ECN4472BAU-A8/B62**	**ECN4473BAU-A8/B62**	**ECN4478BAU-A8/B62**
	300			**ECN4471BAU-A8/B67**	**ECN4472BAU-A8/B67**	**ECN4473BAU-A8/B67**	**ECN4478BAU-A8/B67**
460	450			**ECN4471CAU-A8/B78**	**ECN4472CAU-A8/B78**	**ECN4473CAU-A8/B78**	**ECN4478CAU-A8/B78**
	500			**ECN4471CAU-A8/B81**	**ECN4472CAU-A8/B81**	**ECN4473CAU-A8/B81**	**ECN4478CAU-A8/B81**
	600			**ECN4471CAU-A8/B84**	**ECN4472CAU-A8/B84**	**ECN4473CAU-A8/B84**	**ECN4478CAU-A8/B84**
575	450			**ECN4471DAU-A8/B79**	**ECN4472DAU-A8/B79**	**ECN4473DAU-A8/B79**	**ECN4478DAU-A8/B79**
	500			**ECN4471DAU-A8/B82**	**ECN4472DAU-A8/B82**	**ECN4473DAU-A8/B82**	**ECN4478DAU-A8/B82**
	600			**ECN4471DAU-A8/B85**	**ECN4472DAU-A8/B85**	**ECN4473DAU-A8/B85**	**ECN4478DAU-A8/B85**
NEMA Size 8 (1215A)							
230	400	120	④	**ECN4481BAU-A8/B72**	**ECN4482BAU-A8/B72**	**ECN4483BAU-A8/B72**	**ECN4488BAU-A8/B72**
	450			**ECN4481BAU-A8/B76**	**ECN4482BAU-A8/B76**	**ECN4483BAU-A8/B76**	**ECN4488BAU-A8/B76**
460	700			**ECN4481CAU-A8/B87**	**ECN4482CAU-A8/B87**	**ECN4483CAU-A8/B87**	**ECN4488CAU-A8/B87**
	800			**ECN4481CAU-A8/B91**	**ECN4482CAU-A8/B91**	**ECN4483CAU-A8/B91**	**ECN4488CAU-A8/B91**
	900			**ECN4481CAU-A8/B94**	**ECN4482CAU-A8/B94**	**ECN4483CAU-A8/B94**	**ECN4488CAU-A8/B94**
575	700			**ECN4481DAU-A8/B88**	**ECN4482DAU-A8/B88**	**ECN4483DAU-A8/B88**	**ECN4488DAU-A8/B88**
	800			**ECN4481DAU-A8/B92**	**ECN4482DAU-A8/B92**	**ECN4483DAU-A8/B92**	**ECN4488DAU-A8/B92**
	900			**ECN4481DAU-A8/B95**	**ECN4482DAU-A8/B95**	**ECN4483DAU-A8/B95**	**ECN4488DAU-A8/B95**
NEMA Size 9 (2250A)							
230	800	120	④	**ECN4491BAU-A8/B89**	**ECN4492BAU-A8/B89**	**ECN4493BAU-A8/B89**	**ECN4498BAU-A8/B89**
460	1600			**ECN4491CAU-A8/B96**	**ECN4492CAU-A8/B96**	**ECN4493CAU-A8/B96**	**ECN4498CAU-A8/B96**
575	1600			**ECN4491DAU-A8/B97**	**ECN4492DAU-A8/B97**	**ECN4493DAU-A8/B97**	**ECN4498DAU-A8/B97**

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary. If modification code **C35** separate control is specified, the control transformer is omitted.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door lock.

④ Supply hp, voltage, FLA and whether motor is design E or not when ordering the starter.

Part Winding

Features

- Non-combination and combination designs
- Three-phase magnetic, three-pole
- Interchangeable heater OLR
- 600V maximum

Class ECN45—Non-Combination Part Winding Starter

Motor Voltage	Max. hp Rating	Magnet Coil Voltage ①	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③ Catalog Number	Component Starter (Open) Catalog Number
NEMA Size 2PW							
200	20	120	**ECN4521EAA**	**ECN4522EAA**	**ECN4524EAA**	**ECN4528EAA**	**AN16GN0AB**
230	25		**ECN4521BAA**	**ECN4522BAA**	**ECN4524BAA**	**ECN4528BAA**	
460	40		**ECN4521CAA**	**ECN4522CAA**	**ECN4524CAA**	**ECN4528CAA**	
575	40		**ECN4521DAA**	**ECN4522DAA**	**ECN4524DAA**	**ECN4528DAA**	
NEMA Size 3PW							
200	40	120	**ECN4531EAA**	**ECN4532EAA**	**ECN4534EAA**	**ECN4538EAA**	**AN16KN0AB**
230	50		**ECN4531BAA**	**ECN4532BAA**	**ECN4534BAA**	**ECN4538BAA**	
460	75		**ECN4531CAA**	**ECN4532CAA**	**ECN4534CAA**	**ECN4538CAA**	
575	75		**ECN4531DAA**	**ECN4532DAA**	**ECN4534DAA**	**ECN4538DAA**	
NEMA Size 4PW							
200	75	120	**ECN4541EAA**	**ECN4542EAA**	**ECN4544EAA**	**ECN4548EAA**	**AN16NN0AB**
230	75		**ECN4541BAA**	**ECN4542BAA**	**ECN4544BAA**	**ECN4548BAA**	
460	150		**ECN4541CAA**	**ECN4542CAA**	**ECN4544CAA**	**ECN4548CAA**	
575	150		**ECN4541DAA**	**ECN4542DAA**	**ECN4544DAA**	**ECN4548DAA**	
NEMA Size 5PW							
200	150	120	**ECN4551EAA**	**ECN4552EAA**	**ECN4554EAA**	**ECN4558EAA**	**AN16SN0AB**
230	150		**ECN4551BAA**	**ECN4552BAA**	**ECN4554BAA**	**ECN4558BAA**	
460	350		**ECN4551CAA**	**ECN4552CAA**	**ECN4554CAA**	**ECN4558CAA**	
575	350		**ECN4551DAA**	**ECN4552DAA**	**ECN4554DAA**	**ECN4558DAA**	
NEMA Size 6PW							
230	300	120	**ECN4561BAA**	**ECN4562BAA**	**ECN4563BAA** ④	**ECN4568BAA**	**AN16TN0AB**
460	600		**ECN4561CAA**	**ECN4562CAA**	**ECN4563CAA** ④	**ECN4568CAA**	
575	600		**ECN4561DAA**	**ECN4562DAA**	**ECN4563DAA** ④	**ECN4568DAA**	
NEMA Size 7PW							
230	450	120	**ECN4571BAA**	**ECN4572BAA**	**ECN4573BAA** ④	**ECN4578BAA**	**AN16UN0AB**
460	900		**ECN4571CAA**	**ECN4572CAA**	**ECN4573CAA** ④	**ECN4578CAA**	
575	900		**ECN4571DAA**	**ECN4572DAA**	**ECN4573DAA** ④	**ECN4578DAA**	
NEMA Size 8PW							
230	700	120	**ECN4581BAA**	**ECN4582BAA**	**ECN4583BAA** ④	**ECN4588BAA**	**AN16VN0AB**
460	1400		**ECN4581CAA**	**ECN4582CAA**	**ECN4583CAA** ④	**ECN4588CAA**	
575	1400		**ECN4581DAA**	**ECN4582DAA**	**ECN4583DAA** ④	**ECN4588DAA**	

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each winding). Heater pack selection, **Tab 15**.

Notes

① All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary. If modification code **C35** separate control is specified, the control transformer is omitted.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN452**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 Painted Steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code R5.

④ Type 4 (painted steel) sizes 6–8PW.

Class ECN46—Combination Part Winding Starter—Fusible Disconnect

Motor Voltage	Max. hp Rating	Magnet Coil Voltage ①	Fuse Clip Amp.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
NEMA Size 2PW								
200	20	120	100A	**ECN4621EAF**	**ECN4622EAF**	**ECN4624EAF**	**ECN4628EAF**	**AN16GN0AB**
230	15		60A	**ECN4621BAD**	**ECN4622BAD**	**ECN4624BAD**	**ECN4628BAD**	**AN16GN0AB**
	25		100A	**ECN4621BAF**	**ECN4622BAF**	**ECN4624BAF**	**ECN4628BAF**	
460	30		60A	**ECN4621CAE**	**ECN4622CAE**	**ECN4624CAE**	**ECN4628CAE**	**AN16GN0AB**
	40		100A	**ECN4621CAG**	**ECN4622CAG**	**ECN4624CAG**	**ECN4628CAG**	
575	20		30A	**ECN4621DAC**	**ECN4622DAC**	**ECN4624DAC**	**ECN4628DAC**	**AN16GN0AB**
	40		60A	**ECN4621DAE**	**ECN4622DAE**	**ECN4624DAE**	**ECN4628DAE**	
NEMA Size 3PW								
200	40	120	200A	**ECN4631EAH**	**ECN4632EAH**	**ECN4634EAH**	**ECN4638EAH**	**AN16KN0AB**
230	50			**ECN4631BAH**	**ECN4632BAH**	**ECN4634BAH**	**ECN4638BAH**	**AN16KN0AB**
460	50		100A	**ECN4631CAG**	**ECN4632CAG**	**ECN4634CAG**	**ECN4638CAG**	**AN16KN0AB**
	75		200A	**ECN4631CAJ**	**ECN4632CAJ**	**ECN4634CAJ**	**ECN4638CAJ**	
575	60		100A	**ECN4631DAG**	**ECN4632DAG**	**ECN4634DAG**	**ECN4638DAG**	**AN16KN0AB**
	75		200A	**ECN4631DAJ**	**ECN4632DAJ**	**ECN4634DAJ**	**ECN4638DAJ**	
NEMA Size 4PW								
200	50	120	200A	**ECN4641EAH**	**ECN4642EAH**	**ECN4644EAH**	**ECN4648EAH**	**AN16NN0AB**
	75		400A	**ECN4641EAK**	**ECN4642EAK**	**ECN4644EAK**	**ECN4648EAK**	
230	75			**ECN4641BAK**	**ECN4642BAK**	**ECN4644BAK**	**ECN4648BAK**	**AN16NN0AB**
460	100		200A	**ECN4641CAJ**	**ECN4642CAJ**	**ECN4644CAJ**	**ECN4648CAJ**	**AN16NN0AB**
	150		400A	**ECN4641CAL**	**ECN4642CAL**	**ECN4644CAL**	**ECN4648CAL**	
575	150		200A	**ECN4641DAJ**	**ECN4642DAJ**	**ECN4644DAJ**	**ECN4648DAJ**	**AN16NN0AB**

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each winding). Heater pack selection, **Tab 15**.

Notes

① All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN462**4**EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Type 12 enclosure is without safety door interlock.

Class ECN46—Combination Part Winding Starter—Fusible Disconnect, continued

Motor Voltage	Max. hp Rating	Magnet Coil Voltage ①	Fuse Clip Amp.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
NEMA Size 5PW								
200	100	120	200	**ECN4651EAK**	**ECN4652EAK**	**ECN4654EAK**	**ECN4658EAK**	**AN16SN0AB**
	150			**ECN4651EAM**	**ECN4652EAM**	**ECN4654EAM**	**ECN4658EAM**	
230	100		230	**ECN4651BAK**	**ECN4652BAK**	**ECN4654BAK**	**ECN4658BAK**	**AN16SN0AB**
	150			**ECN4651BAM**	**ECN4652BAM**	**ECN4654BAM**	**ECN4658BAM**	
460	200		460	**ECN4651CAL**	**ECN4652CAL**	**ECN4654CAL**	**ECN4658CAL**	**AN16SN0AB**
	350			**ECN4651CAN**	**ECN4652CAN**	**ECN4654CAN**	**ECN4658CAN**	
575	300		575	**ECN4651DAL**	**ECN4652DAL**	**ECN4654DAL**	**ECN4658DAL**	**AN16SN0AB**
	350			**ECN4651DAN**	**ECN4652DAN**	**ECN4654DAN**	**ECN4658DAN**	
NEMA Size 6PW								
230	300	120	⑤	**ECN4661BAU**	**ECN4662BAU**	**ECN4663BAU** ⑥	**ECN4668BAU**	**AN16TN0AB**
460	600			**ECN4661CAU**	**ECN4662CAU**	**ECN4663CAU** ⑥	**ECN4668CAU**	
575	600			**ECN4661DAU**	**ECN4662DAU**	**ECN4663DAU** ⑥	**ECN4668DAU**	
NEMA Size 7PW								
230	450	120	⑤	**ECN4671BAU**	**ECN4672BAU**	**ECN4673BAU** ⑥	**ECN4678BAU**	**AN16UN0AB**
460	900			**ECN4671CAU**	**ECN4672CAU**	**ECN4673CAU** ⑥	**ECN4678CAU**	
575	900			**ECN4671DAU**	**ECN4672DAU**	**ECN4673DAU** ⑥	**ECN4678DAU**	
NEMA Size 8PW								
230	700	120	⑤	**ECN4681BAU**	**ECN4682BAU**	**ECN4683BAU** ⑥	**ECN4688BAU**	**AN16VN0AB**
460	1400			**ECN4681CAU**	**ECN4682CAU**	**ECN4683CAU** ⑥	**ECN4688CAU**	
575	1400			**ECN4681DAU**	**ECN4682DAU**	**ECN4683DAU** ⑥	**ECN4688DAU**	

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each winding). Heater pack selection, **Tab 15**.

Notes

① All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary. If modification code **C35** separate control is specified, the control transformer is omitted.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN462**4**EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Type 12 enclosure is without safety door interlock.

⑤ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑥ Type 4 (painted steel) sizes 6–8PW.

Class ECN46—Combination Part Winding Starter—Non-Fusible Disconnect

Motor Voltage	Max. hp Rating	Magnet Coil Voltage ①	Disconnect Amperes	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
NEMA Size 2PW								
200	20	120	60A	**ECN4621EAA**	**ECN4622EAA**	**ECN4624EAA**	**ECN4628EAA**	**AN16GN0AB**
230	25			**ECN4621BAA**	**ECN4622BAA**	**ECN4624BAA**	**ECN4628BAA**	
460	40			**ECN4621CAA**	**ECN4622CAA**	**ECN4624CAA**	**ECN4628CAA**	
575	40			**ECN4621DAA**	**ECN4622DAA**	**ECN4624DAA**	**ECN4628DAA**	
NEMA Size 3PW								
200	40	120	100A	**ECN4631EAA**	**ECN4632EAA**	**ECN4634EAA**	**ECN4638EAA**	**AN16KN0AB**
230	50			**ECN4631BAA**	**ECN4632BAA**	**ECN4634BAA**	**ECN4638BAA**	
460	75			**ECN4631CAA**	**ECN4632CAA**	**ECN4634CAA**	**ECN4638CAA**	
575	75			**ECN4631DAA**	**ECN4632DAA**	**ECN4634DAA**	**ECN4638DAA**	
NEMA Size 4PW								
200	75	120	200A	**ECN4641EAA**	**ECN4642EAA**	**ECN4644EAA**	**ECN4648EAA**	**AN16NN0AB**
230	75			**ECN4641BAA**	**ECN4642BAA**	**ECN4644BAA**	**ECN4648BAA**	
460	150			**ECN4641CAA**	**ECN4642CAA**	**ECN4644CAA**	**ECN4648CAA**	
575	150			**ECN4641DAA**	**ECN4642DAA**	**ECN4644DAA**	**ECN4648DAA**	
NEMA Size 5PW								
200	150	120	400A	**ECN4651EAA**	**ECN4652EAA**	**ECN4654EAA**	**ECN4658EAA**	**AN16SN0AB**
230	150			**ECN4651BAA**	**ECN4652BAA**	**ECN4654BAA**	**ECN4658BAA**	
460	350			**ECN4651CAA**	**ECN4652CAA**	**ECN4654CAA**	**ECN4658CAA**	
575	350			**ECN4651DAA**	**ECN4652DAA**	**ECN4654DAA**	**ECN4658DAA**	
NEMA Size 6PW								
230	300	120	600A	**ECN4661BAA**	**ECN4662BAA**	**ECN4663BAA** ⑥	**ECN4668BAA**	**AN16TN0AB**
460	600			**ECN4661CAA**	**ECN4662CAA**	**ECN4663CAA** ⑥	**ECN4668CAA**	
575	600			**ECN4661DAA**	**ECN4662DAA**	**ECN4663DAA** ⑥	**ECN4668DAA**	
NEMA Size 7PW								
230	450	120	⑤	**ECN4671BAA**	**ECN4672BAA**	**ECN4673BAA** ⑥	**ECN4678BAA**	**AN16UN0AB**
460	900			**ECN4671CAA**	**ECN4672CAA**	**ECN4673CAA** ⑥	**ECN4678CAA**	
575	900			**ECN4671DAA**	**ECN4672DAA**	**ECN4673DAA** ⑥	**ECN4678DAA**	
NEMA Size 8PW								
230	700	120	⑤	**ECN4681BAA**	**ECN4682BAA**	**ECN4683BAA** ⑥	**ECN4688BAA**	**AN16VN0AB**
460	1400			**ECN4681CAA**	**ECN4682CAA**	**ECN4683CAA** ⑥	**ECN4688CAA**	
575	1400			**ECN4681DAA**	**ECN4682DAA**	**ECN4683DAA** ⑥	**ECN4688DAA**	

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each winding). Heater pack selection, **Tab 15**.

Notes

① All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN462**4**EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Type 12 enclosure is without safety door interlock.

⑤ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑥ Type 4 (painted steel) sizes 6–8PW.

Class ECN47—Combination Part Winding Starter—Circuit Breaker

Motor Voltage	Max. hp Rating	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
NEMA Size 2PW								
200	15	120	70A	**ECN4721EAH**	**ECN4722EAH**	**ECN4724EAH**	**ECN4728EAH**	**AN16GN0AB**
	20		100A	**ECN4721EAK**	**ECN4722EAK**	**ECN4724EAK**	**ECN4728EAK**	
230	15		70A	**ECN4721BAH**	**ECN4722BAH**	**ECN4724BAH**	**ECN4728BAH**	**AN16GN0AB**
	20		90A	**ECN4721BAJ**	**ECN4722BAJ**	**ECN4724BAJ**	**ECN4728BAJ**	
	25		100A	**ECN4721BAK**	**ECN4722BAK**	**ECN4724BAK**	**ECN4728BAK**	
460	20		40A	**ECN4721CAE**	**ECN4722CAE**	**ECN4724CAE**	**ECN4728CAE**	**AN16GN0AB**
	30		60A	**ECN4721CAG**	**ECN4722CAG**	**ECN4724CAG**	**ECN4728CAG**	
	40		90A	**ECN4721CAJ**	**ECN4722CAJ**	**ECN4724CAJ**	**ECN4728CAJ**	
575	25		40A	**ECN4721DAE**	**ECN4722DAE**	**ECN4724DAE**	**ECN4728DAE**	**AN16GN0AB**
	30		50A	**ECN4721DAF**	**ECN4722DAF**	**ECN4724DAF**	**ECN4728DAF**	
	40		60A	**ECN4721DAG**	**ECN4722DAG**	**ECN4724DAG**	**ECN4728DAG**	
NEMA Size 3PW								
200	40	120	125A	**ECN4731EAL**	**ECN4732EAL**	**ECN4734EAL**	**ECN4738EAL**	**AN16KN0AB**
230	40			**ECN4731BAL**	**ECN4732BAL**	**ECN4734BAL**	**ECN4738BAL**	**AN16KN0AB**
	50		150A	**ECN4731BAM**	**ECN4732BAM**	**ECN4734BAM**	**ECN4738BAM**	
460	50		100A	**ECN4731CAK**	**ECN4732CAK**	**ECN4734CAK**	**ECN4738CAK**	**AN16KN0AB**
	75		125A	**ECN4731CAL**	**ECN4732CAL**	**ECN4734CAL**	**ECN4738CAL**	
575	50		90A	**ECN4731DAJ**	**ECN4732DAJ**	**ECN4734DAJ**	**ECN4738DAJ**	**AN16KN0AB**
	60		100A	**ECN4731DAK**	**ECN4732DAK**	**ECN4734DAK**	**ECN4738DAK**	
	75		125A	**ECN4731DAL**	**ECN4732DAL**	**ECN4734DAL**	**ECN4738DAL**	
NEMA Size 4PW								
200	50	120	200A	**ECN4741EAP**	**ECN4742EAP**	**ECN4744EAP**	**ECN4748EAP**	**AN16NN0AB**
	60		225A	**ECN4741EAQ**	**ECN4742EAQ**	**ECN4744EAQ**	**ECN4748EAQ**	
	75		300A	**ECN4741EAS**	**ECN4742EAS**	**ECN4744EAS**	**ECN4748EAS**	
230	60		200A	**ECN4741BAP**	**ECN4742BAP**	**ECN4744BAP**	**ECN4748BAP**	**AN16NN0AB**
	75		250A	**ECN4741BAR**	**ECN4742BAR**	**ECN4744BAR**	**ECN4748BAR**	
460	100		150A	**ECN4741CAM**	**ECN4742CAM**	**ECN4744CAM**	**ECN4748CAM**	**AN16NN0AB**
	125		225A	**ECN4741CAQ**	**ECN4742CAQ**	**ECN4744CAQ**	**ECN4748CAQ**	
	150		250A	**ECN4741CAR**	**ECN4742CAR**	**ECN4744CAR**	**ECN4748CAR**	
575	100		125A	**ECN4741DAL**	**ECN4742DAL**	**ECN4744DAL**	**ECN4748DAL**	**AN16NN0AB**
	125		150A	**ECN4741DAM**	**ECN4742DAM**	**ECN4744DAM**	**ECN4748DAM**	
	150		200A	**ECN4741DAP**	**ECN4742DAP**	**ECN4744DAP**	**ECN4748DAP**	

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each winding). Heater pack selection, **Tab 15**.

Notes

① All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Type 12 enclosure is without safety door interlock.

Class ECN47—Combination Part Winding Starter—Circuit Breaker, continued

Motor Voltage	Max. hp Rating	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
NEMA Size 5PW								
200	100	120	350A	**ECN4751EAV**	**ECN4752EAV**	**ECN4754EAV**	**ECN4758EAV**	**AN16SN0AB**
	125		500A	**ECN4751EAY**	**ECN4752EAY**	**ECN4754EAY**	**ECN4758EAY**	
	150		600A	**ECN4751EAZ**	**ECN4752EAZ**	**ECN4754EAZ**	**ECN4758EAZ**	
230	100		350A	**ECN4751BAV**	**ECN4752BAV**	**ECN4754BAV**	**ECN4758BAV**	**AN16SN0AB**
	125		400A	**ECN4751BAW**	**ECN4752BAW**	**ECN4754BAW**	**ECN4758BAW**	
	150		500A	**ECN4751BAY**	**ECN4752BAY**	**ECN4754BAY**	**ECN4758BAY**	
460	200		350A	**ECN4751CAV**	**ECN4752CAV**	**ECN4754CAV**	**ECN4758CAV**	**AN16SN0AB**
	250		400A	**ECN4751CAW**	**ECN4752CAW**	**ECN4754CAW**	**ECN4758CAW**	
	300		500A	**ECN4751CAY**	**ECN4752CAY**	**ECN4754CAY**	**ECN4758CAY**	
	350		600A	**ECN4751CAZ**	**ECN4752CAZ**	**ECN4754CAZ**	**ECN4758CAZ**	
575	200		250A	**ECN4751DAR**	**ECN4752DAR**	**ECN4754DAR**	**ECN4758DAR**	**AN16SN0AB**
	300		350A	**ECN4751DAV**	**ECN4752DAV**	**ECN4754DAV**	**ECN4758DAV**	
	350		500A	**ECN4751DAY**	**ECN4752DAY**	**ECN4754DAY**	**ECN4758DAY**	
NEMA Size 6PW								
230	300	120	⑤	**ECN4761BAU**	**ECN4762BAU**	**ECN4763BAU** ⑥	**ECN4768BAU**	**AN16TN0AB**
460	600			**ECN4761CAU**	**ECN4762CAU**	**ECN4763CAU** ⑥	**ECN4768CAU**	**AN16TN0AB**
575	600			**ECN4761DAU**	**ECN4762DAU**	**ECN4763DAU** ⑥	**ECN4768DAU**	**AN16TN0AB**
NEMA Size 7PW								
230	450	120	⑤	**ECN4771BAU**	**ECN4772BAU**	**ECN4773BAU** ⑥	**ECN4778BAU**	**AN16UN0AB**
460	900			**ECN4771CAU**	**ECN4772CAU**	**ECN4773CAU** ⑥	**ECN4778CAU**	**AN16UN0AB**
575	900			**ECN4771DAU**	**ECN4772DAU**	**ECN4773DAU** ⑥	**ECN4778DAU**	**AN16UN0AB**
NEMA Size 8PW								
230	700	120	⑤	**ECN4781BAU**	**ECN4782BAU**	**ECN4783BAU** ⑥	**ECN4788BAU**	**AN16VN0AB**
460	1400			**ECN4781CAU**	**ECN4782CAU**	**ECN4783CAU** ⑥	**ECN4788CAU**	**AN16VN0AB**
575	1400			**ECN4781DAU**	**ECN4782DAU**	**ECN4783DAU** ⑥	**ECN4788DAU**	**AN16VN0AB**

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each winding). Heater pack selection, **Tab 15**.

Notes

① All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary. If modification code **C35** separate control is specified, the control transformer is omitted.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Type 12 enclosure is without safety door interlock.

⑤ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑥ Type 4 (painted steel) sizes 6–8PW.

Wye Delta

Features

- Open or closed transition
- Non-combination and combination designs
- Three-phase magnetic, three-pole
- Interchangeable heater OLR
- 600V maximum

Class ECN48—Non-Combination Open Transition Wye Delta Starter

NEMA Size	Motor Voltage	Max. hp Rating	Magnet Coil Voltage ①	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③ Catalog Number	Component Starter (Open) ⑤ Catalog Number
2YD	200	20	120	ECN4821EAA	ECN4822EAA	ECN4824EAA	ECN4828EAA	AN16GN0AB
3YD		40		ECN4831EAA	ECN4832EAA	ECN4834EAA	ECN4838EAA	AN16KN0AB
4YD		60		ECN4841EAA	ECN4842EAA	ECN4844EAA	ECN4848EAA	AN16NN0AB
5YD		150		ECN4851EAA	ECN4852EAA	ECN4854EAA	ECN4858EAA	AN16SN0AB
6YD		300		ECN4861EAA	ECN4862EAA	ECN4863EAA ④	ECN4868EAA	AN16TN0AB
7YD		500		ECN4871EAA	ECN4872EAA	ECN4873EAA ④	ECN4878EAA	AN16UN0AB
8YD		750		ECN4881EAA	ECN4882EAA	ECN4883EAA ④	ECN4888EAA	AN16VN0AB
2YD	230	25	120	ECN4821BAA	ECN4822BAA	ECN4824BAA	ECN4828BAA	AN16GN0AB
3YD		50		ECN4831BAA	ECN4832BAA	ECN4834BAA	ECN4838BAA	AN16KN0AB
4YD		75		ECN4841BAA	ECN4842BAA	ECN4844BAA	ECN4848BAA	AN16NN0AB
5YD		150		ECN4851BAA	ECN4852BAA	ECN4854BAA	ECN4858BAA	AN16SN0AB
6YD		350		ECN4861BAA	ECN4862BAA	ECN4863BAA ④	ECN4868BAA	AN16TN0AB
7YD		500		ECN4871BAA	ECN4872BAA	ECN4873BAA ④	ECN4878BAA	AN16UN0AB
8YD		800		ECN4881BAA	ECN4882BAA	ECN4883BAA ④	ECN4888BAA	AN16VN0AB
2YD	460	40	120	ECN4821CAA	ECN4822CAA	ECN4824CAA	ECN4828CAA	AN16GN0AB
3YD		75		ECN4831CAA	ECN4832CAA	ECN4834CAA	ECN4838CAA	AN16KN0AB
4YD		150		ECN4841CAA	ECN4842CAA	ECN4844CAA	ECN4848CAA	AN16NN0AB
5YD		300		ECN4851CAA	ECN4852CAA	ECN4854CAA	ECN4858CAA	AN16SN0AB
6YD		700		ECN4861CAA	ECN4862CAA	ECN4863CAA ④	ECN4868CAA	AN16TN0AB
7YD		1000		ECN4871CAA	ECN4872CAA	ECN4873CAA ④	ECN4878CAA	AN16UN0AB
8YD		1500		ECN4881CAA	ECN4882CAA	ECN4883CAA ④	ECN4888CAA	AN16VN0AB
2YD	575	40	120	ECN4821DAA	ECN4822DAA	ECN4824DAA	ECN4828DAA	AN16GN0AB
3YD		75		ECN4831DAA	ECN4832DAA	ECN4834DAA	ECN4838DAA	AN16KN0AB
4YD		150		ECN4841DAA	ECN4842DAA	ECN4844DAA	ECN4848DAA	AN16NN0AB
5YD		300		ECN4851DAA	ECN4852DAA	ECN4854DAA	ECN4858DAA	AN16SN0AB
6YD		700		ECN4861DAA	ECN4862DAA	ECN4863DAA ④	ECN4868DAA	AN16TN0AB
7YD		1000		ECN4871DAA	ECN4872DAA	ECN4873DAA ④	ECN4878DAA	AN16UN0AB
8YD		1500		ECN4881DAA	ECN4882DAA	ECN4883DAA ④	ECN4888DAA	AN16VN0AB

Starters do not include heater packs. Select one carton of three heater packs (two overload relays—one for each winding). Heater pack selection, **Tab 15**.

Notes

① All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary. If modification code **C35** separate control is specified, the control transformer is omitted.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN462**4**EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Also requires matching contactor with mechanical interlock.

⑤ Type 4 (painted steel) sizes 6–8YD.

Class ECN49—Combination Open Transition Wye Delta Starter—Fusible Disconnect

NEMA Size	Max. hp Rating	Fuse Clip Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 200/Magnet Coil Voltage 120 ⑤							
2YD	15	60A	**ECN4921EAD-W10/G1**	**ECN4922EAD-W10/G1**	**ECN4924EAD-W10/G1**	**ECN4928EAD-W10/G1**	**AN16GN0AB**
	20	100A	**ECN4921EAF-W10/G3**	**ECN4922EAF-W10/G3**	**ECN4924EAF-W10/G3**	**ECN4928EAF-W10/G3**	
3YD	25	100A	**ECN4931EAF-W10/G8**	**ECN4932EAF-W10/G8**	**ECN4934EAF-W10/G8**	**ECN4938EAF-W10/G8**	**AN16KN0AB**
	30	200A	**ECN4931EAH-W10/G13**	**ECN4932EAH-W10/G13**	**ECN4934EAH-W10/G13**	**ECN4938EAH-W10/G13**	
	40		**ECN4931EAH-W10/G18**	**ECN4932EAH-W10/G18**	**ECN4934EAH-W10/G18**	**ECN4938EAH-W10/G18**	
4YD	50	200A	**ECN4941EAH-W10/G23**	**ECN4942EAH-W10/G23**	**ECN4944EAH-W10/G23**	**ECN4948EAH-W10/G23**	**AN16NN0AB**
	60	400A	**ECN4941EAK-W10/G28**	**ECN4942EAK-W10/G28**	**ECN4944EAK-W10/G28**	**ECN4948EAK-W10/G28**	
5YD	75	400A	**ECN4951EAK-W10/G33**	**ECN4952EAK-W10/G33**	**ECN4954EAK-W10/G33**	**ECN4958EAK-W10/G33**	**AN16SN0AB**
	100		**ECN4951EAK-W10/G38**	**ECN4952EAK-W10/G38**	**ECN4954EAK-W10/G38**	**ECN4958EAK-W10/G38**	
	125	600A	**ECN4951EAM-W10/G43**	**ECN4952EAM-W10/G43**	**ECN4954EAM-W10/G43**	**ECN4958EAM-W10/G43**	
	150		**ECN4951EAM-W10/G48**	**ECN4952EAM-W10/G48**	**ECN4954EAM-W10/G48**	**ECN4958EAM-W10/G48**	
6YD	200	⑥	**ECN4961EAU-W10/G53**	**ECN4962EAU-W10/G53**	**ECN4963EAU-W10/G53** ⑦	**ECN4968EAU-W10/G33**	**AN16TN0AB**
	250		**ECN4961EAU-W10/G58**	**ECN4962EAU-W10/G58**	**ECN4963EAU-W10/G58** ⑦	**ECN4968EAU-W10/G58**	
	300		**ECN4961EAU-W10/G63**	**ECN4962EAU-W10/G63**	**ECN4963EAU-W10/G63** ⑦	**ECN4968EAU-W10/G63**	
7YD	350	⑥	**ECN4971EAU-W10/G68**	**ECN4972EAU-W10/G68**	**ECN4973EAU-W10/G68** ⑦	**ECN4978EAU-W10/G68**	**AN16UN0AB**
	400		**ECN4971EAU-W10/G73**	**ECN4972EAU-W10/G73**	**ECN4973EAU-W10/G73** ⑦	**ECN4978EAU-W10/G73**	
	450		**ECN4971EAU-W10/G78**	**ECN4972EAU-W10/G78**	**ECN4973EAU-W10/G78** ⑦	**ECN4978EAU-W10/G78**	
	500		**ECN4971EAU-W10/G83**	**ECN4972EAU-W10/G83**	**ECN4973EAU-W10/G83** ⑦	**ECN4978EAU-W10/G83**	
8YD	600	⑥	**ECN4981EAU-W10/G88**	**ECN4982EAU-W10/G88**	**ECN4983EAU-W10/G88** ⑦	**ECN4988EAU-W10/G88**	**AN16VN0AB**
	700		**ECN4981EAU-W10/G93**	**ECN4982EAU-W10/G93**	**ECN4983EAU-W10/G93** ⑦	**ECN4988EAU-W10/G93**	
	750		**ECN4981EAU-W10/G98**	**ECN4982EAU-W10/G98**	**ECN4983EAU-W10/G98** ⑦	**ECN4988EAU-W10/G98**	

Starters do not include heater packs. Select one carton of three heater packs (two overload relays—one for each winding). Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN49—Combination Open Transition Wye Delta Starter—Fusible Disconnect, continued

NEMA Size	Max. hp Rating	Fuse Clip Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 230/Magnet Coil Voltage 120 ⑤							
2YD	15	60A	**ECN4921BAD-W10/G2**	**ECN4922BAD-W10/G2**	**ECN4924BAD-W10/G2**	**ECN4928BAD-W10/G2**	**AN16GN0AB**
	20	100A	**ECN4921BAF-W10/G4**	**ECN4922BAF-W10/G4**	**ECN4924BAF-W10/G4**	**ECN4928BAF-W10/G4**	
	25		**ECN4921BAF-W10/G9**	**ECN4922BAF-W10/G9**	**ECN4924BAF-W10/G9**	**ECN4928BAF-W10/G9**	
3YD	30	100A	**ECN4931BAF-W10/G14**	**ECN4932BAF-W10/G14**	**ECN4934BAF-W10/G14**	**ECN4938BAF-W10/G14**	**AN16KN0AB**
	40	200A	**ECN4931BAH-W10/G19**	**ECN4932BAH-W10/G19**	**ECN4934BAH-W10/G19**	**ECN4938BAH-W10/G19**	
	50		**ECN4931BAH-W10/G24**	**ECN4932BAH-W10/G24**	**ECN4934BAH-W10/G24**	**ECN4938BAH-W10/G24**	
4YD	60	200A	**ECN4941BAH-W10/G29**	**ECN4942BAH-W10/G29**	**ECN4944BAH-W10/G29**	**ECN4948BAH-W10/G29**	**AN16NN0AB**
	75	400A	**ECN4941BAK-W10/G34**	**ECN4942BAK-W10/G34**	**ECN4944BAK-W10/G34**	**ECN4948BAK-W10/G34**	
5YD	100	400A	**ECN4951BAK-W10/G39**	**ECN4952BAK-W10/G39**	**ECN4954BAK-W10/G39**	**ECN4958BAK-W10/G39**	**AN16SN0AB**
	125		**ECN4951BAK-W10/G44**	**ECN4952BAK-W10/G44**	**ECN4954BAK-W10/G44**	**ECN4958BAK-W10/G44**	
	150	600A	**ECN4951BAM-W10/G49**	**ECN4952BAM-W10/G49**	**ECN4954BAM-W10/G49**	**ECN4958BAM-W10/G49**	
6YD	200	600A	**ECN4961BAM-W10/G54**	**ECN4962BAM-W10/G54**	**ECN4963BAM-W10/G54** ⑦	**ECN4968BAM-W10/G54**	**AN16TN0AB**
	250	⑥	**ECN4961BAU-W10/G59**	**ECN4962BAU-W10/G59**	**ECN4963BAU-W10/G59** ⑦	**ECN4968BAU-W10/G59**	
	300		**ECN4961BAU-W10/G64**	**ECN4962BAU-W10/G64**	**ECN4963BAU-W10/G64** ⑦	**ECN4968BAU-W10/G64**	
	350		**ECN4961BAU-W10/G69**	**ECN4962BAU-W10/G69**	**ECN4963BAU-W10/G69** ⑦	**ECN4968BAU-W10/G69**	
7YD	400	⑥	**ECN4971BAU-W10/G74**	**ECN4972BAU-W10/G74**	**ECN4973BAU-W10/G74** ⑦	**ECN4978BAU-W10/G74**	**AN16UN0AB**
	450		**ECN4971BAU-W10/G79**	**ECN4972BAU-W10/G79**	**ECN4973BAU-W10/G79** ⑦	**ECN4978BAU-W10/G79**	
	500		**ECN4971BAU-W10/G84**	**ECN4972BAU-W10/G84**	**ECN4973BAU-W10/G84** ⑦	**ECN4978BAU-W10/G84**	
8YD	600	⑥	**ECN4981BAU-W10/G89**	**ECN4982BAU-W10/G89**	**ECN4983BAU-W10/G89** ⑦	**ECN4988BAU-W10/G89**	**AN16VN0AB**
	700		**ECN4981BAU-W10/G94**	**ECN4982BAU-W10/G94**	**ECN4983BAU-W10/G94** ⑦	**ECN4988BAU-W10/G94**	
	750		**ECN4981BAU-W10/G99**	**ECN4982BAU-W10/G99**	**ECN4983BAU-W10/G99** ⑦	**ECN4988BAU-W10/G99**	
	800		**ECN4981BAU-W10/G103**	**ECN4982BAU-W10/G103**	**ECN4983BAU-W10/G103** ⑦	**ECN4988BAU-W10/G103**	

Starters do not include heater packs. Select one carton of three heater packs (two overload relays—one for each winding). Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN49—Combination Open Transition Wye Delta Starter—Fusible Disconnect, continued

NEMA Size	Max. hp Rating	Fuse Clip Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 460/Magnet Coil Voltage 120 ⑤							
2YD	20	60A	**ECN4921CAE-W10/G6**	**ECN4922CAE-W10/G6**	**ECN4924CAE-W10/G6**	**ECN4928CAE-W10/G6**	**AN16GN0AB**
	25		**ECN4921CAE-W10/G11**	**ECN4922CAE-W10/G11**	**ECN4924CAE-W10/G11**	**ECN4928CAE-W10/G11**	
	30		**ECN4921CAE-W10/G16**	**ECN4922CAE-W10/G16**	**ECN4924CAE-W10/G16**	**ECN4928CAE-W10/G16**	
	40		**ECN4921CAE-W10/G21**	**ECN4922CAE-W10/G21**	**ECN4924CAE-W10/G21**	**ECN4928CAE-W10/G21**	
3YD	50	100A	**ECN4931CAG-W10/G26**	**ECN4932CAG-W10/G26**	**ECN4934CAG-W10/G26**	**ECN4938CAG-W10/G26**	**AN16KN0AB**
	60		**ECN4931CAG-W10/G31**	**ECN4932CAG-W10/G31**	**ECN4934CAG-W10/G31**	**ECN4938CAG-W10/G31**	
	75	200A	**ECN4931CAJ-W10/G36**	**ECN4932CAJ-W10/G36**	**ECN4934CAJ-W10/G36**	**ECN4938CAJ-W10/G36**	
4YD	100	200A	**ECN4941CAJ-W10/G41**	**ECN4942CAJ-W10/G41**	**ECN4944CAJ-W10/G41**	**ECN4948CAJ-W10/G41**	**AN16NN0AB**
	125		**ECN4941CAJ-W10/G46**	**ECN4942CAJ-W10/G46**	**ECN4944CAJ-W10/G46**	**ECN4948CAJ-W10/G46**	
	150	400A	**ECN4941CAL-W10/G51**	**ECN4942CAL-W10/G51**	**ECN4944CAL-W10/G51**	**ECN4948CAL-W10/G51**	
5YD	200	400A	**ECN4951CAL-W10/G56**	**ECN4952CAL-W10/G56**	**ECN4954CAL-W10/G56**	**ECN4958CAL-W10/G56**	**AN16SN0AB**
	250		**ECN4951CAL-W10/G61**	**ECN4952CAL-W10/G61**	**ECN4954CAL-W10/G61**	**ECN4958CAL-W10/G61**	
	300	600A	**ECN4951CAN-W10/G66**	**ECN4952CAN-W10/G66**	**ECN4954CAN-W10/G66**	**ECN4958CAN-W10/G66**	
6YD	350	600A	**ECN4961CAN-W10/G71**	**ECN4962CAN-W10/G71**	**ECN4963CAN-W10/G71** ⑦	**ECN4968CAN-W10/G71**	**AN16TN0AB**
	400		**ECN4961CAN-W10/G76**	**ECN4962CAN-W10/G76**	**ECN4963CAN-W10/G76** ⑦	**ECN4968CAN-W10/G76**	
	450		**ECN4961CAN-W10/G81**	**ECN4962CAN-W10/G81**	**ECN4963CAN-W10/G81** ⑦	**ECN4968CAN-W10/G81**	
	500	800A	**ECN4961CAP-W10/G86**	**ECN4962CAP-W10/G86**	**ECN4963CAP-W10/G86** ⑦	**ECN4968CAP-W10/G86**	
	600	1200A	**ECN4961CAQ-W10/G91**	**ECN4962CAQ-W10/G91**	**ECN4963CAQ-W10/G91** ⑦	**ECN4968CAQ-W10/G91**	
	700		**ECN4961CAQ-W10/G96**	**ECN4962CAQ-W10/G96**	**ECN4963CAQ-W10/G96** ⑦	**ECN4968CAQ-W10/G96**	
7YD	750	1200A	**ECN4971CAQ-W10/G101**	**ECN4972CAQ-W10/G101**	**ECN4973CAQ-W10/G101** ⑦	**ECN4978CAQ-W10/G101**	**AN16UN0AB**
	800	⑥	**ECN4971CAU-W10/G105**	**ECN4972CAU-W10/G105**	**ECN4973CAU-W10/G105** ⑦	**ECN4978CAU-W10/G105**	
	900		**ECN4971CAU-W10/G108**	**ECN4972CAU-W10/G108**	**ECN4973CAU-W10/G108** ⑦	**ECN4978CAU-W10/G108**	
	1000		**ECN4971CAU-W10/G111**	**ECN4972CAU-W10/G111**	**ECN4973CAU-W10/G111** ⑦	**ECN4978CAU-W10/G111**	
8YD	1250	⑥	**ECN4981CAU-W10/G114**	**ECN4982CAU-W10/G114**	**ECN4983CAU-W10/G114** ⑦	**ECN4988CAU-W10/G114**	**AN16VN0AB**
	1500		**ECN4981CAU-W10/G117**	**ECN4982CAU-W10/G117**	**ECN4983CAU-W10/G117** ⑦	**ECN4988CAU-W10/G117**	

Starters do not include heater packs. Select one carton of three heater packs (two overload relays—one for each winding). Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN462**4**EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN49—Combination Open Transition Wye Delta Starter—Fusible Disconnect, continued

NEMA Size	Max. hp Rating	Fuse Clip Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 575/Magnet Coil Voltage 120 ⑤							
2YD	20	30A	**ECN4921DAC-W10/G7**	**ECN4922DAC-W10/G7**	**ECN4924DAC-W10/G7**	**ECN4928DAC-W10/G7**	**AN16GN0AB**
	25	60A	**ECN4921DAE-W10/G12**	**ECN4922DAE-W10/G12**	**ECN4924DAE-W10/G12**	**ECN4928DAE-W10/G12**	
	30		**ECN4921DAE-W10/G17**	**ECN4922DAE-W10/G17**	**ECN4924DAE-W10/G17**	**ECN4928DAE-W10/G17**	
	40		**ECN4921DAE-W10/G22**	**ECN4922DAE-W10/G22**	**ECN4924DAE-W10/G22**	**ECN4928DAE-W10/G22**	
3YD	50	100A	**ECN4931DAG-W10/G27**	**ECN4932DAG-W10/G27**	**ECN4934DAG-W10/G27**	**ECN4938DAG-W10/G27**	**AN16KN0AB**
	60		**ECN4931DAG-W10/G32**	**ECN4932DAG-W10/G32**	**ECN4934DAG-W10/G32**	**ECN4938DAG-W10/G32**	
	75		**ECN4931DAG-W10/G37**	**ECN4932DAG-W10/G37**	**ECN4934DAG-W10/G37**	**ECN4938DAG-W10/G37**	
4YD	100	200A	**ECN4941DAJ-W10/G42**	**ECN4942DAJ-W10/G42**	**ECN4944DAJ-W10/G42**	**ECN4948DAJ-W10/G42**	**AN16NN0AB**
	125		**ECN4941DAJ-W10/G47**	**ECN4942DAJ-W10/G47**	**ECN4944DAJ-W10/G47**	**ECN4948DAJ-W10/G47**	
	150		**ECN4941DAJ-W10/G52**	**ECN4942DAJ-W10/G52**	**ECN4944DAJ-W10/G52**	**ECN4948DAJ-W10/G52**	
5YD	200	400A	**ECN4951DAL-W10/G57**	**ECN4952DAL-W10/G57**	**ECN4954DAL-W10/G57**	**ECN4958DAL-W10/G57**	**AN16SN0AB**
	250		**ECN4951DAL-W10/G62**	**ECN4952DAL-W10/G62**	**ECN4954DAL-W10/G62**	**ECN4958DAL-W10/G62**	
	300		**ECN4951DAL-W10/G67**	**ECN4952DAL-W10/G67**	**ECN4954DAL-W10/G67**	**ECN4958DAL-W10/G67**	
6YD	350	400A	**ECN4961DAL-W10/G72**	**ECN4962DAL-W10/G72**	**ECN4963DAL-W10/G72** ⑦	**ECN4968DAL-W10/G72**	**AN16TN0AB**
	400	600A	**ECN4961DAN-W10/G77**	**ECN4962DAN-W10/G77**	**ECN4963DAN-W10/G77** ⑦	**ECN4968DAN-W10/G77**	
	450		**ECN4961DAN-W10/G82**	**ECN4962DAN-W10/G82**	**ECN4963DAN-W10/G82** ⑦	**ECN4968DAN-W10/G82**	
	500		**ECN4961DAN-W10/G87**	**ECN4962DAN-W10/G87**	**ECN4963DAN-W10/G87** ⑦	**ECN4968DAN-W10/G87**	
	600	800A	**ECN4961DAP-W10/G92**	**ECN4962DAP-W10/G92**	**ECN4963DAP-W10/G92** ⑦	**ECN4968DAP-W10/G92**	
	700		**ECN4961DAP-W10/G97**	**ECN4962DAP-W10/G97**	**ECN4963DAP-W10/G97** ⑦	**ECN4968DAP-W10/G97**	
7YD	750	⑥	**ECN4971DAU-W10/G102**	**ECN4972DAU-W10/G102**	**ECN4973DAU-W10/G102** ⑦	**ECN4978DAU-W10/G102**	**AN16UN0AB**
	800		**ECN4971DAU-W10/G106**	**ECN4972DAU-W10/G106**	**ECN4973DAU-W10/G106** ⑦	**ECN4978DAU-W10/G106**	
	900		**ECN4971DAU-W10/G109**	**ECN4972DAU-W10/G109**	**ECN4973DAU-W10/G109** ⑦	**ECN4978DAU-W10/G109**	
	1000		**ECN4971DAU-W10/G112**	**ECN4972DAU-W10/G112**	**ECN4973DAU-W10/G112** ⑦	**ECN4978DAU-W10/G112**	
8YD	1250	⑥	**ECN4981DAU-W10/G115**	**ECN4982DAU-W10/G115**	**ECN4983DAU-W10/G115** ⑦	**ECN4988DAU-W10/G115**	**AN16VN0AB**
	1500		**ECN4981DAU-W10/G118**	**ECN4982DAU-W10/G118**	**ECN4983DAU-W10/G118** ⑦	**ECN4988DAU-W10/G118**	

Starters do not include heater packs. Select one carton of three heater packs (two overload relays—one for each winding). Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN49—Combination Open Transition Wye Delta Starter—Non-Fusible Disconnect

NEMA Size	Max. hp Rating	Disconnect Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 200/Magnet Coil Voltage 120 ⑤							
2YD	15	60A	**ECN4921EAA-W10/G1**	**ECN4922EAA-W10/G1**	**ECN4924EAA-W10/G1**	**ECN4928EAA-W10/G1**	**AN16GN0AB**
	20	100A	**ECN4921EAA-W10/G3**	**ECN4922EAA-W10/G3**	**ECN4924EAA-W10/G3**	**ECN4928EAA-W10/G3**	
3YD	25	100A	**ECN4931EAA-W10/G8**	**ECN4932EAA-W10/G8**	**ECN4934EAA-W10/G8**	**ECN4938EAA-W10/G8**	**AN16KN0AB**
	30	200A	**ECN4931EAA-W10/G13**	**ECN4932EAA-W10/G13**	**ECN4934EAA-W10/G13**	**ECN4938EAA-W10/G13**	
	40		**ECN4931EAA-W10/G18**	**ECN4932EAA-W10/G18**	**ECN4934EAA-W10/G18**	**ECN4938EAA-W10/G18**	
4YD	50	200A	**ECN4941EAA-W10/G23**	**ECN4942EAA-W10/G23**	**ECN4944EAA-W10/G23**	**ECN4948EAA-W10/G23**	**AN16NN0AB**
	60	400A	**ECN4941EAA-W10/G28**	**ECN4942EAA-W10/G28**	**ECN4944EAA-W10/G28**	**ECN4948EAA-W10/G28**	
5YD	75	400A	**ECN4951EAA-W10/G33**	**ECN4952EAA-W10/G33**	**ECN4954EAA-W10/G33**	**ECN4958EAA-W10/G33**	**AN16SN0AB**
	100		**ECN4951EAA-W10/G38**	**ECN4952EAA-W10/G38**	**ECN4954EAA-W10/G38**	**ECN4958EAA-W10/G38**	
	125	600A	**ECN4951EAA-W10/G43**	**ECN4952EAA-W10/G43**	**ECN4954EAA-W10/G43**	**ECN4958EAA-W10/G43**	
	150		**ECN4951EAA-W10/G48**	**ECN4952EAA-W10/G48**	**ECN4954EAA-W10/G48**	**ECN4958EAA-W10/G48**	
6YD	200	⑥	**ECN4961EAA-W10/G53**	**ECN4962EAA-W10/G53**	**ECN4963EAA-W10/G53** ⑦	**ECN4968EAA-W10/G33**	**AN16TN0AB**
	250		**ECN4961EAA-W10/G58**	**ECN4962EAA-W10/G58**	**ECN4963EAA-W10/G58** ⑦	**ECN4968EAA-W10/G58**	
	300		**ECN4961EAA-W10/G63**	**ECN4962EAA-W10/G63**	**ECN4963EAA-W10/G63** ⑦	**ECN4968EAA-W10/G63**	
7YD	350	⑥	**ECN4971EAA-W10/G68**	**ECN4972EAA-W10/G68**	**ECN4973EAA-W10/G68** ⑦	**ECN4978EAA-W10/G68**	**AN16UN0AB**
	400		**ECN4971EAA-W10/G73**	**ECN4972EAA-W10/G73**	**ECN4973EAA-W10/G73** ⑦	**ECN4978EAA-W10/G73**	
	450		**ECN4971EAA-W10/G78**	**ECN4972EAA-W10/G78**	**ECN4973EAA-W10/G78** ⑦	**ECN4978EAA-W10/G78**	
	500		**ECN4971EAA-W10/G83**	**ECN4972EAA-W10/G83**	**ECN4973EAA-W10/G83** ⑦	**ECN4978EAA-W10/G83**	
8YD	600	⑥	**ECN4981EAA-W10/G88**	**ECN4982EAA-W10/G88**	**ECN4983EAA-W10/G88** ⑦	**ECN4988EAA-W10/G88**	**AN16VN0AB**
	700		**ECN4981EAA-W10/G93**	**ECN4982EAA-W10/G93**	**ECN4983EAA-W10/G93** ⑦	**ECN4988EAA-W10/G93**	
	750		**ECN4981EAA-W10/G98**	**ECN4982EAA-W10/G98**	**ECN4983EAA-W10/G98** ⑦	**ECN4988EAA-W10/G98**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN49—Combination Open Transition Wye Delta Starter—Non-Fusible Disconnect, continued

NEMA Size	Max. hp Rating	Disconnect Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 230/Magnet Coil Voltage 120 ⑤							
2YD	15	60A	**ECN4921BAA-W10/G2**	**ECN4922BAA-W10/G2**	**ECN4924BAA-W10/G2**	**ECN4928BAA-W10/G2**	**AN16GN0AB**
	20	100A	**ECN4921BAA-W10/G4**	**ECN4922BAA-W10/G4**	**ECN4924BAA-W10/G4**	**ECN4928BAA-W10/G4**	
	25		**ECN4921BAA-W10/G9**	**ECN4922BAA-W10/G9**	**ECN4924BAA-W10/G9**	**ECN4928BAA-W10/G9**	
3YD	30	100A	**ECN4931BAA-W10/G14**	**ECN4932BAA-W10/G14**	**ECN4934BAA-W10/G14**	**ECN4938BAA-W10/G14**	**AN16KN0AB**
	40	200A	**ECN4931BAA-W10/G19**	**ECN4932BAA-W10/G19**	**ECN4934BAA-W10/G19**	**ECN4938BAA-W10/G19**	
	50		**ECN4931BAA-W10/G24**	**ECN4932BAA-W10/G24**	**ECN4934BAA-W10/G24**	**ECN4938BAA-W10/G24**	
4YD	60	200A	**ECN4941BAA-W10/G29**	**ECN4942BAA-W10/G29**	**ECN4944BAA-W10/G29**	**ECN4948BAA-W10/G29**	**AN16NN0AB**
	75	400A	**ECN4941BAA-W10/G34**	**ECN4942BAA-W10/G34**	**ECN4944BAA-W10/G34**	**ECN4948BAA-W10/G34**	
5YD	100	400A	**ECN4951BAA-W10/G39**	**ECN4952BAA-W10/G39**	**ECN4954BAA-W10/G39**	**ECN4958BAA-W10/G39**	**AN16SN0AB**
	125		**ECN4951BAA-W10/G44**	**ECN4952BAA-W10/G44**	**ECN4954BAA-W10/G44**	**ECN4958BAA-W10/G44**	
	150	600A	**ECN4951BAA-W10/G49**	**ECN4952BAA-W10/G49**	**ECN4954BAA-W10/G49**	**ECN4958BAA-W10/G49**	
6YD	200	600A	**ECN4961BAA-W10/G54**	**ECN4962BAA-W10/G54**	**ECN4963BAA-W10/G54** ⑦	**ECN4968BAA-W10/G54**	**AN16TN0AB**
	250	⑥	**ECN4961BAA-W10/G59**	**ECN4962BAA-W10/G59**	**ECN4963BAA-W10/G59** ⑦	**ECN4968BAA-W10/G59**	
	300		**ECN4961BAA-W10/G64**	**ECN4962BAA-W10/G64**	**ECN4963BAA-W10/G64** ⑦	**ECN4968BAA-W10/G64**	
	350		**ECN4961BAA-W10/G69**	**ECN4962BAA-W10/G69**	**ECN4963BAA-W10/G69** ⑦	**ECN4968BAA-W10/G69**	
7YD	400	⑥	**ECN4971BAA-W10/G74**	**ECN4972BAA-W10/G74**	**ECN4973BAA-W10/G74** ⑦	**ECN4978BAA-W10/G74**	**AN16UN0AB**
	450		**ECN4971BAA-W10/G79**	**ECN4972BAA-W10/G79**	**ECN4973BAA-W10/G79** ⑦	**ECN4978BAA-W10/G79**	
	500		**ECN4971BAA-W10/G84**	**ECN4972BAA-W10/G84**	**ECN4973BAA-W10/G84** ⑦	**ECN4978BAA-W10/G84**	
8YD	600	⑥	**ECN4981BAA-W10/G89**	**ECN4982BAA-W10/G89**	**ECN4983BAA-W10/G89** ⑦	**ECN4988BAA-W10/G89**	**AN16VN0AB**
	700		**ECN4981BAA-W10/G94**	**ECN4982BAA-W10/G94**	**ECN4983BAA-W10/G94** ⑦	**ECN4988BAA-W10/G94**	
	750		**ECN4981BAA-W10/G99**	**ECN4982BAA-W10/G99**	**ECN4983BAA-W10/G99** ⑦	**ECN4988BAA-W10/G99**	
	800		**ECN4981BAA-W10/G103**	**ECN4982BAA-W10/G103**	**ECN4983BAA-W10/G103** ⑦	**ECN4988BAA-W10/G103**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN49—Combination Open Transition Wye Delta Starter—Non-Fusible Disconnect, continued

NEMA Size	Max. hp Rating	Disconnect Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 460/Magnet Coil Voltage 120 ⑤							
2YD	20	60A	**ECN4921CAA-W10/G6**	**ECN4922CAA-W10/G6**	**ECN4924CAA-W10/G6**	**ECN4928CAA-W10/G6**	**AN16GN0AB**
	25		**ECN4921CAA-W10/G11**	**ECN4922CAA-W10/G11**	**ECN4924CAA-W10/G11**	**ECN4928CAA-W10/G11**	
	30		**ECN4921CAA-W10/G16**	**ECN4922CAA-W10/G16**	**ECN4924CAA-W10/G16**	**ECN4928CAA-W10/G16**	
	40		**ECN4921CAA-W10/G21**	**ECN4922CAA-W10/G21**	**ECN4924CAA-W10/G21**	**ECN4928CAA-W10/G21**	
3YD	50	100A	**ECN4931CAA-W10/G26**	**ECN4932CAA-W10/G26**	**ECN4934CAA-W10/G26**	**ECN4938CAA-W10/G26**	**AN16KN0AB**
	60		**ECN4931CAA-W10/G31**	**ECN4932CAA-W10/G31**	**ECN4934CAA-W10/G31**	**ECN4938CAA-W10/G31**	
	75	200A	**ECN4931CAA-W10/G36**	**ECN4932CAA-W10/G36**	**ECN4934CAA-W10/G36**	**ECN4938CAA-W10/G36**	
4YD	100	200A	**ECN4941CAA-W10/G41**	**ECN4942CAA-W10/G41**	**ECN4944CAA-W10/G41**	**ECN4948CAA-W10/G41**	**AN16NN0AB**
	125		**ECN4941CAA-W10/G46**	**ECN4942CAA-W10/G46**	**ECN4944CAA-W10/G46**	**ECN4948CAA-W10/G46**	
	150	400A	**ECN4941CAA-W10/G51**	**ECN4942CAA-W10/G51**	**ECN4944CAA-W10/G51**	**ECN4948CAA-W10/G51**	
5YD	200	400A	**ECN4951CAA-W10/G56**	**ECN4952CAA-W10/G56**	**ECN4954CAA-W10/G56**	**ECN4958CAA-W10/G56**	**AN16SN0AB**
	250		**ECN4951CAA-W10/G61**	**ECN4952CAA-W10/G61**	**ECN4954CAA-W10/G61**	**ECN4958CAA-W10/G61**	
	300	600A	**ECN4951CAA-W10/G66**	**ECN4952CAA-W10/G66**	**ECN4954CAA-W10/G66**	**ECN4958CAA-W10/G66**	
6YD	350	600A	**ECN4961CAA-W10/G71**	**ECN4962CAA-W10/G71**	**ECN4963CAA-W10/G71** ⑦	**ECN4968CAA-W10/G71**	**AN16TN0AB**
	400		**ECN4961CAA-W10/G76**	**ECN4962CAA-W10/G76**	**ECN4963CAA-W10/G76** ⑦	**ECN4968CAA-W10/G76**	
	450		**ECN4961CAA-W10/G81**	**ECN4962CAA-W10/G81**	**ECN4963CAA-W10/G81** ⑦	**ECN4968CAA-W10/G81**	
	500	800A	**ECN4961CAA-W10/G86**	**ECN4962CAA-W10/G86**	**ECN4963CAA-W10/G86** ⑦	**ECN4968CAA-W10/G86**	
	600	1200A	**ECN4961CAA-W10/G91**	**ECN4962CAA-W10/G91**	**ECN4963CAA-W10/G91** ⑦	**ECN4968CAA-W10/G91**	
	700		**ECN4961CAA-W10/G96**	**ECN4962CAA-W10/G96**	**ECN4963CAA-W10/G96** ⑦	**ECN4968CAA-W10/G96**	
7YD	750	1200A	**ECN4971CAA-W10/G101**	**ECN4972CAA-W10/G101**	**ECN4973CAA-W10/G101** ⑦	**ECN4978CAA-W10/G101**	**AN16UN0AB**
	800	⑥	**ECN4971CAA-W10/G105**	**ECN4972CAA-W10/G105**	**ECN4973CAA-W10/G105** ⑦	**ECN4978CAA-W10/G105**	
	900		**ECN4971CAA-W10/G108**	**ECN4972CAA-W10/G108**	**ECN4973CAA-W10/G108** ⑦	**ECN4978CAA-W10/G108**	
	1000		**ECN4971CAA-W10/G111**	**ECN4972CAA-W10/G111**	**ECN4973CAA-W10/G111** ⑦	**ECN4978CAA-W10/G111**	
8YD	1250	⑥	**ECN4981CAA-W10/G114**	**ECN4982CAA-W10/G114**	**ECN4983CAA-W10/G114** ⑦	**ECN4988CAA-W10/G114**	**AN16VN0AB**
	1500		**ECN4981CAA-W10/G117**	**ECN4982CAA-W10/G117**	**ECN4983CAA-W10/G117** ⑦	**ECN4988CAA-W10/G117**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN462**4**EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN49—Combination Open Transition Wye Delta Starter—Non-Fusible Disconnect, continued

NEMA Size	Max. hp Rating	Disconnect Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 575/Magnet Coil Voltage 120 ⑤							
2YD	20	30A	**ECN4921DAA-W10/G7**	**ECN4922DAA-W10/G7**	**ECN4924DAA-W10/G7**	**ECN4928DAA-W10/G7**	**AN16GN0AB**
	25	60A	**ECN4921DAA-W10/G12**	**ECN4922DAA-W10/G12**	**ECN4924DAA-W10/G12**	**ECN4928DAA-W10/G12**	
	30		**ECN4921DAA-W10/G17**	**ECN4922DAA-W10/G17**	**ECN4924DAA-W10/G17**	**ECN4928DAA-W10/G17**	
	40		**ECN4921DAA-W10/G22**	**ECN4922DAA-W10/G22**	**ECN4924DAA-W10/G22**	**ECN4928DAA-W10/G22**	
3YD	50	100A	**ECN4931DAA-W10/G27**	**ECN4932DAA-W10/G27**	**ECN4934DAA-W10/G27**	**ECN4938DAA-W10/G27**	**AN16KN0AB**
	60		**ECN4931DAA-W10/G32**	**ECN4932DAA-W10/G32**	**ECN4934DAA-W10/G32**	**ECN4938DAA-W10/G32**	
	75		**ECN4931DAA-W10/G37**	**ECN4932DAA-W10/G37**	**ECN4934DAA-W10/G37**	**ECN4938DAA-W10/G37**	
4YD	100	200A	**ECN4941DAA-W10/G42**	**ECN4942DAA-W10/G42**	**ECN4944DAA-W10/G42**	**ECN4948DAA-W10/G42**	**AN16NN0AB**
	125		**ECN4941DAA-W10/G47**	**ECN4942DAA-W10/G47**	**ECN4944DAA-W10/G47**	**ECN4948DAA-W10/G47**	
	150		**ECN4941DAA-W10/G52**	**ECN4942DAA-W10/G52**	**ECN4944DAA-W10/G52**	**ECN4948DAA-W10/G52**	
5YD	200	400A	**ECN4951DAA-W10/G57**	**ECN4952DAA-W10/G57**	**ECN4954DAA-W10/G57**	**ECN4958DAA-W10/G57**	**AN16SN0AB**
	250		**ECN4951DAA-W10/G62**	**ECN4952DAA-W10/G62**	**ECN4954DAA-W10/G62**	**ECN4958DAA-W10/G62**	
	300		**ECN4951DAA-W10/G67**	**ECN4952DAA-W10/G67**	**ECN4954DAA-W10/G67**	**ECN4958DAA-W10/G67**	
6YD	350	400A	**ECN4961DAA-W10/G72**	**ECN4962DAA-W10/G72**	**ECN4963DAA-W10/G72** ⑦	**ECN4968DAA-W10/G72**	**AN16TN0AB**
	400	600A	**ECN4961DAA-W10/G77**	**ECN4962DAA-W10/G77**	**ECN4963DAA-W10/G77** ⑦	**ECN4968DAA-W10/G77**	
	450		**ECN4961DAA-W10/G82**	**ECN4962DAA-W10/G82**	**ECN4963DAA-W10/G82** ⑦	**ECN4968DAA-W10/G82**	
	500		**ECN4961DAA-W10/G87**	**ECN4962DAA-W10/G87**	**ECN4963DAA-W10/G87** ⑦	**ECN4968DAA-W10/G87**	
	600	800A	**ECN4961DAA-W10/G92**	**ECN4962DAA-W10/G92**	**ECN4963DAA-W10/G92** ⑦	**ECN4968DAA-W10/G92**	
	700		**ECN4961DAA-W10/G97**	**ECN4962DAA-W10/G97**	**ECN4963DAA-W10/G97** ⑦	**ECN4968DAA-W10/G97**	
7YD	750	⑥	**ECN4971DAA-W10/G102**	**ECN4972DAA-W10/G102**	**ECN4973DAA-W10/G102** ⑦	**ECN4978DAA-W10/G102**	**AN16UN0AB**
	800		**ECN4971DAA-W10/G106**	**ECN4972DAA-W10/G106**	**ECN4973DAA-W10/G106** ⑦	**ECN4978DAA-W10/G106**	
	900		**ECN4971DAA-W10/G109**	**ECN4972DAA-W10/G109**	**ECN4973DAA-W10/G109** ⑦	**ECN4978DAA-W10/G109**	
	1000		**ECN4971DAA-W10/G112**	**ECN4972DAA-W10/G112**	**ECN4973DAA-W10/G112** ⑦	**ECN4978DAA-W10/G112**	
8YD	1250	⑥	**ECN4981DAA-W10/G115**	**ECN4982DAA-W10/G115**	**ECN4983DAA-W10/G115** ⑦	**ECN4988DAA-W10/G115**	**AN16VN0AB**
	1500		**ECN4981DAA-W10/G118**	**ECN4982DAA-W10/G118**	**ECN4983DAA-W10/G118** ⑦	**ECN4988DAA-W10/G118**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN50—Combination Open Transition Wye Delta Starter—Circuit Breaker

NEMA Size	Max. hp Rating	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 200/Magnet Coil Voltage 120 ⑤							
2YD	15	70A	**ECN5021EAH-W10/G1**	**ECN5022EAH-W10/G1**	**ECN5024EAH-W10/G1**	**ECN5028EAH-W10/G1**	**AN16GN0AB**
	20	90A	**ECN5021EAJ-W10/G3**	**ECN5022EAJ-W10/G3**	**ECN5024EAJ-W10/G3**	**ECN5028EAJ-W10/G3**	
3YD	25	100A	**ECN5031EAK-W10/G8**	**ECN5032EAK-W10/G8**	**ECN5034EAK-W10/G8**	**ECN5038EAK-W10/G8**	**AN16KN0AB**
	30	125A	**ECN5031EAL-W10/G13**	**ECN5032EAL-W10/G13**	**ECN5034EAL-W10/G13**	**ECN5038EAL-W10/G13**	
	40	175A	**ECN5031EAN-W10/G18**	**ECN5032EAN-W10/G18**	**ECN5034EAN-W10/G18**	**ECN5038EAN-W10/G18**	
4YD	50	200A	**ECN5041EAP-W10/G23**	**ECN5042EAP-W10/G23**	**ECN5044EAP-W10/G23**	**ECN5048EAP-W10/G23**	**AN16NN0AB**
	60	225A	**ECN5041EAQ-W10/G28**	**ECN5042EAQ-W10/G28**	**ECN5044EAQ-W10/G28**	**ECN5048EAQ-W10/G28**	
5YD	75	300A	**ECN5051EAS-W10/G33**	**ECN5052EAS-W10/G33**	**ECN5054EAS-W10/G33**	**ECN5058EAS-W10/G33**	**AN16SN0AB**
	100	350A	**ECN5051EAV-W10/G38**	**ECN5052EAV-W10/G38**	**ECN5054EAV-W10/G38**	**ECN5058EAV-W10/G38**	
	125	450A	**ECN5051EAX-W10/G43**	**ECN5052EAX-W10/G43**	**ECN5054EAX-W10/G43**	**ECN5058EAX-W10/G43**	
	150	500A	**ECN5051EAY-W10/G48**	**ECN5052EAY-W10/G48**	**ECN5054EAY-W10/G48**	**ECN5058EAY-W10/G48**	
6YD	200	800A	**ECN5061EA2-W10/G53**	**ECN5062EA2-W10/G53**	**ECN5063EA2-W10/G53** ⑦	**ECN5068EA2-W10/G33**	**AN16TN0AB**
	250	1000A	**ECN5061EA3-W10/G58**	**ECN5062EA3-W10/G58**	**ECN5063EA3-W10/G58** ⑦	**ECN5068EA3-W10/G58**	
	300	1200A	**ECN5061EA4-W10/G63**	**ECN5062EA4-W10/G63**	**ECN5063EA4-W10/G63** ⑦	**ECN5068EA4-W10/G63**	
7YD	350	⑥	**ECN5071EAU-W10/G68**	**ECN5072EAU-W10/G68**	**ECN5073EAU-W10/G68** ⑦	**ECN5078EAU-W10/G68**	**AN16UN0AB**
	400		**ECN5071EAU-W10/G73**	**ECN5072EAU-W10/G73**	**ECN5073EAU-W10/G73** ⑦	**ECN5078EAU-W10/G73**	
	450		**ECN5071EAU-W10/G78**	**ECN5072EAU-W10/G78**	**ECN5073EAU-W10/G78** ⑦	**ECN5078EAU-W10/G78**	
	500		**ECN5071EAU-W10/G83**	**ECN5072EAU-W10/G83**	**ECN5073EAU-W10/G83** ⑦	**ECN5078EAU-W10/G83**	
8YD	600	⑥	**ECN5081EAU-W10/G88**	**ECN5082EAU-W10/G88**	**ECN5083EAU-W10/G88** ⑦	**ECN5088EAU-W10/G88**	**AN16VN0AB**
	700		**ECN5081EAU-W10/G93**	**ECN5082EAU-W10/G93**	**ECN5083EAU-W10/G93** ⑦	**ECN5088EAU-W10/G93**	
	750		**ECN5081EAU-W10/G98**	**ECN5082EAU-W10/G98**	**ECN5083EAU-W10/G98** ⑦	**ECN5088EAU-W10/G98**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN50—Combination Open Transition Wye Delta Starter—Circuit Breaker, continued

NEMA Size	Max. hp Rating	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 230/Magnet Coil Voltage 120 ⑤							
2YD	15	60A	**ECN5021BAG-W10/G2**	**ECN5022BAG-W10/G2**	**ECN5024BAG-W10/G2**	**ECN5028BAG-W10/G2**	**AN16GN0AB**
	20	70A	**ECN5021BAH-W10/G4**	**ECN5022BAH-W10/G4**	**ECN5024BAH-W10/G4**	**ECN5028BAH-W10/G4**	
	25	90A	**ECN5021BAJ-W10/G9**	**ECN5022BAJ-W10/G9**	**ECN5024BAJ-W10/G9**	**ECN5028BAJ-W10/G9**	
3YD	30	125A	**ECN5031BAL-W10/G14**	**ECN5032BAL-W10/G14**	**ECN5034BAL-W10/G14**	**ECN5038BAL-W10/G14**	**AN16KN0AB**
	40	150A	**ECN5031BAM-W10/G19**	**ECN5032BAM-W10/G19**	**ECN5034BAM-W10/G19**	**ECN5038BAM-W10/G19**	
	50	175A	**ECN5031BAN-W10/G24**	**ECN5032BAN-W10/G24**	**ECN5034BAN-W10/G24**	**ECN5038BAN-W10/G24**	
4YD	60	200A	**ECN5041BAP-W10/G29**	**ECN5042BAP-W10/G29**	**ECN5044BAP-W10/G29**	**ECN5048BAP-W10/G29**	**AN16NN0AB**
	75	250A	**ECN5041BAR-W10/G34**	**ECN5042BAR-W10/G34**	**ECN5044BAR-W10/G34**	**ECN5048BAR-W10/G34**	
5YD	100	350A	**ECN5051BAV-W10/G39**	**ECN5052BAV-W10/G39**	**ECN5054BAV-W10/G39**	**ECN5058BAV-W10/G39**	**AN16SN0AB**
	125	400A	**ECN5051BAW-W10/G44**	**ECN5052BAW-W10/G44**	**ECN5054BAW-W10/G44**	**ECN5058BAW-W10/G44**	
	150	500A	**ECN5051BAY-W10/G49**	**ECN5052BAY-W10/G49**	**ECN5054BAY-W10/G49**	**ECN5058BAY-W10/G49**	
6YD	200	600A	**ECN5061BAZ-W10/G54**	**ECN5062BAZ-W10/G54**	**ECN5063BAZ-W10/G54** ⑦	**ECN5068BAZ-W10/G54**	**AN16TN0AB**
	250	800A	**ECN5061BA2-W10/G59**	**ECN5062BA2-W10/G59**	**ECN5063BA2-W10/G59** ⑦	**ECN5068BA2-W10/G59**	
	300	1000A	**ECN5061BA3-W10/G64**	**ECN5062BA3-W10/G64**	**ECN5063BA3-W10/G64** ⑦	**ECN5068BA3-W10/G64**	
	350	1200A	**ECN5061BA4-W10/G69**	**ECN5062BA4-W10/G69**	**ECN5063BA4-W10/G69** ⑦	**ECN5068BA4-W10/G69**	
7YD	400	⑥	**ECN5071BAU-W10/G74**	**ECN5072BAU-W10/G74**	**ECN5073BAU-W10/G74** ⑦	**ECN5078BAU-W10/G74**	**AN16UN0AB**
	450		**ECN5071BAU-W10/G79**	**ECN5072BAU-W10/G79**	**ECN5073BAU-W10/G79** ⑦	**ECN5078BAU-W10/G79**	
	500		**ECN5071BAU-W10/G84**	**ECN5072BAU-W10/G84**	**ECN5073BAU-W10/G84** ⑦	**ECN5078BAU-W10/G84**	
8YD	600	⑥	**ECN5081BAU-W10/G89**	**ECN5082BAU-W10/G89**	**ECN5083BAU-W10/G89** ⑦	**ECN5088BAU-W10/G89**	**AN16VN0AB**
	700		**ECN5081BAU-W10/G94**	**ECN5082BAU-W10/G94**	**ECN5083BAU-W10/G94** ⑦	**ECN5088BAU-W10/G94**	
	750		**ECN5081BAU-W10/G99**	**ECN5082BAU-W10/G99**	**ECN5083BAU-W10/G99** ⑦	**ECN5088BAU-W10/G99**	
	800		**ECN5081BAU-W10/G103**	**ECN5082BAU-W10/G103**	**ECN5083BAU-W10/G103** ⑦	**ECN5088BAU-W10/G103**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN50—Combination Open Transition Wye Delta Starter—Circuit Breaker, continued

NEMA Size	Max. hp Rating	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 460/Magnet Coil Voltage 120 ⑤							
2YD	20	40A	**ECN5021CAE-W10/G6**	**ECN5022CAE-W10/G6**	**ECN5024CAE-W10/G6**	**ECN5028CAE-W10/G6**	**AN16GN0AB**
	25	50A	**ECN5021CAF-W10/G11**	**ECN5022CAF-W10/G11**	**ECN5024CAF-W10/G11**	**ECN5028CAF-W10/G11**	
	30	60A	**ECN5021CAG-W10/G16**	**ECN5022CAG-W10/G16**	**ECN5024CAG-W10/G16**	**ECN5028CAG-W10/G16**	
	40	70A	**ECN5021CAH-W10/G21**	**ECN5022CAH-W10/G21**	**ECN5024CAH-W10/G21**	**ECN5028CAH-W10/G21**	
3YD	50	90A	**ECN5031CAJ-W10/G26**	**ECN5032CAJ-W10/G26**	**ECN5034CAJ-W10/G26**	**ECN5038CAJ-W10/G26**	**AN16KN0AB**
	60	100A	**ECN5031CAK-W10/G31**	**ECN5032CAK-W10/G31**	**ECN5034CAK-W10/G31**	**ECN5038CAK-W10/G31**	
	75	125A	**ECN5031CAL-W10/G36**	**ECN5032CAL-W10/G36**	**ECN5034CAL-W10/G36**	**ECN5038CAL-W10/G36**	
4YD	100	175A	**ECN5041CAN-W10/G41**	**ECN5042CAN-W10/G41**	**ECN5044CAN-W10/G41**	**ECN5048CAN-W10/G41**	**AN16NN0AB**
	125	225A	**ECN5041CAQ-W10/G46**	**ECN5042CAQ-W10/G46**	**ECN5044CAQ-W10/G46**	**ECN5048CAQ-W10/G46**	
	150	250A	**ECN5041CAR-W10/G51**	**ECN5042CAR-W10/G51**	**ECN5044CAR-W10/G51**	**ECN5048CAR-W10/G51**	
5YD	200	350A	**ECN5051CAV-W10/G56**	**ECN5052CAV-W10/G56**	**ECN5054CAV-W10/G56**	**ECN5058CAV-W10/G56**	**AN16SN0AB**
	250	400A	**ECN5051CAW-W10/G61**	**ECN5052CAW-W10/G61**	**ECN5054CAW-W10/G61**	**ECN5058CAW-W10/G61**	
	300	500A	**ECN5051CAY-W10/G66**	**ECN5052CAY-W10/G66**	**ECN5054CAY-W10/G66**	**ECN5058CAY-W10/G66**	
6YD	350	600A	**ECN5061CAZ-W10/G71**	**ECN5062CAZ-W10/G71**	**ECN5063CAZ-W10/G71** ⑦	**ECN5068CAZ-W10/G71**	**AN16TN0AB**
	400		**ECN5061CAZ-W10/G76**	**ECN5062CAZ-W10/G76**	**ECN5063CAZ-W10/G76** ⑦	**ECN5068CAZ-W10/G76**	
	450	700A	**ECN5061CA1-W10/G81**	**ECN5062CA1-W10/G81**	**ECN5063CA1-W10/G81** ⑦	**ECN5068CA1-W10/G81**	
	500	800A	**ECN5061CA2-W10/G86**	**ECN5062CA2-W10/G86**	**ECN5063CA2-W10/G86** ⑦	**ECN5068CA2-W10/G86**	
	600	1000A	**ECN5061CA3-W10/G91**	**ECN5062CA3-W10/G91**	**ECN5063CA3-W10/G91** ⑦	**ECN5068CA3-W10/G91**	
	700	1200A	**ECN5061CA4-W10/G96**	**ECN5062CA4-W10/G96**	**ECN5063CA4-W10/G96** ⑦	**ECN5068CA4-W10/G96**	
7YD	750	⑥	**ECN5071CAU-W10/G101**	**ECN5072CAU-W10/G101**	**ECN5073CAU-W10/G101** ⑦	**ECN5078CAU-W10/G101**	**AN16UN0AB**
	800		**ECN5071CAU-W10/G105**	**ECN5072CAU-W10/G105**	**ECN5073CAU-W10/G105** ⑦	**ECN5078CAU-W10/G105**	
	900		**ECN5071CAU-W10/G108**	**ECN5072CAU-W10/G108**	**ECN5073CAU-W10/G108** ⑦	**ECN5078CAU-W10/G108**	
	1000		**ECN5071CAU-W10/G111**	**ECN5072CAU-W10/G111**	**ECN5073CAU-W10/G111** ⑦	**ECN5078CAU-W10/G111**	
8YD	1250	⑥	**ECN5081CAU-W10/G114**	**ECN5082CAU-W10/G114**	**ECN5083CAU-W10/G114** ⑦	**ECN5088CAU-W10/G114**	**AN16VN0AB**
	1500		**ECN5081CAU-W10/G117**	**ECN5082CAU-W10/G117**	**ECN5083CAU-W10/G117** ⑦	**ECN5088CAU-W10/G117**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN50—Combination Open Transition Wye Delta Starter—Circuit Breaker, continued

NEMA Size	Max. hp Rating	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 575/Magnet Coil Voltage 120 ⑤							
2YD	20	30A	**ECN5021DAD-W10/G7**	**ECN5022DAD-W10/G7**	**ECN5024DAD-W10/G7**	**ECN5028DAD-W10/G7**	**AN16GN0AB**
	25	40A	**ECN5021DAE-W10/G12**	**ECN5022DAE-W10/G12**	**ECN5024DAE-W10/G12**	**ECN5028DAE-W10/G12**	
	30	50A	**ECN5021DAF-W10/G17**	**ECN5022DAF-W10/G17**	**ECN5024DAF-W10/G17**	**ECN5028DAF-W10/G17**	
	40	60A	**ECN5021DAG-W10/G22**	**ECN5022DAG-W10/G22**	**ECN5024DAG-W10/G22**	**ECN5028DAG-W10/G22**	
3YD	50	70A	**ECN5031DAH-W10/G27**	**ECN5032DAH-W10/G27**	**ECN5034DAH-W10/G27**	**ECN5038DAH-W10/G27**	**AN16KN0AB**
	60	90A	**ECN5031DAJ-W10/G32**	**ECN5032DAJ-W10/G32**	**ECN5034DAJ-W10/G32**	**ECN5038DAJ-W10/G32**	
	75	100A	**ECN5031DAK-W10/G37**	**ECN5032DAK-W10/G37**	**ECN5034DAK-W10/G37**	**ECN5038DAK-W10/G37**	
4YD	100	125A	**ECN5041DAL-W10/G42**	**ECN5042DAL-W10/G42**	**ECN5044DAL-W10/G42**	**ECN5048DAL-W10/G42**	**AN16NN0AB**
	125	175A	**ECN5041DAN-W10/G47**	**ECN5042DAN-W10/G47**	**ECN5044DAN-W10/G47**	**ECN5048DAN-W10/G47**	
	150	200A	**ECN5041DAP-W10/G52**	**ECN5042DAP-W10/G52**	**ECN5044DAP-W10/G52**	**ECN5048DAP-W10/G52**	
5YD	200	250A	**ECN5051DAR-W10/G57**	**ECN5052DAR-W10/G57**	**ECN5054DAR-W10/G57**	**ECN5058DAR-W10/G57**	**AN16SN0AB**
	250	350A	**ECN5051DAV-W10/G62**	**ECN5052DAV-W10/G62**	**ECN5054DAV-W10/G62**	**ECN5058DAV-W10/G62**	
	300		**ECN5051DAV-W10/G67**	**ECN5052DAV-W10/G67**	**ECN5054DAV-W10/G67**	**ECN5058DAV-W10/G67**	
6YD	350	500A	**ECN5061DAY-W10/G72**	**ECN5062DAY-W10/G72**	**ECN5063DAY-W10/G72** ⑦	**ECN5068DAY-W10/G72**	**AN16TN0AB**
	400		**ECN5061DAY-W10/G77**	**ECN5062DAY-W10/G77**	**ECN5063DAY-W10/G77** ⑦	**ECN5068DAY-W10/G77**	
	450	600A	**ECN5061DAZ-W10/G82**	**ECN5062DAZ-W10/G82**	**ECN5063DAZ-W10/G82** ⑦	**ECN5068DAZ-W10/G82**	
	500		**ECN5061DAZ-W10/G87**	**ECN5062DAZ-W10/G87**	**ECN5063DAZ-W10/G87** 4⑦	**ECN5068DAZ-W10/G87**	
	600	800A	**ECN5061DA2-W10/G92**	**ECN5062DA2-W10/G92**	**ECN5063DA2-W10/G92** ⑦	**ECN5068DA2-W10/G92**	
	700	1000A	**ECN5061DA3-W10/G97**	**ECN5062DA3-W10/G97**	**ECN5063DA3-W10/G97** ⑦	**ECN5068DA3-W10/G97**	
7YD	750	⑥	**ECN5071DAU-W10/G102**	**ECN5072DAU-W10/G102**	**ECN5073DAU-W10/G102** ⑦	**ECN5078DAU-W10/G102**	**AN16UN0AB**
	800		**ECN5071DAU-W10/G106**	**ECN5072DAU-W10/G106**	**ECN5073DAU-W10/G106** ⑦	**ECN5078DAU-W10/G106**	
	900		**ECN5071DAU-W10/G109**	**ECN5072DAU-W10/G109**	**ECN5073DAU-W10/G109** ⑦	**ECN5078DAU-W10/G109**	
	1000		**ECN5071DAU-W10/G112**	**ECN5072DAU-W10/G112**	**ECN5073DAU-W10/G112** ⑦	**ECN5078DAU-W10/G112**	
8YD	1250	⑥	**ECN5081DAU-W10/G115**	**ECN5082DAU-W10/G115**	**ECN5083DAU-W10/G115** ⑦	**ECN5088DAU-W10/G115**	**AN16VN0AB**
	1500		**ECN5081DAU-W10/G118**	**ECN5082DAU-W10/G118**	**ECN5083DAU-W10/G118** ⑦	**ECN5088DAU-W10/G118**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN462**4**EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN51—Non-Combination Closed Transition Wye Delta Starter

NEMA Size	Max. hp Rating	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ② Catalog Number	Component Starter (Open) ③ Catalog Number
Motor Volts 200/Magnet Coil Voltage 120 ④						
2YD	15	**ECN5121EAA-W10/G1**	**ECN5122EAA-W10/G1**	**ECN5124EAA-W10/G1**	**ECN5128EAA-W10/G1**	**AN16GN0AB**
	20	**ECN5121EAA-W10/G3**	**ECN5122EAA-W10/G3**	**ECN5124EAA-W10/G3**	**ECN5128EAA-W10/G3**	
3YD	25	**ECN5131EAA-W10/G8**	**ECN5132EAA-W10/G8**	**ECN5134EAA-W10/G8**	**ECN5138EAA-W10/G8**	**AN16KN0AB**
	30	**ECN5131EAA-W10/G13**	**ECN5132EAA-W10/G13**	**ECN5134EAA-W10/G13**	**ECN5138EAA-W10/G13**	
	40	**ECN5131EAA-W10/G18**	**ECN5132EAA-W10/G18**	**ECN5134EAA-W10/G18**	**ECN5138EAA-W10/G18**	
4YD	50	**ECN5141EAA-W10/G23**	**ECN5142EAA-W10/G23**	**ECN5144EAA-W10/G23**	**ECN5148EAA-W10/G23**	**AN16NN0AB**
	60	**ECN5141EAA-W10/G28**	**ECN5142EAA-W10/G28**	**ECN5144EAA-W10/G28**	**ECN5148EAA-W10/G28**	
5YD	75	**ECN5151EAA-W10/G33**	**ECN5152EAA-W10/G33**	**ECN5154EAA-W10/G33**	**ECN5158EAA-W10/G33**	**AN16SN0AB**
	100	**ECN5151EAA-W10/G38**	**ECN5152EAA-W10/G38**	**ECN5154EAA-W10/G38**	**ECN5158EAA-W10/G38**	
	125	**ECN5151EAA-W10/G43**	**ECN5152EAA-W10/G43**	**ECN5154EAA-W10/G43**	**ECN5158EAA-W10/G43**	
	150	**ECN5151EAA-W10/G48**	**ECN5152EAA-W10/G48**	**ECN5154EAA-W10/G48**	**ECN5158EAA-W10/G48**	
6YD	200	**ECN5161EAA-W10/G53**	**ECN5162EAA-W10/G53**	**ECN5163EAA-W10/G53** ⑤	**ECN5168EAA-W10/G33**	**AN16TN0AB**
	250	**ECN5161EAA-W10/G58**	**ECN5162EAA-W10/G58**	**ECN5163EAA-W10/G58** ⑤	**ECN5168EAA-W10/G58**	
	300	**ECN5161EAA-W10/G63**	**ECN5162EAA-W10/G63**	**ECN5163EAA-W10/G63** ⑤	**ECN5168EAA-W10/G63**	
7YD	350	**ECN5171EAA-W10/G68**	**ECN5172EAA-W10/G68**	**ECN5173EAA-W10/G68** ⑤	**ECN5178EAA-W10/G68**	**AN16UN0AB**
	400	**ECN5171EAA-W10/G73**	**ECN5172EAA-W10/G73**	**ECN5173EAA-W10/G73** ⑤	**ECN5178EAA-W10/G73**	
	450	**ECN5171EAA-W10/G78**	**ECN5172EAA-W10/G78**	**ECN5173EAA-W10/G78** ⑤	**ECN5178EAA-W10/G78**	
	500	**ECN5171EAA-W10/G83**	**ECN5172EAA-W10/G83**	**ECN5173EAA-W10/G83** ⑤	**ECN5178EAA-W10/G83**	
8YD	600	**ECN5181EAA-W10/G88**	**ECN5182EAA-W10/G88**	**ECN5183EAA-W10/G88** ⑤	**ECN5188EAA-W10/G88**	**AN16VN0AB**
	700	**ECN5181EAA-W10/G93**	**ECN5182EAA-W10/G93**	**ECN5183EAA-W10/G93** ⑤	**ECN5188EAA-W10/G93**	
	750	**ECN5181EAA-W10/G98**	**ECN5182EAA-W10/G98**	**ECN5183EAA-W10/G98** ⑤	**ECN5188EAA-W10/G98**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Also requires matching contactor with mechanical interlock.

④ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑤ Type 4 (painted steel) sizes 6–8YD.

Class ECN51—Non-Combination Closed Transition Wye Delta Starter, continued

NEMA Size	Max. hp Rating	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ② Catalog Number	Component Starter (Open) ③ Catalog Number
Motor Volts 230/Magnet Coil Voltage 120 ④						
2YD	15	**ECN5121BAA-W10/G2**	**ECN5122BAA-W10/G2**	**ECN5124BAA-W10/G2**	**ECN5128BAA-W10/G2**	**AN16GN0AB**
	20	**ECN5121BAA-W10/G4**	**ECN5122BAA-W10/G4**	**ECN5124BAA-W10/G4**	**ECN5128BAA-W10/G4**	
	25	**ECN5121BAA-W10/G9**	**ECN5122BAA-W10/G9**	**ECN5124BAA-W10/G9**	**ECN5128BAA-W10/G9**	
3YD	30	**ECN5131BAA-W10/G14**	**ECN5132BAA-W10/G14**	**ECN5134BAA-W10/G14**	**ECN5138BAA-W10/G14**	**AN16KN0AB**
	40	**ECN5131BAA-W10/G19**	**ECN5132BAA-W10/G19**	**ECN5134BAA-W10/G19**	**ECN5138BAA-W10/G19**	
	50	**ECN5131BAA-W10/G24**	**ECN5132BAA-W10/G24**	**ECN5134BAA-W10/G24**	**ECN5138BAA-W10/G24**	
4YD	60	**ECN5141BAA-W10/G29**	**ECN5142BAA-W10/G29**	**ECN5144BAA-W10/G29**	**ECN5148BAA-W10/G29**	**AN16NN0AB**
	75	**ECN5141BAA-W10/G34**	**ECN5142BAA-W10/G34**	**ECN5144BAA-W10/G34**	**ECN5148BAA-W10/G34**	
5YD	100	**ECN5151BAA-W10/G39**	**ECN5152BAA-W10/G39**	**ECN5154BAA-W10/G39**	**ECN5158BAA-W10/G39**	**AN16SN0AB**
	125	**ECN5151BAA-W10/G44**	**ECN5152BAA-W10/G44**	**ECN5154BAA-W10/G44**	**ECN5158BAA-W10/G44**	
	150	**ECN5151BAA-W10/G49**	**ECN5152BAA-W10/G49**	**ECN5154BAA-W10/G49**	**ECN5158BAA-W10/G49**	
6YD	200	**ECN5161BAA-W10/G54**	**ECN5162BAA-W10/G54**	**ECN5163BAA-W10/G54** ⑤	**ECN5168BAA-W10/G54**	**AN16TN0AB**
	250	**ECN5161BAA-W10/G59**	**ECN5162BAA-W10/G59**	**ECN5163BAA-W10/G59** ⑤	**ECN5168BAA-W10/G59**	
	300	**ECN5161BAA-W10/G64**	**ECN5162BAA-W10/G64**	**ECN5163BAA-W10/G64** ⑤	**ECN5168BAA-W10/G64**	
	350	**ECN5161BAA-W10/G69**	**ECN5162BAA-W10/G69**	**ECN5163BAA-W10/G69** ⑤	**ECN5168BAA-W10/G69**	
7YD	400	**ECN5171BAA-W10/G74**	**ECN5172BAA-W10/G74**	**ECN5173BAA-W10/G74** ⑤	**ECN5178BAA-W10/G74**	**AN16UN0AB**
	450	**ECN5171BAA-W10/G79**	**ECN5172BAA-W10/G79**	**ECN5173BAA-W10/G79** ⑤	**ECN5178BAA-W10/G79**	
	500	**ECN5171BAA-W10/G84**	**ECN5172BAA-W10/G84**	**ECN5173BAA-W10/G84** ⑤	**ECN5178BAA-W10/G84**	
8YD	600	**ECN5181BAA-W10/G89**	**ECN5182BAA-W10/G89**	**ECN5183BAA-W10/G89** ⑤	**ECN5188BAA-W10/G89**	**AN16VN0AB**
	700	**ECN5181BAA-W10/G94**	**ECN5182BAA-W10/G94**	**ECN5183BAA-W10/G94** ⑤	**ECN5188BAA-W10/G94**	
	750	**ECN5181BAA-W10/G99**	**ECN5182BAA-W10/G99**	**ECN5183BAA-W10/G99** ⑤	**ECN5188BAA-W10/G99**	
	800	**ECN5181BAA-W10/G103**	**ECN5182BAA-W10/G103**	**ECN5183BAA-W10/G103** ⑤	**ECN5188BAA-W10/G103**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Also requires matching contactor with mechanical interlock.

④ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑤ Type 4 (painted steel) sizes 6–8YD.

Class ECN51—Non-Combination Closed Transition Wye Delta Starter, continued

NEMA Size	Max. hp Rating	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ② Catalog Number	Component Starter (Open) ③ Catalog Number
Motor Volts 460/Magnet Coil Voltage 120 ④						
2YD	20	**ECN5121CAA-W10/G6**	**ECN5122CAA-W10/G6**	**ECN5124CAA-W10/G6**	**ECN5128CAA-W10/G6**	**AN16GN0AB**
	25	**ECN5121CAA-W10/G11**	**ECN5122CAA-W10/G11**	**ECN5124CAA-W10/G11**	**ECN5128CAA-W10/G11**	
	30	**ECN5121CAA-W10/G16**	**ECN5122CAA-W10/G16**	**ECN5124CAA-W10/G16**	**ECN5128CAA-W10/G16**	
	40	**ECN5121CAA-W10/G21**	**ECN5122CAA-W10/G21**	**ECN5124CAA-W10/G21**	**ECN5128CAA-W10/G21**	
3YD	50	**ECN5131CAA-W10/G26**	**ECN5132CAA-W10/G26**	**ECN5134CAA-W10/G26**	**ECN5138CAA-W10/G26**	**AN16KN0AB**
	60	**ECN5131CAA-W10/G31**	**ECN5132CAA-W10/G31**	**ECN5134CAA-W10/G31**	**ECN5138CAA-W10/G31**	
	75	**ECN5131CAA-W10/G36**	**ECN5132CAA-W10/G36**	**ECN5134CAA-W10/G36**	**ECN5138CAA-W10/G36**	
4YD	100	**ECN5141CAA-W10/G41**	**ECN5142CAA-W10/G41**	**ECN5144CAA-W10/G41**	**ECN5148CAA-W10/G41**	**AN16NN0AB**
	125	**ECN5141CAA-W10/G46**	**ECN5142CAA-W10/G46**	**ECN5144CAA-W10/G46**	**ECN5148CAA-W10/G46**	
	150	**ECN5141CAA-W10/G51**	**ECN5142CAA-W10/G51**	**ECN5144CAA-W10/G51**	**ECN5148CAA-W10/G51**	
5YD	200	**ECN5151CAA-W10/G56**	**ECN5152CAA-W10/G56**	**ECN5154CAA-W10/G56**	**ECN5158CAA-W10/G56**	**AN16SN0AB**
	250	**ECN5151CAA-W10/G61**	**ECN5152CAA-W10/G61**	**ECN5154CAA-W10/G61**	**ECN5158CAA-W10/G61**	
	300	**ECN5151CAA-W10/G66**	**ECN5152CAA-W10/G66**	**ECN5154CAA-W10/G66**	**ECN5158CAA-W10/G66**	
6YD	350	**ECN5161CAA-W10/G71**	**ECN5162CAA-W10/G71**	**ECN5163CAA-W10/G71** ⑤	**ECN5168CAA-W10/G71**	**AN16TN0AB**
	400	**ECN5161CAA-W10/G76**	**ECN5162CAA-W10/G76**	**ECN5163CAA-W10/G76** ⑤	**ECN5168CAA-W10/G76**	
	450	**ECN5161CAA-W10/G81**	**ECN5162CAA-W10/G81**	**ECN5163CAA-W10/G81** ⑤	**ECN5168CAA-W10/G81**	
	500	**ECN5161CAA-W10/G86**	**ECN5162CAA-W10/G86**	**ECN5163CAA-W10/G86** ⑤	**ECN5168CAA-W10/G86**	
	600	**ECN5161CAA-W10/G91**	**ECN5162CAA-W10/G91**	**ECN5163CAA-W10/G91** ⑤	**ECN5168CAA-W10/G91**	
	700	**ECN5161CAA-W10/G96**	**ECN5162CAA-W10/G96**	**ECN5163CAA-W10/G96** ⑤	**ECN5168CAA-W10/G96**	
7YD	750	**ECN5171CAA-W10/G101**	**ECN5172CAA-W10/G101**	**ECN5173CAA-W10/G101** ⑤	**ECN5178CAA-W10/G101**	**AN16UN0AB**
	800	**ECN5171CAA-W10/G105**	**ECN5172CAA-W10/G105**	**ECN5173CAA-W10/G105** ⑤	**ECN5178CAA-W10/G105**	
	900	**ECN5171CAA-W10/G108**	**ECN5172CAA-W10/G108**	**ECN5173CAA-W10/G108** ⑤	**ECN5178CAA-W10/G108**	
	1000	**ECN5171CAA-W10/G111**	**ECN5172CAA-W10/G111**	**ECN5173CAA-W10/G111** ⑤	**ECN5178CAA-W10/G111**	
8YD	1250	**ECN5181CAA-W10/G114**	**ECN5182CAA-W10/G114**	**ECN5183CAA-W10/G114** ⑤	**ECN5188CAA-W10/G114**	**AN16VN0AB**
	1500	**ECN5181CAA-W10/G117**	**ECN5182CAA-W10/G117**	**ECN5183CAA-W10/G117** ⑤	**ECN5188CAA-W10/G117**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Also requires matching contactor with mechanical interlock.

④ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑤ Type 4 (painted steel) sizes 6–8YD.

Class ECN51—Non-Combination Closed Transition Wye Delta Starter, continued

NEMA Size	Max. hp Rating	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ② Catalog Number	Component Starter (Open) ③ Catalog Number
Motor Volts 575/Magnet Coil Voltage 120 ④						
2YD	20	**ECN5121DAA-W10/G7**	**ECN5122DAA-W10/G7**	**ECN5124DAA-W10/G7**	**ECN5128DAA-W10/G7**	**AN16GN0AB**
	25	**ECN5121DAA-W10/G12**	**ECN5122DAA-W10/G12**	**ECN5124DAA-W10/G12**	**ECN5128DAA-W10/G12**	
	30	**ECN5121DAA-W10/G17**	**ECN5122DAA-W10/G17**	**ECN5124DAA-W10/G17**	**ECN5128DAA-W10/G17**	
	40	**ECN5121DAA-W10/G22**	**ECN5122DAA-W10/G22**	**ECN5124DAA-W10/G22**	**ECN5128DAA-W10/G22**	
3YD	50	**ECN5131DAA-W10/G27**	**ECN5132DAA-W10/G27**	**ECN5134DAA-W10/G27**	**ECN5138DAA-W10/G27**	**AN16KN0AB**
	60	**ECN5131DAA-W10/G32**	**ECN5132DAA-W10/G32**	**ECN5134DAA-W10/G32**	**ECN5138DAA-W10/G32**	
	75	**ECN5131DAA-W10/G37**	**ECN5132DAA-W10/G37**	**ECN5134DAA-W10/G37**	**ECN5138DAA-W10/G37**	
4YD	100	**ECN5141DAA-W10/G42**	**ECN5142DAA-W10/G42**	**ECN5144DAA-W10/G42**	**ECN5148DAA-W10/G42**	**AN16NN0AB**
	125	**ECN5141DAA-W10/G47**	**ECN5142DAA-W10/G47**	**ECN5144DAA-W10/G47**	**ECN5148DAA-W10/G47**	
	150	**ECN5141DAA-W10/G52**	**ECN5142DAA-W10/G52**	**ECN5144DAA-W10/G52**	**ECN5148DAA-W10/G52**	
5YD	200	**ECN5151DAA-W10/G57**	**ECN5152DAA-W10/G57**	**ECN5154DAA-W10/G57**	**ECN5158DAA-W10/G57**	**AN16SN0AB**
	250	**ECN5151DAA-W10/G62**	**ECN5152DAA-W10/G62**	**ECN5154DAA-W10/G62**	**ECN5158DAA-W10/G62**	
	300	**ECN5151DAA-W10/G67**	**ECN5152DAA-W10/G67**	**ECN5154DAA-W10/G67**	**ECN5158DAA-W10/G67**	
6YD	350	**ECN5161DAA-W10/G72**	**ECN5162DAA-W10/G72**	**ECN5163DAA-W10/G72** ⑤	**ECN5168DAA-W10/G72**	**AN16TN0AB**
	400	**ECN5161DAA-W10/G77**	**ECN5162DAA-W10/G77**	**ECN5163DAA-W10/G77** ⑤	**ECN5168DAA-W10/G77**	
	450	**ECN5161DAA-W10/G82**	**ECN5162DAA-W10/G82**	**ECN5163DAA-W10/G82** ⑤	**ECN5168DAA-W10/G82**	
	500	**ECN5161DAA-W10/G87**	**ECN5162DAA-W10/G87**	**ECN5163DAA-W10/G87** ⑤	**ECN5168DAA-W10/G87**	
	600	**ECN5161DAA-W10/G92**	**ECN5162DAA-W10/G92**	**ECN5163DAA-W10/G92** ⑤	**ECN5168DAA-W10/G92**	
	700	**ECN5161DAA-W10/G97**	**ECN5162DAA-W10/G97**	**ECN5163DAA-W10/G97** ⑤	**ECN5168DAA-W10/G97**	
7YD	750	**ECN5171DAA-W10/G102**	**ECN5172DAA-W10/G102**	**ECN5173DAA-W10/G102** ⑤	**ECN5178DAA-W10/G102**	**AN16UN0AB**
	800	**ECN5171DAA-W10/G106**	**ECN5172DAA-W10/G106**	**ECN5173DAA-W10/G106** ⑤	**ECN5178DAA-W10/G106**	
	900	**ECN5171DAA-W10/G109**	**ECN5172DAA-W10/G109**	**ECN5173DAA-W10/G109** ⑤	**ECN5178DAA-W10/G109**	
	1000	**ECN5171DAA-W10/G112**	**ECN5172DAA-W10/G112**	**ECN5173DAA-W10/G112** ⑤	**ECN5178DAA-W10/G112**	
8YD	1250	**ECN5181DAA-W10/G115**	**ECN5182DAA-W10/G115**	**ECN5183DAA-W10/G115** ⑤	**ECN5188DAA-W10/G115**	**AN16VN0AB**
	1500	**ECN5181DAA-W10/G118**	**ECN5182DAA-W10/G118**	**ECN5183DAA-W10/G118** ⑤	**ECN5188DAA-W10/G118**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN462**4**EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Also requires matching contactor with mechanical interlock.

④ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑤ Type 4 (painted steel) sizes 6–8YD.

Class ECN52—Combination Closed Transition Wye Delta Starter—Fusible Disconnect

NEMA Size	Max. hp Rating	Fuse Clip Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 200/Magnet Coil Voltage 120 ⑤							
2YD	15	60A	**ECN5221EAD-W10/G1**	**ECN5222EAD-W10/G1**	**ECN5224EAD-W10/G1**	**ECN5228EAD-W10/G1**	**AN16GN0AB**
	20	100A	**ECN5221EAF-W10/G3**	**ECN5222EAF-W10/G3**	**ECN5224EAF-W10/G3**	**ECN5228EAF-W10/G3**	
3YD	25	100A	**ECN5231EAF-W10/G8**	**ECN5232EAF-W10/G8**	**ECN5234EAF-W10/G8**	**ECN5238EAF-W10/G8**	**AN16KN0AB**
	30	200A	**ECN5231EAH-W10/G13**	**ECN5232EAH-W10/G13**	**ECN5234EAH-W10/G13**	**ECN5238EAH-W10/G13**	
	40		**ECN5231EAH-W10/G18**	**ECN5232EAH-W10/G18**	**ECN5234EAH-W10/G18**	**ECN5238EAH-W10/G18**	
4YD	50	200A	**ECN5241EAH-W10/G23**	**ECN5242EAH-W10/G23**	**ECN5244EAH-W10/G23**	**ECN5248EAH-W10/G23**	**AN16NN0AB**
	60	400A	**ECN5241EAK-W10/G28**	**ECN5242EAK-W10/G28**	**ECN5244EAK-W10/G28**	**ECN5248EAK-W10/G28**	
5YD	75	400A	**ECN5251EAK-W10/G33**	**ECN5252EAK-W10/G33**	**ECN5254EAK-W10/G33**	**ECN5258EAK-W10/G33**	**AN16SN0AB**
	100		**ECN5251EAK-W10/G38**	**ECN5252EAK-W10/G38**	**ECN5254EAK-W10/G38**	**ECN5258EAK-W10/G38**	
	125	600A	**ECN5251EAM-W10/G43**	**ECN5252EAM-W10/G43**	**ECN5254EAM-W10/G43**	**ECN5258EAM-W10/G43**	
	150		**ECN5251EAM-W10/G48**	**ECN5252EAM-W10/G48**	**ECN5254EAM-W10/G48**	**ECN5258EAM-W10/G48**	
6YD	200	⑥	**ECN5261EAU-W10/G53**	**ECN5262EAU-W10/G53**	**ECN5263EAU-W10/G53** ⑦	**ECN5268EAU-W10/G33**	**AN16TN0AB**
	250		**ECN5261EAU-W10/G58**	**ECN5262EAU-W10/G58**	**ECN5263EAU-W10/G58** ⑦	**ECN5268EAU-W10/G58**	
	300		**ECN5261EAU-W10/G63**	**ECN5262EAU-W10/G63**	**ECN5263EAU-W10/G63** ⑦	**ECN5268EAU-W10/G63**	
7YD	350	⑥	**ECN5271EAU-W10/G68**	**ECN5272EAU-W10/G68**	**ECN5273EAU-W10/G68** ⑦	**ECN5278EAU-W10/G68**	**AN16UN0AB**
	400		**ECN5271EAU-W10/G73**	**ECN5272EAU-W10/G73**	**ECN5273EAU-W10/G73** ⑦	**ECN5278EAU-W10/G73**	
	450		**ECN5271EAU-W10/G78**	**ECN5272EAU-W10/G78**	**ECN5273EAU-W10/G78** ⑦	**ECN5278EAU-W10/G78**	
	500		**ECN5271EAU-W10/G83**	**ECN5272EAU-W10/G83**	**ECN5273EAU-W10/G83** ⑦	**ECN5278EAU-W10/G83**	
8YD	600	⑥	**ECN5281EAU-W10/G88**	**ECN5282EAU-W10/G88**	**ECN5283EAU-W10/G88** ⑦	**ECN5288EAU-W10/G88**	**AN16VN0AB**
	700		**ECN5281EAU-W10/G93**	**ECN5282EAU-W10/G93**	**ECN5283EAU-W10/G93** ⑦	**ECN5288EAU-W10/G93**	
	750		**ECN5281EAU-W10/G98**	**ECN5282EAU-W10/G98**	**ECN5283EAU-W10/G98** ⑦	**ECN5288EAU-W10/G98**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN52—Combination Closed Transition Wye Delta Starter—Fusible Disconnect, continued

NEMA Size	Max. hp Rating	Fuse Clip Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 230/Magnet Coil Voltage 120 ⑤							
2YD	15	60A	**ECN5221BAD-W10/G2**	**ECN5222BAD-W10/G2**	**ECN5224BAD-W10/G2**	**ECN5228BAD-W10/G2**	**AN16GN0AB**
	20	100A	**ECN5221BAF-W10/G4**	**ECN5222BAF-W10/G4**	**ECN5224BAF-W10/G4**	**ECN5228BAF-W10/G4**	
	25		**ECN5221BAF-W10/G9**	**ECN5222BAF-W10/G9**	**ECN5224BAF-W10/G9**	**ECN5228BAF-W10/G9**	
3YD	30	100A	**ECN5231BAF-W10/G14**	**ECN5232BAF-W10/G14**	**ECN5234BAF-W10/G14**	**ECN5238BAF-W10/G14**	**AN16KN0AB**
	40	200A	**ECN5231BAH-W10/G19**	**ECN5232BAH-W10/G19**	**ECN5234BAH-W10/G19**	**ECN5238BAH-W10/G19**	
	50		**ECN5231BAH-W10/G24**	**ECN5232BAH-W10/G24**	**ECN5234BAH-W10/G24**	**ECN5238BAH-W10/G24**	
4YD	60	200A	**ECN5241BAH-W10/G29**	**ECN5242BAH-W10/G29**	**ECN5244BAH-W10/G29**	**ECN5248BAH-W10/G29**	**AN16NN0AB**
	75	400A	**ECN5241BAK-W10/G34**	**ECN5242BAK-W10/G34**	**ECN5244BAK-W10/G34**	**ECN5248BAK-W10/G34**	
5YD	100	400A	**ECN5251BAK-W10/G39**	**ECN5252BAK-W10/G39**	**ECN5254BAK-W10/G39**	**ECN5258BAK-W10/G39**	**AN16SN0AB**
	125		**ECN5251BAK-W10/G44**	**ECN5252BAK-W10/G44**	**ECN5254BAK-W10/G44**	**ECN5258BAK-W10/G44**	
	150	600A	**ECN5251BAM-W10/G49**	**ECN5252BAM-W10/G49**	**ECN5254BAM-W10/G49**	**ECN5258BAM-W10/G49**	
6YD	200	600A ⑥	**ECN5261BAM-W10/G54**	**ECN5262BAM-W10/G54**	**ECN5263BAM-W10/G54** ⑦	**ECN5268BAM-W10/G54**	**AN16TN0AB**
	250		**ECN5261BAU-W10/G59**	**ECN5262BAU-W10/G59**	**ECN5263BAU-W10/G59** ⑦	**ECN5268BAU-W10/G59**	
	300		**ECN5261BAU-W10/G64**	**ECN5262BAU-W10/G64**	**ECN5263BAU-W10/G64** ⑦	**ECN5268BAU-W10/G64**	
	350		**ECN5261BAU-W10/G69**	**ECN5262BAU-W10/G69**	**ECN5263BAU-W10/G69** ⑦	**ECN5268BAU-W10/G69**	
7YD	400	⑥	**ECN5271BAU-W10/G74**	**ECN5272BAU-W10/G74**	**ECN5273BAU-W10/G74** ⑦	**ECN5278BAU-W10/G74**	**AN16UN0AB**
	450		**ECN5271BAU-W10/G79**	**ECN5272BAU-W10/G79**	**ECN5273BAU-W10/G79** ⑦	**ECN5278BAU-W10/G79**	
	500		**ECN5271BAU-W10/G84**	**ECN5272BAU-W10/G84**	**ECN5273BAU-W10/G84** ⑦	**ECN5278BAU-W10/G84**	
8YD	600	⑥	**ECN5281BAU-W10/G89**	**ECN5282BAU-W10/G89**	**ECN5283BAU-W10/G89** ⑦	**ECN5288BAU-W10/G89**	**AN16VN0AB**
	700		**ECN5281BAU-W10/G94**	**ECN5282BAU-W10/G94**	**ECN5283BAU-W10/G94** ⑦	**ECN5288BAU-W10/G94**	
	750		**ECN5281BAU-W10/G99**	**ECN5282BAU-W10/G99**	**ECN5283BAU-W10/G99** ⑦	**ECN5288BAU-W10/G99**	
	800		**ECN5281BAU-W10/G103**	**ECN5282BAU-W10/G103**	**ECN5283BAU-W10/G103** ⑦	**ECN5288BAU-W10/G103**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN52—Combination Closed Transition Wye Delta Starter—Fusible Disconnect, continued

NEMA Size	Max. hp Rating	Fuse Clip Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 460/Magnet Coil Voltage 120 ⑤							
2YD	20	60A	**ECN5221CAE-W10/G6**	**ECN5222CAE-W10/G6**	**ECN5224CAE-W10/G6**	**ECN5228CAE-W10/G6**	**AN16GN0AB**
	25		**ECN5221CAE-W10/G11**	**ECN5222CAE-W10/G11**	**ECN5224CAE-W10/G11**	**ECN5228CAE-W10/G11**	
	30		**ECN5221CAE-W10/G16**	**ECN5222CAE-W10/G16**	**ECN5224CAE-W10/G16**	**ECN5228CAE-W10/G16**	
	40		**ECN5221CAE-W10/G21**	**ECN5222CAE-W10/G21**	**ECN5224CAE-W10/G21**	**ECN5228CAE-W10/G21**	
3YD	50	100A	**ECN5231CAG-W10/G26**	**ECN5232CAG-W10/G26**	**ECN5234CAG-W10/G26**	**ECN5238CAG-W10/G26**	**AN16KN0AB**
	60		**ECN5231CAG-W10/G31**	**ECN5232CAG-W10/G31**	**ECN5234CAG-W10/G31**	**ECN5238CAG-W10/G31**	
	75	200A	**ECN5231CAJ-W10/G36**	**ECN5232CAJ-W10/G36**	**ECN5234CAJ-W10/G36**	**ECN5238CAJ-W10/G36**	
4YD	100	200A	**ECN5241CAJ-W10/G41**	**ECN5242CAJ-W10/G41**	**ECN5244CAJ-W10/G41**	**ECN5248CAJ-W10/G41**	**AN16NN0AB**
	125		**ECN5241CAJ-W10/G46**	**ECN5242CAJ-W10/G46**	**ECN5244CAJ-W10/G46**	**ECN5248CAJ-W10/G46**	
	150	400A	**ECN5241CAL-W10/G51**	**ECN5242CAL-W10/G51**	**ECN5244CAL-W10/G51**	**ECN5248CAL-W10/G51**	
5YD	200	400A	**ECN5251CAL-W10/G56**	**ECN5252CAL-W10/G56**	**ECN5254CAL-W10/G56**	**ECN5258CAL-W10/G56**	**AN16SN0AB**
	250		**ECN5251CAL-W10/G61**	**ECN5252CAL-W10/G61**	**ECN5254CAL-W10/G61**	**ECN5258CAL-W10/G61**	
	300	600A	**ECN5251CAN-W10/G66**	**ECN5252CAN-W10/G66**	**ECN5254CAN-W10/G66**	**ECN5258CAN-W10/G66**	
6YD	350	600A	**ECN5261CAN-W10/G71**	**ECN5262CAN-W10/G71**	**ECN5263CAN-W10/G71** ⑦	**ECN5268CAN-W10/G71**	**AN16TN0AB**
	400		**ECN5261CAN-W10/G76**	**ECN5262CAN-W10/G76**	**ECN5263CAN-W10/G76** ⑦	**ECN5268CAN-W10/G76**	
	450		**ECN5261CAN-W10/G81**	**ECN5262CAN-W10/G81**	**ECN5263CAN-W10/G81** ⑦	**ECN5268CAN-W10/G81**	
	500	800A	**ECN5261CAP-W10/G86**	**ECN5262CAP-W10/G86**	**ECN5263CAP-W10/G86** ⑦	**ECN5268CAP-W10/G86**	
	600	1200A	**ECN5261CAQ-W10/G91**	**ECN5262CAQ-W10/G91**	**ECN5263CAQ-W10/G91** ⑦	**ECN5268CAQ-W10/G91**	
	700		**ECN5261CAQ-W10/G96**	**ECN5262CAQ-W10/G96**	**ECN5263CAQ-W10/G96** ⑦	**ECN5268CAQ-W10/G96**	
7YD	750	1200A ⑥	**ECN5271CAQ-W10/G101**	**ECN5272CAQ-W10/G101**	**ECN5273CAQ-W10/G101** ⑦	**ECN5278CAQ-W10/G101**	**AN16UN0AB**
	800		**ECN5271CAU-W10/G105**	**ECN5272CAU-W10/G105**	**ECN5273CAU-W10/G105** ⑦	**ECN5278CAU-W10/G105**	
	900		**ECN5271CAU-W10/G108**	**ECN5272CAU-W10/G108**	**ECN5273CAU-W10/G108** ⑦	**ECN5278CAU-W10/G108**	
	1000		**ECN5271CAU-W10/G111**	**ECN5272CAU-W10/G111**	**ECN5273CAU-W10/G111** ⑦	**ECN5278CAU-W10/G111**	
8YD	1250	⑥	**ECN5281CAU-W10/G114**	**ECN5282CAU-W10/G114**	**ECN5283CAU-W10/G114** ⑦	**ECN5288CAU-W10/G114**	**AN16VN0AB**
	1500		**ECN5281CAU-W10/G117**	**ECN5282CAU-W10/G117**	**ECN5283CAU-W10/G117** ⑦	**ECN5288CAU-W10/G117**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN52—Combination Closed Transition Wye Delta Starter—Fusible Disconnect, continued

NEMA Size	Max. hp Rating	Fuse Clip Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 575/Magnet Coil Voltage 120 ⑤							
2YD	20	30A	**ECN5221DAC-W10/G7**	**ECN5222DAC-W10/G7**	**ECN5224DAC-W10/G7**	**ECN5228DAC-W10/G7**	**AN16GN0AB**
	25	60A	**ECN5221DAE-W10/G12**	**ECN5222DAE-W10/G12**	**ECN5224DAE-W10/G12**	**ECN5228DAE-W10/G12**	
	30		**ECN5221DAE-W10/G17**	**ECN5222DAE-W10/G17**	**ECN5224DAE-W10/G17**	**ECN5228DAE-W10/G17**	
	40		**ECN5221DAE-W10/G22**	**ECN5222DAE-W10/G22**	**ECN5224DAE-W10/G22**	**ECN5228DAE-W10/G22**	
3YD	50	100A	**ECN5231DAG-W10/G27**	**ECN5232DAG-W10/G27**	**ECN5234DAG-W10/G27**	**ECN5238DAG-W10/G27**	**AN16KN0AB**
	60		**ECN5231DAG-W10/G32**	**ECN5232DAG-W10/G32**	**ECN5234DAG-W10/G32**	**ECN5238DAG-W10/G32**	
	75		**ECN5231DAG-W10/G37**	**ECN5232DAG-W10/G37**	**ECN5234DAG-W10/G37**	**ECN5238DAG-W10/G37**	
4YD	100	200A	**ECN5241DAJ-W10/G42**	**ECN5242DAJ-W10/G42**	**ECN5244DAJ-W10/G42**	**ECN5248DAJ-W10/G42**	**AN16NN0AB**
	125		**ECN5241DAJ-W10/G47**	**ECN5242DAJ-W10/G47**	**ECN5244DAJ-W10/G47**	**ECN5248DAJ-W10/G47**	
	150		**ECN5241DAJ-W10/G52**	**ECN5242DAJ-W10/G52**	**ECN5244DAJ-W10/G52**	**ECN5248DAJ-W10/G52**	
5YD	200	400A	**ECN5251DAL-W10/G57**	**ECN5252DAL-W10/G57**	**ECN5254DAL-W10/G57**	**ECN5258DAL-W10/G57**	**AN16SN0AB**
	250		**ECN5251DAL-W10/G62**	**ECN5252DAL-W10/G62**	**ECN5254DAL-W10/G62**	**ECN5258DAL-W10/G62**	
	300		**ECN5251DAL-W10/G67**	**ECN5252DAL-W10/G67**	**ECN5254DAL-W10/G67**	**ECN5258DAL-W10/G67**	
6YD	350	400A	**ECN5261DAL-W10/G72**	**ECN5262DAL-W10/G72**	**ECN5263DAL-W10/G72** ⑦	**ECN5268DAL-W10/G72**	**AN16TN0AB**
	400	600A	**ECN5261DAN-W10/G77**	**ECN5262DAN-W10/G77**	**ECN5263DAN-W10/G77** ⑦	**ECN5268DAN-W10/G77**	
	450		**ECN5261DAN-W10/G82**	**ECN5262DAN-W10/G82**	**ECN5263DAN-W10/G82** ⑦	**ECN5268DAN-W10/G82**	
	500		**ECN5261DAN-W10/G87**	**ECN5262DAN-W10/G87**	**ECN5263DAN-W10/G87** ⑦	**ECN5268DAN-W10/G87**	
	600	800A	**ECN5261DAP-W10/G92**	**ECN5262DAP-W10/G92**	**ECN5263DAP-W10/G92** ⑦	**ECN5268DAP-W10/G92**	
	700		**ECN5261DAP-W10/G97**	**ECN5262DAP-W10/G97**	**ECN5263DAP-W10/G97** ⑦	**ECN5268DAP-W10/G97**	
7YD	750	⑥	**ECN5271DAU-W10/G102**	**ECN5272DAU-W10/G102**	**ECN5273DAU-W10/G102** ⑦	**ECN5278DAU-W10/G102**	**AN16UN0AB**
	800		**ECN5271DAU-W10/G106**	**ECN5272DAU-W10/G106**	**ECN5273DAU-W10/G106** ⑦	**ECN5278DAU-W10/G106**	
	900		**ECN5271DAU-W10/G109**	**ECN5272DAU-W10/G109**	**ECN5273DAU-W10/G109** ⑦	**ECN5278DAU-W10/G109**	
	1000		**ECN5271DAU-W10/G112**	**ECN5272DAU-W10/G112**	**ECN5273DAU-W10/G112** ⑦	**ECN5278DAU-W10/G112**	
8YD	1250	⑥	**ECN5281DAU-W10/G115**	**ECN5282DAU-W10/G115**	**ECN5283DAU-W10/G115** ⑦	**ECN5288DAU-W10/G115**	**AN16VN0AB**
	1500		**ECN5281DAU-W10/G118**	**ECN5282DAU-W10/G118**	**ECN5283DAU-W10/G118** ⑦	**ECN5288DAU-W10/G118**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN462**4**EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN52—Combination Closed Transition Wye Delta Starter—Non-Fusible Disconnect

NEMA Size	Max. hp Rating	Disconnect Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 200/Magnet Coil Voltage 120 ⑤							
2YD	15	60A	**ECN5221EAA-W10/G1**	**ECN5222EAA-W10/G1**	**ECN5224EAA-W10/G1**	**ECN5228EAA-W10/G1**	**AN16GN0AB**
	20	100A	**ECN5221EAA-W10/G3**	**ECN5222EAA-W10/G3**	**ECN5224EAA-W10/G3**	**ECN5228EAA-W10/G3**	
3YD	25	100A	**ECN5231EAA-W10/G8**	**ECN5232EAA-W10/G8**	**ECN5234EAA-W10/G8**	**ECN5238EAA-W10/G8**	**AN16KN0AB**
	30	200A	**ECN5231EAA-W10/G13**	**ECN5232EAA-W10/G13**	**ECN5234EAA-W10/G13**	**ECN5238EAA-W10/G13**	
	40		**ECN5231EAA-W10/G18**	**ECN5232EAA-W10/G18**	**ECN5234EAA-W10/G18**	**ECN5238EAA-W10/G18**	
4YD	50	200A	**ECN5241EAA-W10/G23**	**ECN5242EAA-W10/G23**	**ECN5244EAA-W10/G23**	**ECN5248EAA-W10/G23**	**AN16NN0AB**
	60	400A	**ECN5241EAA-W10/G28**	**ECN5242EAA-W10/G28**	**ECN5244EAA-W10/G28**	**ECN5248EAA-W10/G28**	
5YD	75	400A	**ECN5251EAA-W10/G33**	**ECN5252EAA-W10/G33**	**ECN5254EAA-W10/G33**	**ECN5258EAA-W10/G33**	**AN16SN0AB**
	100		**ECN5251EAA-W10/G38**	**ECN5252EAA-W10/G38**	**ECN5254EAA-W10/G38**	**ECN5258EAA-W10/G38**	
	125	600A	**ECN5251EAA-W10/G43**	**ECN5252EAA-W10/G43**	**ECN5254EAA-W10/G43**	**ECN5258EAA-W10/G43**	
	150		**ECN5251EAA-W10/G48**	**ECN5252EAA-W10/G48**	**ECN5254EAA-W10/G48**	**ECN5258EAA-W10/G48**	
6YD	200	⑥	**ECN5261EAA-W10/G53**	**ECN5262EAA-W10/G53**	**ECN5263EAA-W10/G53** ⑦	**ECN5268EAA-W10/G33**	**AN16TN0AB**
	250		**ECN5261EAA-W10/G58**	**ECN5262EAA-W10/G58**	**ECN5263EAA-W10/G58** ⑦	**ECN5268EAA-W10/G58**	
	300		**ECN5261EAA-W10/G63**	**ECN5262EAA-W10/G63**	**ECN5263EAA-W10/G63** ⑦	**ECN5268EAA-W10/G63**	
7YD	350	⑥	**ECN5271EAA-W10/G68**	**ECN5272EAA-W10/G68**	**ECN5273EAA-W10/G68** ⑦	**ECN5278EAA-W10/G68**	**AN16UN0AB**
	400		**ECN5271EAA-W10/G73**	**ECN5272EAA-W10/G73**	**ECN5273EAA-W10/G73** ⑦	**ECN5278EAA-W10/G73**	
	450		**ECN5271EAA-W10/G78**	**ECN5272EAA-W10/G78**	**ECN5273EAA-W10/G78** ⑦	**ECN5278EAA-W10/G78**	
	500		**ECN5271EAA-W10/G83**	**ECN5272EAA-W10/G83**	**ECN5273EAA-W10/G83** ⑦	**ECN5278EAA-W10/G83**	
8YD	600	⑥	**ECN5281EAA-W10/G88**	**ECN5282EAA-W10/G88**	**ECN5283EAA-W10/G88** ⑦	**ECN5288EAA-W10/G88**	**AN16VN0AB**
	700		**ECN5281EAA-W10/G93**	**ECN5282EAA-W10/G93**	**ECN5283EAA-W10/G93** ⑦	**ECN5288EAA-W10/G93**	
	750		**ECN5281EAA-W10/G98**	**ECN5282EAA-W10/G98**	**ECN5283EAA-W10/G98** ⑦	**ECN5288EAA-W10/G98**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN52—Combination Closed Transition Wye Delta Starter—Non-Fusible Disconnect, continued

NEMA Size	Max. hp Rating	Disconnect Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 230/Magnet Coil Voltage 120 ⑤							
2YD	15	60A	**ECN5221BAA-W10/G2**	**ECN5222BAA-W10/G2**	**ECN5224BAA-W10/G2**	**ECN5228BAA-W10/G2**	**AN16GN0AB**
	20	100A	**ECN5221BAA-W10/G4**	**ECN5222BAA-W10/G4**	**ECN5224BAA-W10/G4**	**ECN5228BAA-W10/G4**	
	25		**ECN5221BAA-W10/G9**	**ECN5222BAA-W10/G9**	**ECN5224BAA-W10/G9**	**ECN5228BAA-W10/G9**	
3YD	30	100A	**ECN5231BAA-W10/G14**	**ECN5232BAA-W10/G14**	**ECN5234BAA-W10/G14**	**ECN5238BAA-W10/G14**	**AN16KN0AB**
	40	200A	**ECN5231BAA-W10/G19**	**ECN5232BAA-W10/G19**	**ECN5234BAA-W10/G19**	**ECN5238BAA-W10/G19**	
	50		**ECN5231BAA-W10/G24**	**ECN5232BAA-W10/G24**	**ECN5234BAA-W10/G24**	**ECN5238BAA-W10/G24**	
4YD	60	200A	**ECN5241BAA-W10/G29**	**ECN5242BAA-W10/G29**	**ECN5244BAA-W10/G29**	**ECN5248BAA-W10/G29**	**AN16NN0AB**
	75	400A	**ECN5241BAA-W10/G34**	**ECN5242BAA-W10/G34**	**ECN5244BAA-W10/G34**	**ECN5248BAA-W10/G34**	
5YD	100	400A	**ECN5251BAA-W10/G39**	**ECN5252BAA-W10/G39**	**ECN5254BAA-W10/G39**	**ECN5258BAA-W10/G39**	**AN16SN0AB**
	125		**ECN5251BAA-W10/G44**	**ECN5252BAA-W10/G44**	**ECN5254BAA-W10/G44**	**ECN5258BAA-W10/G44**	
	150	600A	**ECN5251BAA-W10/G49**	**ECN5252BAA-W10/G49**	**ECN5254BAA-W10/G49**	**ECN5258BAA-W10/G49**	
6YD	200	600A	**ECN5261BAA-W10/G54**	**ECN5262BAA-W10/G54**	**ECN5263BAA-W10/G54** ⑦	**ECN5268BAA-W10/G54**	**AN16TN0AB**
	250	⑥	**ECN5261BAA-W10/G59**	**ECN5262BAA-W10/G59**	**ECN5263BAA-W10/G59** ⑦	**ECN5268BAA-W10/G59**	
	300		**ECN5261BAA-W10/G64**	**ECN5262BAA-W10/G64**	**ECN5263BAA-W10/G64** ⑦	**ECN5268BAA-W10/G64**	
	350		**ECN5261BAA-W10/G69**	**ECN5262BAA-W10/G69**	**ECN5263BAA-W10/G69** ⑦	**ECN5268BAA-W10/G69**	
7YD	400	⑥	**ECN5271BAA-W10/G74**	**ECN5272BAA-W10/G74**	**ECN5273BAA-W10/G74** ⑦	**ECN5278BAA-W10/G74**	**AN16UN0AB**
	450		**ECN5271BAA-W10/G79**	**ECN5272BAA-W10/G79**	**ECN5273BAA-W10/G79** ⑦	**ECN5278BAA-W10/G79**	
	500		**ECN5271BAA-W10/G84**	**ECN5272BAA-W10/G84**	**ECN5273BAA-W10/G84** ⑦	**ECN5278BAA-W10/G84**	
8YD	600	⑥	**ECN5281BAA-W10/G89**	**ECN5282BAA-W10/G89**	**ECN5283BAA-W10/G89** ⑦	**ECN5288BAA-W10/G89**	**AN16VN0AB**
	700		**ECN5281BAA-W10/G94**	**ECN5282BAA-W10/G94**	**ECN5283BAA-W10/G94** ⑦	**ECN5288BAA-W10/G94**	
	750		**ECN5281BAA-W10/G99**	**ECN5282BAA-W10/G99**	**ECN5283BAA-W10/G99** ⑦	**ECN5288BAA-W10/G99**	
	800		**ECN5281BAA-W10/G103**	**ECN5282BAA-W10/G103**	**ECN5283BAA-W10/G103** ⑦	**ECN5288BAA-W10/G103**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN52—Combination Closed Transition Wye Delta Starter—Non-Fusible Disconnect, continued

NEMA Size	Max. hp Rating	Disconnect Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 460/Magnet Coil Voltage 120 ⑤							
2YD	20	60A	**ECN5221CAA-W10/G6**	**ECN5222CAA-W10/G6**	**ECN5224CAA-W10/G6**	**ECN5228CAA-W10/G6**	**AN16GN0AB**
	25		**ECN5221CAA-W10/G11**	**ECN5222CAA-W10/G11**	**ECN5224CAA-W10/G11**	**ECN5228CAA-W10/G11**	
	30		**ECN5221CAA-W10/G16**	**ECN5222CAA-W10/G16**	**ECN5224CAA-W10/G16**	**ECN5228CAA-W10/G16**	
	40		**ECN5221CAA-W10/G21**	**ECN5222CAA-W10/G21**	**ECN5224CAA-W10/G21**	**ECN5228CAA-W10/G21**	
3YD	50	100A	**ECN5231CAA-W10/G26**	**ECN5232CAA-W10/G26**	**ECN5234CAA-W10/G26**	**ECN5238CAA-W10/G26**	**AN16KN0AB**
	60		**ECN5231CAA-W10/G31**	**ECN5232CAA-W10/G31**	**ECN5234CAA-W10/G31**	**ECN5238CAA-W10/G31**	
	75	200A	**ECN5231CAA-W10/G36**	**ECN5232CAA-W10/G36**	**ECN5234CAA-W10/G36**	**ECN5238CAA-W10/G36**	
4YD	100	200A	**ECN5241CAA-W10/G41**	**ECN5242CAA-W10/G41**	**ECN5244CAA-W10/G41**	**ECN5248CAA-W10/G41**	**AN16NN0AB**
	125		**ECN5241CAA-W10/G46**	**ECN5242CAA-W10/G46**	**ECN5244CAA-W10/G46**	**ECN5248CAA-W10/G46**	
	150	400A	**ECN5241CAA-W10/G51**	**ECN5242CAA-W10/G51**	**ECN5244CAA-W10/G51**	**ECN5248CAA-W10/G51**	
5YD	200	400A	**ECN5251CAA-W10/G56**	**ECN5252CAA-W10/G56**	**ECN5254CAA-W10/G56**	**ECN5258CAA-W10/G56**	**AN16SN0AB**
	250		**ECN5251CAA-W10/G61**	**ECN5252CAA-W10/G61**	**ECN5254CAA-W10/G61**	**ECN5258CAA-W10/G61**	
	300	600A	**ECN5251CAA-W10/G66**	**ECN5252CAA-W10/G66**	**ECN5254CAA-W10/G66**	**ECN5258CAA-W10/G66**	
6YD	350	600A	**ECN5261CAA-W10/G71**	**ECN5262CAA-W10/G71**	**ECN5263CAA-W10/G71** ⑦	**ECN5268CAA-W10/G71**	**AN16TN0AB**
	400		**ECN5261CAA-W10/G76**	**ECN5262CAA-W10/G76**	**ECN5263CAA-W10/G76** ⑦	**ECN5268CAA-W10/G76**	
	450		**ECN5261CAA-W10/G81**	**ECN5262CAA-W10/G81**	**ECN5263CAA-W10/G81** ⑦	**ECN5268CAA-W10/G81**	
	500	800A	**ECN5261CAA-W10/G86**	**ECN5262CAA-W10/G86**	**ECN5263CAA-W10/G86** ⑦	**ECN5268CAA-W10/G86**	
	600	1200A	**ECN5261CAA-W10/G91**	**ECN5262CAA-W10/G91**	**ECN5263CAA-W10/G91** ⑦	**ECN5268CAA-W10/G91**	
	700		**ECN5261CAA-W10/G96**	**ECN5262CAA-W10/G96**	**ECN5263CAA-W10/G96** ⑦	**ECN5268CAA-W10/G96**	
7YD	750	1200A	**ECN5271CAA-W10/G101**	**ECN5272CAA-W10/G101**	**ECN5273CAA-W10/G101** ⑦	**ECN5278CAA-W10/G101**	**AN16UN0AB**
	800	⑥	**ECN5271CAA-W10/G105**	**ECN5272CAA-W10/G105**	**ECN5273CAA-W10/G105** ⑦	**ECN5278CAA-W10/G105**	
	900		**ECN5271CAA-W10/G108**	**ECN5272CAA-W10/G108**	**ECN5273CAA-W10/G108** ⑦	**ECN5278CAA-W10/G108**	
	1000		**ECN5271CAA-W10/G111**	**ECN5272CAA-W10/G111**	**ECN5273CAA-W10/G111** ⑦	**ECN5278CAA-W10/G111**	
8YD	1250	⑥	**ECN5281CAA-W10/G114**	**ECN5282CAA-W10/G114**	**ECN5283CAA-W10/G114** ⑦	**ECN5288CAA-W10/G114**	**AN16VN0AB**
	1500		**ECN5281CAA-W10/G117**	**ECN5282CAA-W10/G117**	**ECN5283CAA-W10/G117** ⑦	**ECN5288CAA-W10/G117**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN52—Combination Closed Transition Wye Delta Starter—Non-Fusible Disconnect, continued

NEMA Size	Max. hp Rating	Disconnect Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 575/Magnet Coil Voltage 120 ⑤							
2YD	20	30A	**ECN5221DAA-W10/G7**	**ECN5222DAA-W10/G7**	**ECN5224DAA-W10/G7**	**ECN5228DAA-W10/G7**	**AN16GN0AB**
	25	60A	**ECN5221DAA-W10/G12**	**ECN5222DAA-W10/G12**	**ECN5224DAA-W10/G12**	**ECN5228DAA-W10/G12**	
	30		**ECN5221DAA-W10/G17**	**ECN5222DAA-W10/G17**	**ECN5224DAA-W10/G17**	**ECN5228DAA-W10/G17**	
	40		**ECN5221DAA-W10/G22**	**ECN5222DAA-W10/G22**	**ECN5224DAA-W10/G22**	**ECN5228DAA-W10/G22**	
3YD	50	100A	**ECN5231DAA-W10/G27**	**ECN5232DAA-W10/G27**	**ECN5234DAA-W10/G27**	**ECN5238DAA-W10/G27**	**AN16KN0AB**
	60		**ECN5231DAA-W10/G32**	**ECN5232DAA-W10/G32**	**ECN5234DAA-W10/G32**	**ECN5238DAA-W10/G32**	
	75		**ECN5231DAA-W10/G37**	**ECN5232DAA-W10/G37**	**ECN5234DAA-W10/G37**	**ECN5238DAA-W10/G37**	
4YD	100	200A	**ECN5241DAA-W10/G42**	**ECN5242DAA-W10/G42**	**ECN5244DAA-W10/G42**	**ECN5248DAA-W10/G42**	**AN16NN0AB**
	125		**ECN5241DAA-W10/G47**	**ECN5242DAA-W10/G47**	**ECN5244DAA-W10/G47**	**ECN5248DAA-W10/G47**	
	150		**ECN5241DAA-W10/G52**	**ECN5242DAA-W10/G52**	**ECN5244DAA-W10/G52**	**ECN5248DAA-W10/G52**	
5YD	200	400A	**ECN5251DAA-W10/G57**	**ECN5252DAA-W10/G57**	**ECN5254DAA-W10/G57**	**ECN5258DAA-W10/G57**	**AN16SN0AB**
	250		**ECN5251DAA-W10/G62**	**ECN5252DAA-W10/G62**	**ECN5254DAA-W10/G62**	**ECN5258DAA-W10/G62**	
	300		**ECN5251DAA-W10/G67**	**ECN5252DAA-W10/G67**	**ECN5254DAA-W10/G67**	**ECN5258DAA-W10/G67**	
6YD	350	400A	**ECN5261DAA-W10/G72**	**ECN5262DAA-W10/G72**	**ECN5263DAA-W10/G72** ⑦	**ECN5268DAA-W10/G72**	**AN16TN0AB**
	400	600A	**ECN5261DAA-W10/G77**	**ECN5262DAA-W10/G77**	**ECN5263DAA-W10/G77** ⑦	**ECN5268DAA-W10/G77**	
	450		**ECN5261DAA-W10/G82**	**ECN5262DAA-W10/G82**	**ECN5263DAA-W10/G82** ⑦	**ECN5268DAA-W10/G82**	
	500		**ECN5261DAA-W10/G87**	**ECN5262DAA-W10/G87**	**ECN5263DAA-W10/G87** ⑦	**ECN5268DAA-W10/G87**	
	600	800A	**ECN5261DAA-W10/G92**	**ECN5262DAA-W10/G92**	**ECN5263DAA-W10/G92** ⑦	**ECN5268DAA-W10/G92**	
	700		**ECN5261DAA-W10/G97**	**ECN5262DAA-W10/G97**	**ECN5263DAA-W10/G97** ⑦	**ECN5268DAA-W10/G97**	
7YD	750	⑥	**ECN5271DAA-W10/G102**	**ECN5272DAA-W10/G102**	**ECN5273DAA-W10/G102** ⑦	**ECN5278DAA-W10/G102**	**AN16UN0AB**
	800		**ECN5271DAA-W10/G106**	**ECN5272DAA-W10/G106**	**ECN5273DAA-W10/G106** ⑦	**ECN5278DAA-W10/G106**	
	900		**ECN5271DAA-W10/G109**	**ECN5272DAA-W10/G109**	**ECN5273DAA-W10/G109** ⑦	**ECN5278DAA-W10/G109**	
	1000		**ECN5271DAA-W10/G112**	**ECN5272DAA-W10/G112**	**ECN5273DAA-W10/G112** ⑦	**ECN5278DAA-W10/G112**	
8YD	1250	⑥	**ECN5281DAA-W10/G115**	**ECN5282DAA-W10/G115**	**ECN5283DAA-W10/G115** ⑦	**ECN5288DAA-W10/G115**	**AN16VN0AB**
	1500		**ECN5281DAA-W10/G118**	**ECN5282DAA-W10/G118**	**ECN5283DAA-W10/G118** ⑦	**ECN5288DAA-W10/G118**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN462**4**EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN53—Combination Closed Transition Wye Delta Starter—Circuit Breaker

NEMA Size	Max. hp Rating	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 200/Magnet Coil Voltage 120 ⑤							
2YD	15	70A	**ECN5321EAH-W10/G1**	**ECN5322EAH-W10/G1**	**ECN5324EAH-W10/G1**	**ECN5328EAH-W10/G1**	**AN16GN0AB**
	20	90A	**ECN5321EAJ-W10/G3**	**ECN5322EAJ-W10/G3**	**ECN5324EAJ-W10/G3**	**ECN5328EAJ-W10/G3**	
3YD	25	100A	**ECN5331EAK-W10/G8**	**ECN5332EAK-W10/G8**	**ECN5334EAK-W10/G8**	**ECN5338EAK-W10/G8**	**AN16KN0AB**
	30	125A	**ECN5331EAL-W10/G13**	**ECN5332EAL-W10/G13**	**ECN5334EAL-W10/G13**	**ECN5338EAL-W10/G13**	
	40	175A	**ECN5331EAN-W10/G18**	**ECN5332EAN-W10/G18**	**ECN5334EAN-W10/G18**	**ECN5338EAN-W10/G18**	
4YD	50	200A	**ECN5341EAP-W10/G23**	**ECN5342EAP-W10/G23**	**ECN5344EAP-W10/G23**	**ECN5348EAP-W10/G23**	**AN16NN0AB**
	60	225A	**ECN5341EAQ-W10/G28**	**ECN5342EAQ-W10/G28**	**ECN5344EAQ-W10/G28**	**ECN5348EAQ-W10/G28**	
5YD	75	300A	**ECN5351EAS-W10/G33**	**ECN5352EAS-W10/G33**	**ECN5354EAS-W10/G33**	**ECN5358EAS-W10/G33**	**AN16SN0AB**
	100	350A	**ECN5351EAV-W10/G38**	**ECN5352EAV-W10/G38**	**ECN5354EAV-W10/G38**	**ECN5358EAV-W10/G38**	
	125	450A	**ECN5351EAX-W10/G43**	**ECN5352EAX-W10/G43**	**ECN5354EAX-W10/G43**	**ECN5358EAX-W10/G43**	
	150	500A	**ECN5351EAY-W10/G48**	**ECN5352EAY-W10/G48**	**ECN5354EAY-W10/G48**	**ECN5358EAY-W10/G48**	
6YD	200	800A	**ECN5361EA2-W10/G53**	**ECN5362EA2-W10/G53**	**ECN5363EA2-W10/G53** ⑦	**ECN5368EA2-W10/G33**	**AN16TN0AB**
	250	1000A	**ECN5361EA3-W10/G58**	**ECN5362EA3-W10/G58**	**ECN5363EA3-W10/G58** ⑦	**ECN5368EA3-W10/G58**	
	300	1200A	**ECN5361EA4-W10/G63**	**ECN5362EA4-W10/G63**	**ECN5363EA4-W10/G63** ⑦	**ECN5368EA4-W10/G63**	
7YD	350	⑥	**ECN5371EAU-W10/G68**	**ECN5372EAU-W10/G68**	**ECN5373EAU-W10/G68** ⑦	**ECN5378EAU-W10/G68**	**AN16UN0AB**
	400		**ECN5371EAU-W10/G73**	**ECN5372EAU-W10/G73**	**ECN5373EAU-W10/G73** ⑦	**ECN5378EAU-W10/G73**	
	450		**ECN5371EAU-W10/G78**	**ECN5372EAU-W10/G78**	**ECN5373EAU-W10/G78** ⑦	**ECN5378EAU-W10/G78**	
	500		**ECN5371EAU-W10/G83**	**ECN5372EAU-W10/G83**	**ECN5373EAU-W10/G83** ⑦	**ECN5378EAU-W10/G83**	
8YD	600	⑥	**ECN5381EAU-W10/G88**	**ECN5382EAU-W10/G88**	**ECN5383EAU-W10/G88** ⑦	**ECN5388EAU-W10/G88**	**AN16VN0AB**
	700		**ECN5381EAU-W10/G93**	**ECN5382EAU-W10/G93**	**ECN5383EAU-W10/G93** ⑦	**ECN5388EAU-W10/G93**	
	750		**ECN5381EAU-W10/G98**	**ECN5382EAU-W10/G98**	**ECN5383EAU-W10/G98** ⑦	**ECN5388EAU-W10/G98**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN53—Combination Closed Transition Wye Delta Starter—Circuit Breaker, continued

NEMA Size	Max. hp Rating	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 230/Magnet Coil Voltage 120 ⑤							
2YD	15	60A	**ECN5321BAG-W10/G2**	**ECN5322BAG-W10/G2**	**ECN5324BAG-W10/G2**	**ECN5328BAG-W10/G2**	**AN16GN0AB**
	20	70A	**ECN5321BAH-W10/G4**	**ECN5322BAH-W10/G4**	**ECN5324BAH-W10/G4**	**ECN5328BAH-W10/G4**	
	25	90A	**ECN5321BAJ-W10/G9**	**ECN5322BAJ-W10/G9**	**ECN5324BAJ-W10/G9**	**ECN5328BAJ-W10/G9**	
3YD	30	125A	**ECN5331BAL-W10/G14**	**ECN5332BAL-W10/G14**	**ECN5334BAL-W10/G14**	**ECN5338BAL-W10/G14**	**AN16KN0AB**
	40	150A	**ECN5331BAM-W10/G19**	**ECN5332BAM-W10/G19**	**ECN5334BAM-W10/G19**	**ECN5338BAM-W10/G19**	
	50	175A	**ECN5331BAN-W10/G24**	**ECN5332BAN-W10/G24**	**ECN5334BAN-W10/G24**	**ECN5338BAN-W10/G24**	
4YD	60	200A	**ECN5341BAP-W10/G29**	**ECN5342BAP-W10/G29**	**ECN5344BAP-W10/G29**	**ECN5348BAP-W10/G29**	**AN16NN0AB**
	75	250A	**ECN5341BAR-W10/G34**	**ECN5342BAR-W10/G34**	**ECN5344BAR-W10/G34**	**ECN5348BAR-W10/G34**	
5YD	100	350A	**ECN5351BAV-W10/G39**	**ECN5352BAV-W10/G39**	**ECN5354BAV-W10/G39**	**ECN5358BAV-W10/G39**	**AN16SN0AB**
	125	400A	**ECN5351BAW-W10/G44**	**ECN5352BAW-W10/G44**	**ECN5354BAW-W10/G44**	**ECN5358BAW-W10/G44**	
	150	500A	**ECN5351BAY-W10/G49**	**ECN5352BAY-W10/G49**	**ECN5354BAY-W10/G49**	**ECN5358BAY-W10/G49**	
6YD	200	600A	**ECN5361BAZ-W10/G54**	**ECN5362BAZ-W10/G54**	**ECN5363BAZ-W10/G54** ⑦	**ECN5368BAZ-W10/G54**	**AN16TN0AB**
	250	800A	**ECN5361BA2-W10/G59**	**ECN5362BA2-W10/G59**	**ECN5363BA2-W10/G59** ⑦	**ECN5368BA2-W10/G59**	
	300	1000A	**ECN5361BA3-W10/G64**	**ECN5362BA3-W10/G64**	**ECN5363BA3-W10/G64** ⑦	**ECN5368BA3-W10/G64**	
	350	1200A	**ECN5361BA4-W10/G69**	**ECN5362BA4-W10/G69**	**ECN5363BA4-W10/G69** ⑦	**ECN5368BA4-W10/G69**	
7YD	400	⑥	**ECN5371BAU-W10/G74**	**ECN5372BAU-W10/G74**	**ECN5373BAU-W10/G74** ⑦	**ECN5378BAU-W10/G74**	**AN16UN0AB**
	450		**ECN5371BAU-W10/G79**	**ECN5372BAU-W10/G79**	**ECN5373BAU-W10/G79** ⑦	**ECN5378BAU-W10/G79**	
	500		**ECN5371BAU-W10/G84**	**ECN5372BAU-W10/G84**	**ECN5373BAU-W10/G84** ⑦	**ECN5378BAU-W10/G84**	
8YD	600	⑥	**ECN5381BAU-W10/G89**	**ECN5382BAU-W10/G89**	**ECN5383BAU-W10/G89** ⑦	**ECN5388BAU-W10/G89**	**AN16VN0AB**
	700		**ECN5381BAU-W10/G94**	**ECN5382BAU-W10/G94**	**ECN5383BAU-W10/G94** ⑦	**ECN5388BAU-W10/G94**	
	750		**ECN5381BAU-W10/G99**	**ECN5382BAU-W10/G99**	**ECN5383BAU-W10/G99** ⑦	**ECN5388BAU-W10/G99**	
	800		**ECN5381BAU-W10/G103**	**ECN5382BAU-W10/G103**	**ECN5383BAU-W10/G103** ⑦	**ECN5388BAU-W10/G103**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN53—Combination Closed Transition Wye Delta Starter—Circuit Breaker, continued

NEMA Size	Max. hp Rating	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 460/Magnet Coil Voltage 120 ⑤							
2YD	20	40A	**ECN5321CAE-W10/G6**	**ECN5322CAE-W10/G6**	**ECN5324CAE-W10/G6**	**ECN5328CAE-W10/G6**	**AN16GN0AB**
	25	50A	**ECN5321CAF-W10/G11**	**ECN5322CAF-W10/G11**	**ECN5324CAF-W10/G11**	**ECN5328CAF-W10/G11**	
	30	60A	**ECN5321CAG-W10/G16**	**ECN5322CAG-W10/G16**	**ECN5324CAG-W10/G16**	**ECN5328CAG-W10/G16**	
	40	70A	**ECN5321CAH-W10/G21**	**ECN5322CAH-W10/G21**	**ECN5324CAH-W10/G21**	**ECN5328CAH-W10/G21**	
3YD	50	90A	**ECN5331CAJ-W10/G26**	**ECN5332CAJ-W10/G26**	**ECN5334CAJ-W10/G26**	**ECN5338CAJ-W10/G26**	**AN16KN0AB**
	60	100A	**ECN5331CAK-W10/G31**	**ECN5332CAK-W10/G31**	**ECN5334CAK-W10/G31**	**ECN5338CAK-W10/G31**	
	75	125A	**ECN5331CAL-W10/G36**	**ECN5332CAL-W10/G36**	**ECN5334CAL-W10/G36**	**ECN5338CAL-W10/G36**	
4YD	100	175A	**ECN5341CAN-W10/G41**	**ECN5342CAN-W10/G41**	**ECN5344CAN-W10/G41**	**ECN5348CAN-W10/G41**	**AN16NN0AB**
	125	225A	**ECN5341CAQ-W10/G46**	**ECN5342CAQ-W10/G46**	**ECN5344CAQ-W10/G46**	**ECN5348CAQ-W10/G46**	
	150	250A	**ECN5341CAR-W10/G51**	**ECN5342CAR-W10/G51**	**ECN5344CAR-W10/G51**	**ECN5348CAR-W10/G51**	
5YD	200	350A	**ECN5351CAV-W10/G56**	**ECN5352CAV-W10/G56**	**ECN5354CAV-W10/G56**	**ECN5358CAV-W10/G56**	**AN16SN0AB**
	250	400A	**ECN5351CAW-W10/G61**	**ECN5352CAW-W10/G61**	**ECN5354CAW-W10/G61**	**ECN5358CAW-W10/G61**	
	300	500A	**ECN5351CAY-W10/G66**	**ECN5352CAY-W10/G66**	**ECN5354CAY-W10/G66**	**ECN5358CAY-W10/G66**	
6YD	350	600A	**ECN5361CAZ-W10/G71**	**ECN5362CAZ-W10/G71**	**ECN5363CAZ-W10/G71** ⑦	**ECN5368CAZ-W10/G71**	**AN16TN0AB**
	400		**ECN5361CAZ-W10/G76**	**ECN5362CAZ-W10/G76**	**ECN5363CAZ-W10/G76** ⑦	**ECN5368CAZ-W10/G76**	
	450	700A	**ECN5361CA1-W10/G81**	**ECN5362CA1-W10/G81**	**ECN5363CA1-W10/G81** ⑦	**ECN5368CA1-W10/G81**	
	500	800A	**ECN5361CA2-W10/G86**	**ECN5362CA2-W10/G86**	**ECN5363CA2-W10/G86** ⑦	**ECN5368CA2-W10/G86**	
	600	1000A	**ECN5361CA3-W10/G91**	**ECN5362CA3-W10/G91**	**ECN5363CA3-W10/G91** ⑦	**ECN5368CA3-W10/G91**	
	700	1200A	**ECN5361CA4-W10/G96**	**ECN5362CA4-W10/G96**	**ECN5363CA4-W10/G96** ⑦	**ECN5368CA4-W10/G96**	
7YD	750	⑥	**ECN5371CAU-W10/G101**	**ECN5372CAU-W10/G101**	**ECN5373CAU-W10/G101** ⑦	**ECN5378CAU-W10/G101**	**AN16UN0AB**
	800		**ECN5371CAU-W10/G105**	**ECN5372CAU-W10/G105**	**ECN5373CAU-W10/G105** ⑦	**ECN5378CAU-W10/G105**	
	900		**ECN5371CAU-W10/G108**	**ECN5372CAU-W10/G108**	**ECN5373CAU-W10/G108** ⑦	**ECN5378CAU-W10/G108**	
	1000		**ECN5371CAU-W10/G111**	**ECN5372CAU-W10/G111**	**ECN5373CAU-W10/G111** ⑦	**ECN5378CAU-W10/G111**	
8YD	1250	⑥	**ECN5381CAU-W10/G114**	**ECN5382CAU-W10/G114**	**ECN5383CAU-W10/G114** ⑦	**ECN5388CAU-W10/G114**	**AN16VN0AB**
	1500		**ECN5381CAU-W10/G117**	**ECN5382CAU-W10/G117**	**ECN5383CAU-W10/G117** ⑦	**ECN5388CAU-W10/G117**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN4624EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Class ECN53—Combination Closed Transition Wye Delta Starter—Circuit Breaker, continued

NEMA Size	Max. hp Rating	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Water and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Motor Volts 575/Magnet Coil Voltage 120 ⑤							
2YD	20	30A	**ECN5321DAD-W10/G7**	**ECN5322DAD-W10/G7**	**ECN5324DAD-W10/G7**	**ECN5328DAD-W10/G7**	**AN16GN0AB**
	25	40A	**ECN5321DAE-W10/G12**	**ECN5322DAE-W10/G12**	**ECN5324DAE-W10/G12**	**ECN5328DAE-W10/G12**	
	30	50A	**ECN5321DAF-W10/G17**	**ECN5322DAF-W10/G17**	**ECN5324DAF-W10/G17**	**ECN5328DAF-W10/G17**	
	40	60A	**ECN5321DAG-W10/G22**	**ECN5322DAG-W10/G22**	**ECN5324DAG-W10/G22**	**ECN5328DAG-W10/G22**	
3YD	50	70A	**ECN5331DAH-W10/G27**	**ECN5332DAH-W10/G27**	**ECN5334DAH-W10/G27**	**ECN5338DAH-W10/G27**	**AN16KN0AB**
	60	90A	**ECN5331DAJ-W10/G32**	**ECN5332DAJ-W10/G32**	**ECN5334DAJ-W10/G32**	**ECN5338DAJ-W10/G32**	
	75	100A	**ECN5331DAK-W10/G37**	**ECN5332DAK-W10/G37**	**ECN5334DAK-W10/G37**	**ECN5338DAK-W10/G37**	
4YD	100	125A	**ECN5341DAL-W10/G42**	**ECN5342DAL-W10/G42**	**ECN5344DAL-W10/G42**	**ECN5348DAL-W10/G42**	**AN16NN0AB**
	125	175A	**ECN5341DAN-W10/G47**	**ECN5342DAN-W10/G47**	**ECN5344DAN-W10/G47**	**ECN5348DAN-W10/G47**	
	150	200A	**ECN5341DAP-W10/G52**	**ECN5342DAP-W10/G52**	**ECN5344DAP-W10/G52**	**ECN5348DAP-W10/G52**	
5YD	200	250A	**ECN5351DAR-W10/G57**	**ECN5352DAR-W10/G57**	**ECN5354DAR-W10/G57**	**ECN5358DAR-W10/G57**	**AN16SN0AB**
	250	350A	**ECN5351DAV-W10/G62**	**ECN5352DAV-W10/G62**	**ECN5354DAV-W10/G62**	**ECN5358DAV-W10/G62**	
	300		**ECN5351DAV-W10/G67**	**ECN5352DAV-W10/G67**	**ECN5354DAV-W10/G67**	**ECN5358DAV-W10/G67**	
6YD	350	500A	**ECN5361DAY-W10/G72**	**ECN5362DAY-W10/G72**	**ECN5363DAY-W10/G72** ⑦	**ECN5368DAY-W10/G72**	**AN16TN0AB**
	400		**ECN5361DAY-W10/G77**	**ECN5362DAY-W10/G77**	**ECN5363DAY-W10/G77** ⑦	**ECN5368DAY-W10/G77**	
	450	600A	**ECN5361DAZ-W10/G82**	**ECN5362DAZ-W10/G82**	**ECN5363DAZ-W10/G82** ⑦	**ECN5368DAZ-W10/G82**	
	500		**ECN5361DAZ-W10/G87**	**ECN5362DAZ-W10/G87**	**ECN5363DAZ-W10/G87** ⑦	**ECN5368DAZ-W10/G87**	
	600	800A	**ECN5361DA2-W10/G92**	**ECN5362DA2-W10/G92**	**ECN5363DA2-W10/G92** ⑦	**ECN5368DA2-W10/G92**	
	700	1000A	**ECN5361DA3-W10/G97**	**ECN5362DA3-W10/G97**	**ECN5363DA3-W10/G97** ⑦	**ECN5368DA3-W10/G97**	
7YD	750	⑥	**ECN5371DAU-W10/G102**	**ECN5372DAU-W10/G102**	**ECN5373DAU-W10/G102** ⑦	**ECN5378DAU-W10/G102**	**AN16UN0AB**
	800		**ECN5371DAU-W10/G106**	**ECN5372DAU-W10/G106**	**ECN5373DAU-W10/G106** ⑦	**ECN5378DAU-W10/G106**	
	900		**ECN5371DAU-W10/G109**	**ECN5372DAU-W10/G109**	**ECN5373DAU-W10/G109** ⑦	**ECN5378DAU-W10/G109**	
	1000		**ECN5371DAU-W10/G112**	**ECN5372DAU-W10/G112**	**ECN5373DAU-W10/G112** ⑦	**ECN5378DAU-W10/G112**	
8YD	1250	⑥	**ECN5381DAU-W10/G115**	**ECN5382DAU-W10/G115**	**ECN5383DAU-W10/G115** ⑦	**ECN5388DAU-W10/G115**	**AN16VN0AB**
	1500		**ECN5381DAU-W10/G118**	**ECN5382DAU-W10/G118**	**ECN5383DAU-W10/G118** ⑦	**ECN5388DAU-W10/G118**	

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.

Notes

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN462**4**EAF. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock.

④ Also requires matching contactor with mechanical interlock.

⑤ All reduced voltage starters are furnished with 120V coils and control transformer connected for 120V secondary.
If modification code **C35** separate control is specified, the control transformer is omitted.

⑥ Supply hp, voltage, FLA and whether motor is design E or not when ordering starter.

⑦ Type 4 (painted steel) sizes 6–8YD.

Part Winding Pump Control

Product Description

Standard ECN64, 65 controllers have a HAND/OFF/AUTO selector switch and START pushbutton mounted on the flange of the enclosure and are wired as illustrated on **Page V10-T5-83**.

Note: If branch circuit protective device is 45A or greater, C320FBR1 fuse kit (panel mounted) may be required for control circuit protection per NEC 430-72.

Features

- Three-phase magnetic
- Interchangeable heater OLR

Class ECN64—Combination Part Winding Pump Control Starter—Fusible

NEMA Size	Motor Voltage	Max. hp 50/60 Hz ①	Fuse Clip Rating Amperes	Volts	Catalog Number
3PW	230	50	200	250	**ECN6432BAH**
	460	50	100	600	**ECN6432CAG**
		75	200		**ECN6432CAJ**
4PW	230	75	400	250	**ECN6442BAK**
	460	125	200	600	**ECN6442CAJ**
		150	400		**ECN6442CAL**
5PW	230	100	400	250	**ECN6452BAK**
		150	600		**ECN6452BAM**
	460	200	400	600	**ECN6452CAL**
		350	600		**ECN6452CAN**
6PW	230	300	1200 ②	250	**ECN6462BAQ**
	460	600		600	**ECN6462CAQ**

Class ECN65—Combination Part Winding Pump Control Starter—Circuit Breaker

NEMA Size	Motor Voltage	Max. hp 50/60 Hz ①	Circuit Breaker Type	Catalog Number
3PW	230	40	HFD 125	**ECN6532BAL**
		50	HFD 150	**ECN6532BAM**
	460	50	HFD 100	**ECN6532CAK**
		75	HFD 125	**ECN6532CAL**
4PW	230	60	JD 200	**ECN6542BAP**
		75	JD 250	**ECN6542BAR**
	460	100	HFD 150	**ECN6542CAM**
		125	JD 225	**ECN6542BAQ**
		150	JD 250	**ECN6542CAR**
5PW	230	100	KD 350	**ECN6552BAV**
		125	KD 400	**ECN6552BAW**
		150	LD 500	**ECN6552BAY**
	460	200	KD 350	**ECN6552CAV**
		250	KD 400	**ECN6552CAW**
		300	LD 500	**ECN6552CAY**
		350	LD 600	**ECN6552CAZ**
6PW	230	350	ND 1200	**ECN6562BA4**
	460	600		**ECN6562CA4**

Starters do not include heater packs. Select one carton of three heater packs. Heater pack selection, **Tab 15**.
Starters with electronic overload—see modification codes, **Tab 15**.

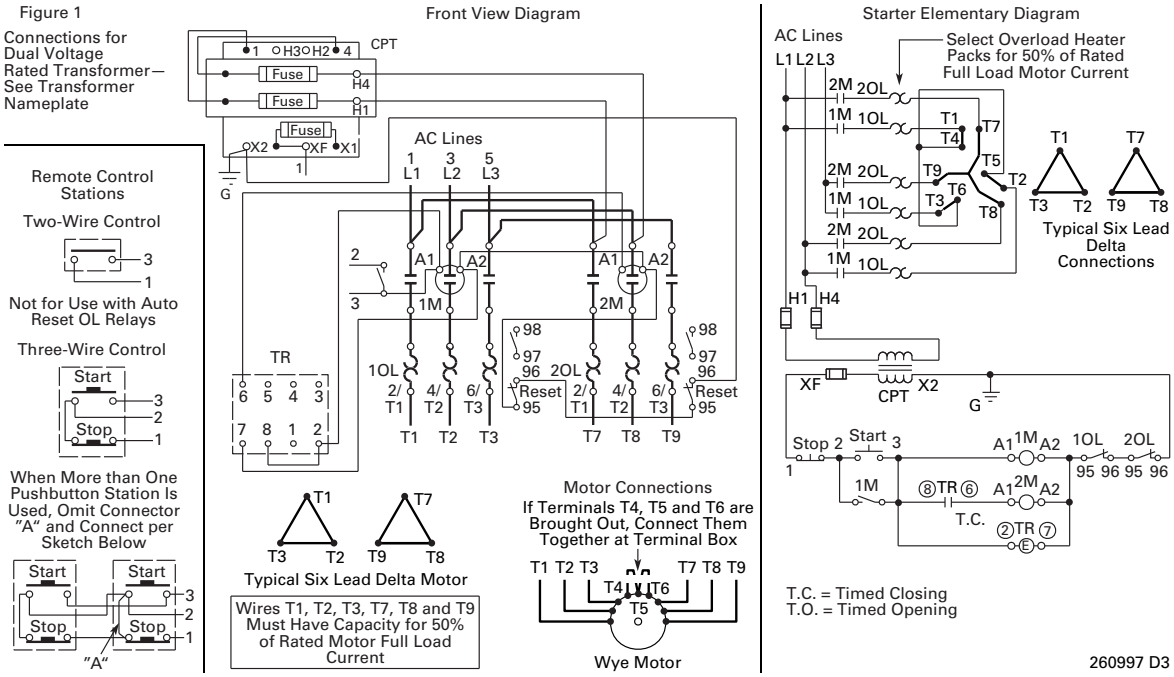
Notes

① Horsepower ratings based on dual element fuses.
② Class L fuse mounting.

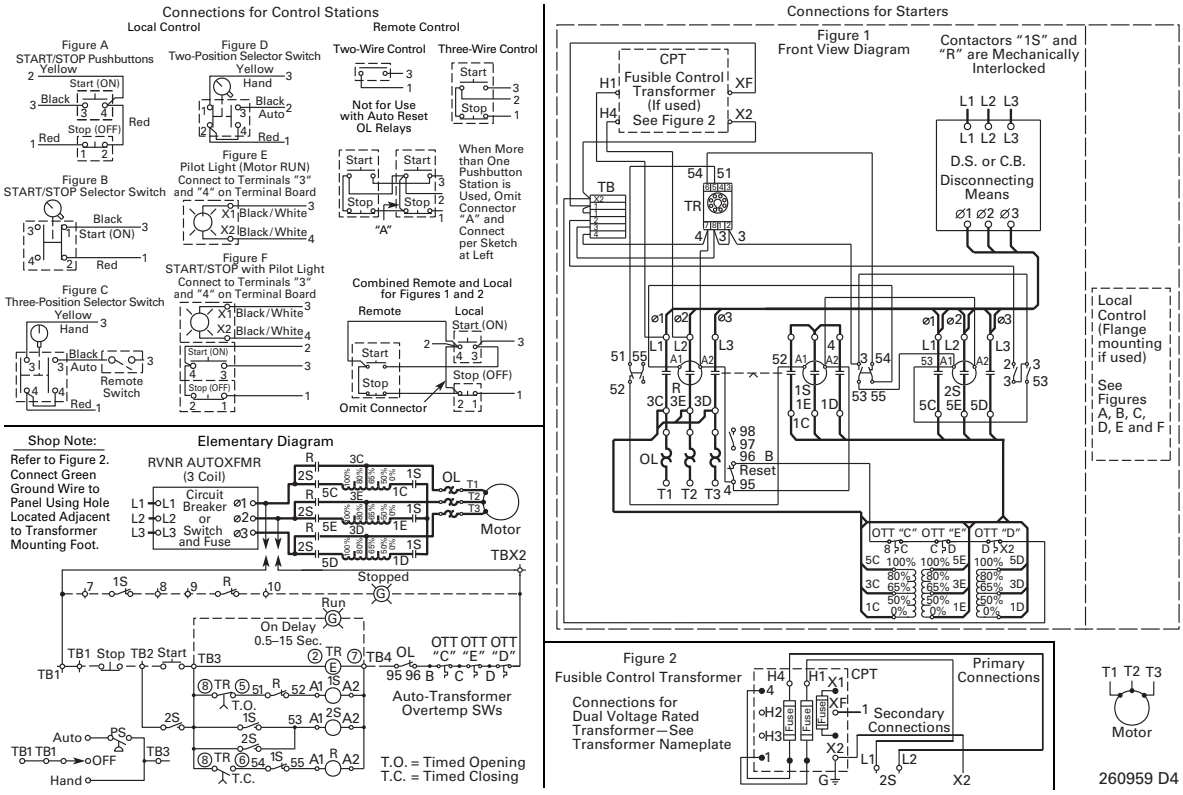
Wiring Diagrams

Part Winding—Non-Combination

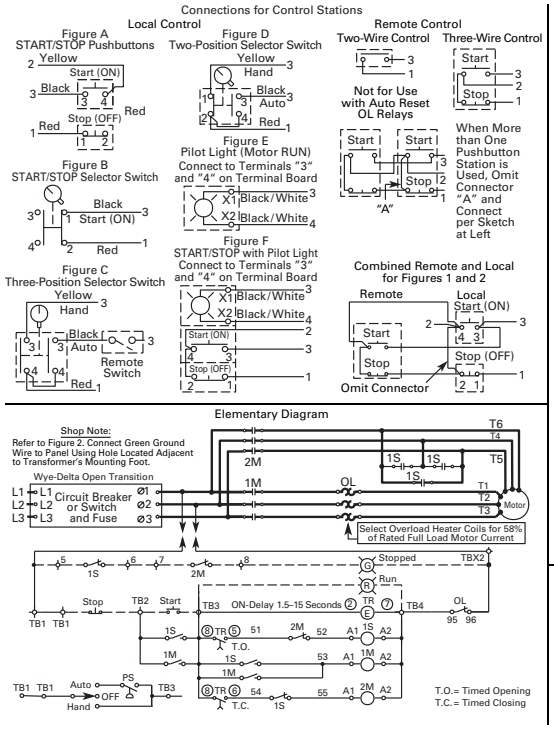
Figure 1
Connections for Dual Voltage Rated Transformer—See Transformer Nameplate

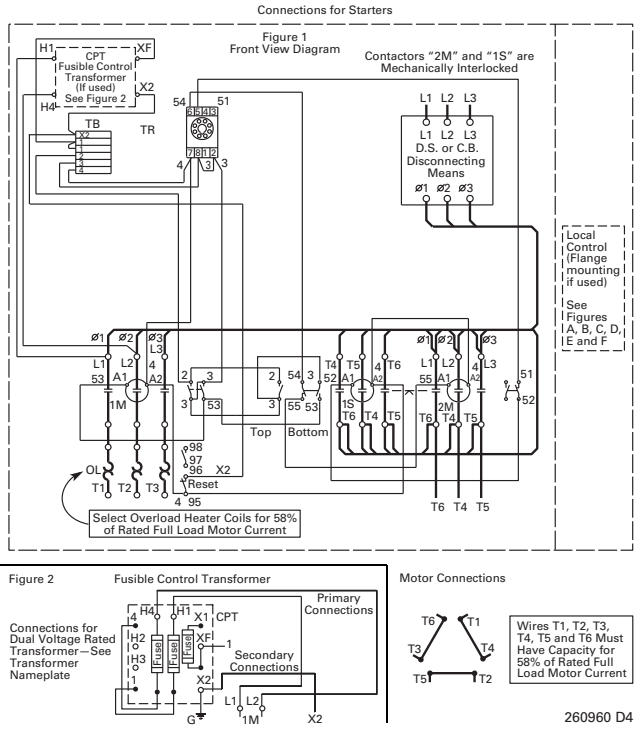


Autotransformer—Combination

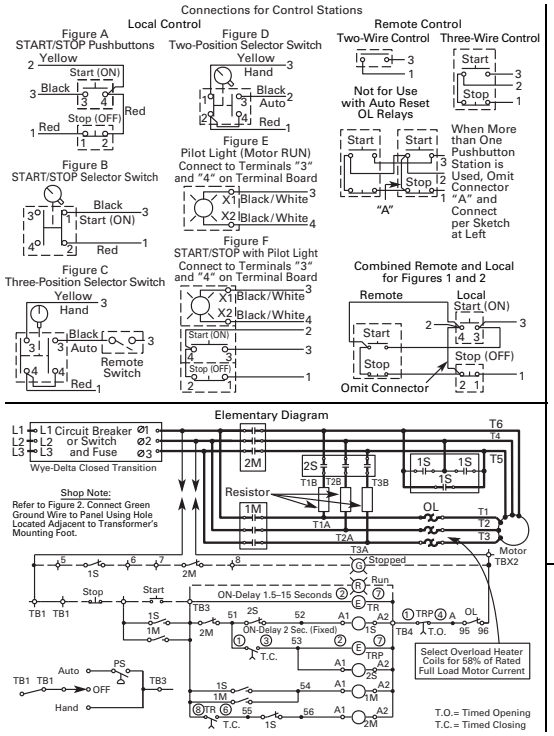


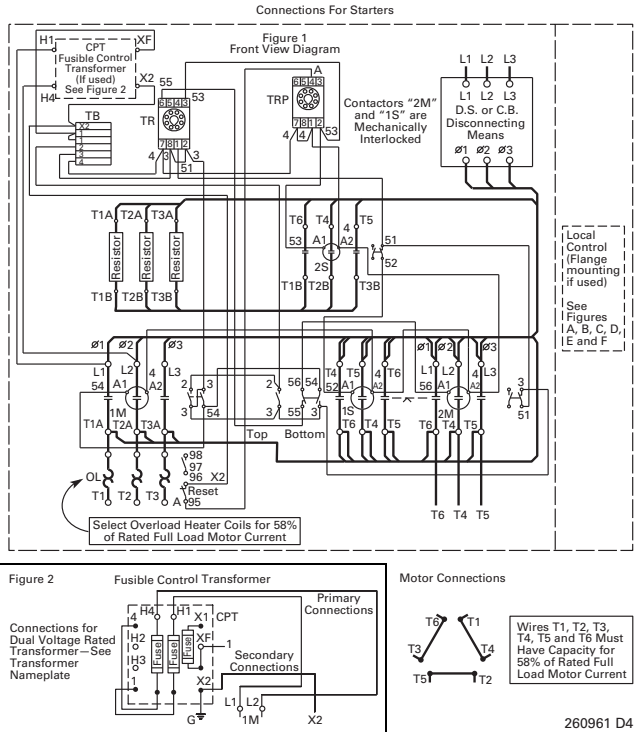
Wye Delta—Open Transition Combination



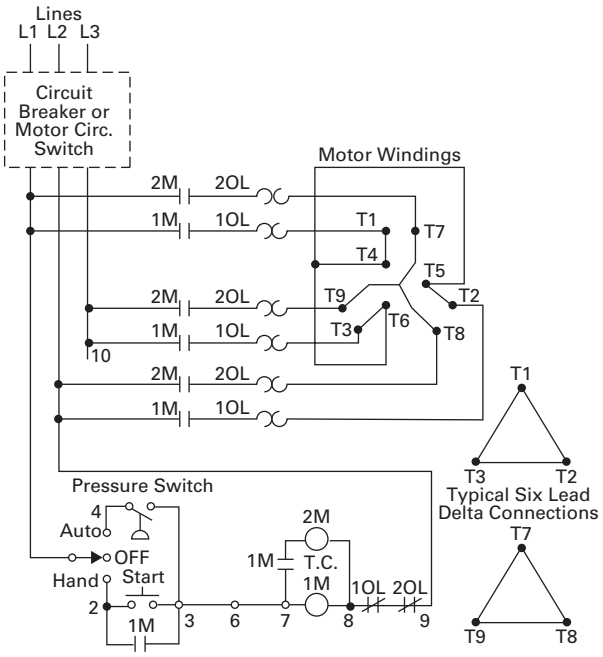


Wye Delta—Closed Transition Combination





Typical Part Winding Pump Control Wiring Diagram



Type 3R Industrial Pump Panel—C440 SSOL

Narrow Enclosure Pump Panel

Irrigation Pump Panel—C440 SSOL

A200 Pump Panel

Industrial Pump Panels

Contents

Product Overview

Product Description

Eaton's pump controllers are combination starters with accessories and modifications designed to meet the particular requirements of the irrigation, oil well, gas and other pump application industries. The enclosure is Type 3R to provide weather-tight protection and is available in several sizes, depending on the customer's control option requirements. The disconnect, contactor and overload relay are the same as used in Freedom lines of combination starters. These controllers are available in standard full voltage as well as reduced voltage configurations, with vacuum contactors as well as the standard electromechanical contactors.

Eaton's revolutionary design for soft starters is shown in the S801+ and S811+ soft starter products which are members of the Intelligent Technologies (***IT***.) family of products. These reduced voltage soft starters are the most compact, multi-functional, easy-to-install products on the market. Their superiority begins with the control package, which features 24 Vdc control, onboard Digital Signal Processor (DSP), and use of a low impedance run contactor, all of which contribute to the ***IT***. soft starter's safety, advanced functionality and compact size.

Features

The Freedom series starters are available in either fusible or circuit breaker types utilizing Type 3R rainproof and sleet resistant enclosures. Convenient straight-through wiring with top line connections and bottom load connections features easily accessible pressure connections for line, load and control. Starter and disconnect are factory wired.

- **Motor Circuit Switch**—Long life, heavy-duty, quick acting, double break action. Positive ON and positive OFF available in either fusible or non-fusible versions. Fuse clip kits are available for field installation and can be converted in the field for maximum job flexibility
- **Motor Circuit Protector**—Similar to a magnetic trip only circuit breaker. Features an adjustable magnetic trip characteristic for accurate, dependable fault protection and simultaneous trip of all poles to prevent single phasing
- **Overload Relay**—Freedom overload relays with trip indication feature bimetallic type operation with ambient compensation and a choice of either manual or automatic reset

  C440 electronic overload relays are available up to 100A as a self-powered, self-contained unit. With external CTs, C440 can protect motor up to 1500 FLA. Available add-on accessories include remote reset capability and communication modules with I/O for DeviceNet, PROFIBUS, and Modbus.
- **HAND/OFF/AUTO Selector Switch and START Pushbutton**—10250T heavy-duty units mounted on the flange of the enclosure for outside accessibility
- **RESET Button**—Accessible from front of enclosure (booted for environmental protection) for operation of overload relay reset function

- **Enclosure**—Type 3R rainproof and sleet resistant construction with stainless steel door latches and special corrosion resistant paint. Enclosure features include grounding lugs, padlocking feature on door latch, drip hood over door and provisions for top mounting conduit hubs. Most enclosures include generous panel space for mounting optional control and accessories
- **Mounting**—Pole mounting feet with keyhole slots for easy mounting are standard on enclosures for Sizes 1–5 (removable for Sizes 1–5 standard width flange type enclosures). Brackets can be formed to the contour of the pole after mounting
- **Padlocking**—Provision on door latch for locking door closed, as well as provision for padlocking disconnect switch in OFF position. With a simple modification, disconnect can also be padlocked in ON position
- **UL Listed**—Underwriters Laboratories Inc. includes the "Suitable for Use as Service Equipment" label

Interrupting Ratings

- **Fusible**—Sizes 1–5 suitable for use on a circuit capable of delivering not more than 100,000 rms symmetrical amperes. 600V maximum where a Class R fuse clip kit is properly installed and Class R fuses are used. If Class R fuses are not used, the switch should not be installed on circuits capable of delivering more than 10,000 rms symmetrical amperes. Size 6 is limited to 18,000 and Size 7 is limited to 30,000 rms symmetrical amperes
- **Circuit Breaker**—Sizes 1–3 controllers are suitable for use on circuits capable of delivering not more than 100,000 rms symmetrical amperes at 480V maximum; for 600V applications not more than 65,000 rms symmetrical amperes
- **ECP Irrigation Pump Panel**—Suitable for use on circuits capable of delivering not more than 10,000 rms symmetrical amperes at 480V maximum

Optional Features

- **Backspin Timer**—0.2 seconds to 3 minutes. Prevents restart until motor and pump have stopped
- **Program Timer**—24 hour, 7 day with day omission
- **Control Transformer**—Available as standard, either as a field kit or factory installed. Includes two primary and one secondary fuses
- **Electrical Interlocks**—Side mounted in NO, NC and NO-NC. Maximum of two contacts on either side of starter through Size 2, maximum of three per side Sizes 3–5
- **Control Circuit Fuse Kit**—30A, 600V rating
- **Lightning Arrestor**—Offers protection to control from lightning induced surges
- **"R" Fuse Clip Kits**—30–200A, 250V and 600V ratings
- **Disconnect Control Circuit Interlock**—To disconnect separate control circuits
- **Enclosure Conduit Hubs**—Hole provided in enclosure top covered with hole closer. Will accept 3/4 in, 1-1/4 in, 1-1/2 in, 2 in, 2-1/2 in, and three inconduit sizes
- **Pad Mounting Feet**—For standard width enclosures Sizes 1–5
- **Electronic Overload (SSOL)**
- **304-Grade Stainless Steel Enclosure**—For additional corrosion resistance, any of the pump panels can be ordered as 304-Grade stainless steel, still keeping the Type 3R rating
- **Soft Starter Pump Control Options**
  - Designed to reduce "water-hammer" during start-up and stopping sequences
  - Stop ramp extended to 60 seconds to help control larger motors and systems with long piping runs

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL Listed
- cUL Listed (indicates appropriate CSA Standard investigation)
- ABS Type Approved
- OSHPD Certified (OSP-0015-10)

Additional Reference

Kits **V10-T6-5**
Dimensions . . . . . **Tab 14**
Accessories and Modifications . . . . . **Tab 15**
Technical Data and Specifications . . . . . **Tab 17**

Catalog Number Selection

Pump Panel

EC N 54 1 2 B A A - __

Design
N = Freedom
2 = A200
V = Vacuum

Class
54 = Type 3R pump panel—fusible disconnect
55 = Type 3R pump panel—circuit breaker disconnect
64 = Part winding with motor circuit
65 = Part winding—circuit breaker disconnect
68 = Duplex—non-combination ①
69 = Duplex—disconnect switch ①
70 = Duplex—circuit breaker disconnect ①

NEMA Size
1 = Size 1
2 = Size 2
3 = Size 3
4 = Size 4
5 = Size 5
6 = Size 6
7 = Size 7

Enclosure
2 = 3R painted steel
A = 3R stainless steel

Voltage ②
A = 120V/60 or 110/50
B = 240V/60 or 220/50
C = 460V/60 or 440/50

Cover Control ③
A = None

Disconnect Fuse Clip Ratings

A = None	**H** = 200A/250V R
B = 30A/250V R	**J** = 200A/600V R
C = 30A/600V R	**K** = 400A/250V R
D = 60A/250V R	**L** = 400A/600V R
E = 60A/600V R	**M** = 600A/250V R
F = 100A/250V R	**N** = 600A/600V R
G = 100A/600V R	**Q** = 1200A/600V L

Circuit Breaker Ratings

B = 3A	**M** = 800A
C = 7A	**N** = 1000A
D = 15A	**P** = 1200A
E = 30A	**Q** = 2000A
F = 50A	**R** = 3000A
G = 100A	**U** = ④
H = 150A	**W** = 70A
J = 250A	**X** = 100A
K = 400A	**Y** = 150A
L = 600A	

Modification Code

Notes
① More information on Type 1, 3R, 4X and 12 duplex pump panels is on **Page V10-T6-23**. Product Selection is on **Page V10-T6-26**.
② For other voltages and single-phase applications, consult your Eaton representative.
③ HOA selector switch and START pushbutton provided as standard.
④ Engineering determination depending on size, horsepower FLA, NEC or other considerations.

Accessories

Kits

Kits for Field Mounting

Description	Catalog Number Suffix	Catalog Number
Backspin timer—0.2 sec. to 3 min. (60 Hz)	**B12**	—
Control transformers 240/480V primary, 120V secondary		
Size 1	**C1**	—
Size 2	**C1**	—
Size 3	**C1**	—
Size 4	**C1**	—
Size 5	**C1**	—
Lightning arrestor	**L3**	—
Control circuit fuse kit (600V)	**C31**	—
Electrical interlocks—Freedom line/vacuum		
NO	**A27**	—
NC	**A28**	**C320KGS2**
NO and NC	**A29**	**C320KGS3**
Time delay relay—3 minutes		
ON delay (unwired)	**T6**	—
OFF delay (unwired)	**T7**	—
24-hour programming clock	**P44**	—
Interchangeable hubs for enclosure. ① Enclosure has removable top plate. If conduit hub is required, order:		
3/4 in conduit size	—	**DS075H1**
1-1/4 in conduit size	—	**DS125H1**
1-1/2 in conduit size	—	**DS150H1**
2 in conduit size	—	**DS200H1**
2-1/2 in conduit size	—	**DS250H2**
3 in conduit size	—	**DS300H2**
Power supply	**C34**	—

Note

① Does not apply to reduced voltage controllers.

Overload Relays

Freedom Solid-State Overload Relays

NEMA Size	Full Load Current Adjustment Range (A)	Three-Phase without Ground Fault Auto/Manual Reset Overload Selectable Class 10/20/30	Three-Phase with Ground Fault Auto/Manual Reset Overload Selectable Class 10/20/30
00	0.33–1.65 ①	R63/A	R64/A
	1–5	R63/B	R64/B
	4–20	R63/C	R64/C
0 and 1	0.33–1.65 ①	R63/A	R64/A
	1–5	R63/B	R64/B
	4–20	R63/C	R64/C
	9–45	R63/D	R64/D
2	9–45	R63/D	R64/D
3	20–100	R63/E	R64/E
4	28–140	R63/F	R64/F
5	60–300 ②	R63/G	R64/G
6	120–600 ③	R63/H	R64/H

Notes

① Not UL Listed.

② NEMA Size 5 starter available with 60–300A panel mounted CTs. Starter as an assembled unit with 1–5A C440 overload relay (C440A1A005SELAX or C440A2A005SELAX).

③ NEMA Size 6 starter available with 120–600A panel mounted CTs. Starter as an assembled unit with 1–5A C440 overload relay (C440A1A005SELAX or C440A2A005SELAX).

Freedom—Fusible Disconnect

Product Description

- Three-phase magnetic
- Interchangeable heater OLR

Standard ECN54 controllers have a HAND/OFF/AUTO selector switch and START and RESET pushbuttons mounted on the enclosure and are wired as illustrated on **Page V10-T6-8**.

Type 3R enclosure does not include top conduit hubs. Hubs are available in kit form—see **Page V10-T6-5**.

If branch circuit protective device is 45A or greater, C320FBR1 fuse kit (panel mounted) may be required for control circuit protection per NEC 430-72.

Stainless steel enclosure may be ordered by changing the seventh digit to **A**. Type 3R rating will still apply.

Product Selection

Class ECN54—Combination Pump Panel—Fusible Disconnect

NEMA Size	Motor Voltage ①	Max. hp 50/60 Hz	Fuse Clip Rating ② Amperes	Fuse Clip Rating ② Volts	Narrow Width ③ Catalog Number	Standard Width ③ Catalog Number
1 ④	230	7-1/2	30	250	**ECN5412BAB-E14**	**ECN5412BAB**
	460	10		600	**ECN5412CAC-E14**	**ECN5412CAC**
	—	—	Not installed	Not installed	**ECN5412AAA-E14**	**ECN5412AAA**
2	230	15	60	250	**ECN5422BAD-E14**	**ECN5422BAD**
	460	25		600	**ECN5422CAE-E14**	**ECN5422CAE**
	—	—	Not installed	Not installed	**ECN5422AAA-E14**	**ECN5422AAA**
3	230	30	100	250	—	**ECN5432BAF**
	460	50		600	—	**ECN5432CAG**
	—	—	Not installed	Not installed	—	**ECN5432AAA**
4 ④	230	50	200	250	—	**ECN5442BAH**
	460	100		600	—	**ECN5442CAJ**
	—	—	Not installed	Not installed	—	**ECN5442AAA**
5	230	100	400	250	—	**ECN5452BAK**
	460	200		600	—	**ECN5452CAL**
6	230	200	600	250	—	**ECN5462BAM**
	460	400		600	—	**ECN5462CAN**
7	460	600	1200	600	—	**ECN5472CAQ**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15.**

Starters with electronic overload, see Modification Codes in **Tab 15**.

① Dual element fuse ratings.

② Class R fuse clips, except for Size 7 which uses Class L fuse clips. For starters with clips "Not Installed," select fuse clip kit on **Page V10-T6-8**.

③ To order without the START pushbutton, add modification code **P6**.

④ For Compact NEMA Size 1 or Size 4 Pump Panel, add modification code **C60**. (Example: ECN5412AAA-**C60**).

Compact NEMA Size 1 and Size 4 Starters
Electrical Life at Rated Continuous Current

NEMA Size	Rated Current (Amp) AC3/AC4	Operations
1C	27/150	2,500,000/40,000
1	27/153	5,000,000/110,000
4C	135/516	500,000/40,000
4	135/822	800,000/70,000

For Other Volts and Hertz Applications

For other than listed volts and hertz, select required controller by catalog number and replace the magnet coil alpha designation, eighth digit in catalog number, with proper code suffix from the table below.

Example: For 600V 60 Hz coil, change ECN5412**B**AC to ECN5412**D**AC.

Coil Voltage

Coil Volts and Hertz	Suffix Code
120/60 or 110/50	**A**
240/60 or 220/50	**B**
480/60 or 440/50	**C**
600/60 or 550/50	**D**
208/60	**E**

Accessories

C351—Fuse Clip Selection—Three-Pole (Three Fuses)

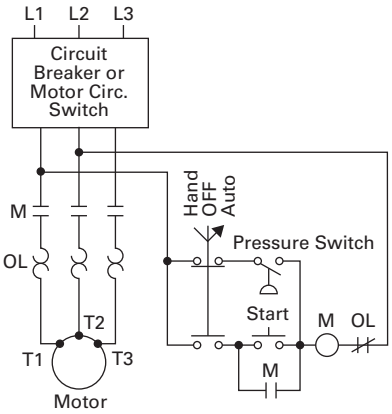
NEMA Size	Motor Voltage	Fuse Clip Rating Amperes	Volts	Fuse Clip Kit for Field Installation in Non-Fusible Starter For Non-Rejection Type Fuses Catalog Number	Fuse Clip Kit for Field Installation in Non-Fusible Starter For Use with "R" Rejection Type Fuses Catalog Number
1	200/230	30	250	**C351KC21**	**C351KC21R**
	460–575		600	**C351KD22-61**	**C351KD22-61R**
2	200	60	250	**C351KD22-61**	**C351KD22-61R**
	230			**C351KD22-61**	**C351KD22-61R**
	460–575		600	**C351KD62**	**C351KD62R**
3	200	100	250	**C351KE23-63**	**C351KE23-63** ①
	230			**C351KE23-63**	**C351KE23-63** ①
	460–575		600	**C351KE23-63**	**C351KE23-63** ①
4	200	200	250	**C351KF24-64**	**C351KF24-64** ①
	230			**C351KF24-64**	**C351KF24-64** ①
	460–575		600	**C351KF24-64**	**C351KF24-64** ①

Note

① Fuse clip "R" rejection members for use with Class R fuses are supplied loose both in fuse clip kits and when fuse clips are factory installed.

Wiring Diagram

Typical Wiring Diagram



Freedom—Circuit Breaker

Product Description

- Three-phase magnetic
- Interchangeable heater OLR

These ECN55 pump controllers feature the Freedom line starters. They have a HAND/OFF/AUTO selector switch and START pushbutton mounted on the enclosure and a RESET button on the front—wiring is as illustrated in the wiring diagram on **Page V10-T6-8**.

Type 3R enclosure does not include top conduit hubs. Hubs are available in kit form—see table on **Page V10-T6-5**.

If branch circuit protective device is 45A or greater, C320FBR1 fuse kit (panel mounted) may be required for control circuit protection per NEC 430-72.

Stainless steel enclosure may be ordered by changing the seventh digit to **A**. Type 3R rating will still apply.

Product Selection

Class ECN55—Combination Pump Panel—Circuit Breaker

NEMA Size	Motor Voltage	Max. hp 50/60 Hz	Circuit Breaker Size	Narrow Width ① Catalog Number	Standard Width ① Catalog Number
1 ②	230	1	7A	**ECN5512BAC-E14**	**ECN5512BAC**
		3	15A	**ECN5512BAD-E14**	**ECN5512BAD**
		7-1/2	30A	**ECN5512BAE-E14**	**ECN5512BAE**
	460	1	3A	**ECN5512CAB-E14**	**ECN5512CAB**
		3	7A	**ECN5512CAC-E14**	**ECN5512CAC**
		5	15A	**ECN5512CAD-E14**	**ECN5512CAD**
		10	30A	**ECN5512CAE-E14**	**ECN5512CAE**
2	230	10	50A	**ECN5522BAF-E14**	**ECN5522BAF**
	460	25		**ECN5522CAF-E14**	**ECN5522CAF**
3	230	30	100A	—	**ECN5532BAG**
	460	50		—	**ECN5532CAG**
4 ②	230	50	150A	—	**ECN5542BAH**
	460	100		—	**ECN5542CAH**
5	230	60	250A	—	**ECN5552BAJ**
	230	100	400A	—	**ECN5552BAK**
	460	150	250A	—	**ECN5552CAJ**
	460	200	400A	—	**ECN5552CAK**
6	230	125	600A	—	**ECN5562BAL**
	230	200	800A	—	**ECN5562BAM**
	460	300	600A	—	**ECN5562CAL**
	460	400	800A	—	**ECN5562CAM**
7	230	250	③	—	**ECN5572BAU**
	230	300		—	**ECN5572BAU**
	460	500		—	**ECN5572CAU**
	460	600		—	**ECN5572CAU**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15.**

① To order without the START pushbutton, add modification code **P6**.

② For Compact NEMA Size 1 or Size 4 Pump Panel, add modification code **C60**. (Example: ECN5412AAA-**C60**).

Compact NEMA Size 1 and Size 4 Starters
Electrical Life at Rated Continuous Current

NEMA Size	Rated Current (Amp) AC3/AC4	Operations
1C	27/150	2,500,000/40,000
1	27/153	5,000,000/110,000
4C	135/516	500,000/40,000
4	135/822	800,000/70,000

③ Supply hp, voltage, FLA and whether motor is design E or not when ordering the starter.

For Other Volts and Hertz Applications

For other than listed volts and hertz, select required controller by catalog number and replace the magnet coil alpha designation, eighth digit in catalog number, with proper code suffix from the table below.

Example: For 600V 60 Hz coil, change ECN5512**C**AC to ECN5512**D**AC.

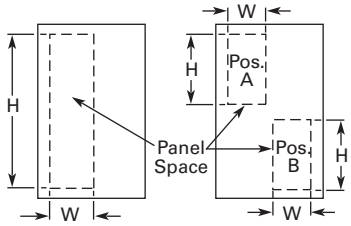
Coil Voltage

Coil Volts and Hertz	Suffix Code
120/60 or 110/50	**A**
240/60 or 220/50	**B**
480/60 or 440/50	**C**
600/60 or 550/50	**D**
208/60	**E**

Dimensions

Approximate Dimensions in Inches (mm)

Panel Space



NEMA Sizes 1–4 NEMA Size 5

Panel Size	NEMA Size	Position (see figure above)	Width W	Height H
Narrow ①	1–2	—	5.5 (140)	6.0 (152)
Standard	1–3	—	8.5 (216)	26.0 (660)
	4	—	8.5 (216)	39.0 (991)
	5	A	10.0 (254)	22.0 (559)
		B	15.0 (381)	12.0 (305)
Oversize	1–2	—	12.0 (318)	39.0 (991)
	3	—	11.0 (279)	39.0 (991)

Note

① Space is between disconnect switch or circuit breaker and starter.

A200—Fusible Disconnect

Product Description

- Three-phase magnetic
- Interchangeable heater OLR

Standard ECN54 controllers have a HAND/OFF/AUTO selector switch and START and RESET pushbuttons mounted on the enclosure and are wired as illustrated on **Page V10-T6-12**.

Type 3R enclosure does not include top conduit hubs. Hubs are available in kit form—see table on **Page V10-T6-5**.

If branch circuit protective device is 45A or greater, C320FBR1 fuse kit (panel mounted) may be required for control circuit protection per NEC 430-72.

Stainless steel enclosure may be ordered by changing the seventh digit to **A**. Type 3R rating will still apply.

Product Selection

Class EC254—Combination A200 Pump Panel—Fusible Disconnect

NEMA Size	Motor Voltage ①	Max. hp 50/60 Hz	Fuse Clip Rating ② Amperes	Fuse Clip Rating ② Volts	Narrow Width ③ Catalog Number	Standard Width ③ Catalog Number
1	230	7-1/2	30	250	**EC25412BAB-E14**	**EC25412BAB**
	460	10		600	**EC25412CAC-E14**	**EC25412CAC**
	—	—	Not installed	Not installed	**EC25412AAA-E14**	**EC25412AAA**
2	230	15	60	250	**EC25422BAD-E14**	**EC25422BAD**
	460	25		600	**EC25422CAE-E14**	**EC25422CAE**
	—	—	Not installed	Not installed	**EC25422AAA-E14**	**EC25422AAA**
3	230	30	100	250	—	**EC25432BAF**
	460	50		600	—	**EC25432CAG**
	—	—	Not installed	Not installed	—	**EC25432AAA**
4	230	50	200	250	—	**EC25442BAH**
	460	100		600	—	**EC25442CAJ**
	—	—	Not installed	Not installed	—	**EC25442AAA**
5	230	100	400	250	—	**EC25452BAK**
	460	200		600	—	**EC25452CAL**
6	230	200	600	250	—	**EC25462BAM**
	460	400		600	—	**EC25462CAN**
7	460	600	1200	600	—	**EC25472CAQ**

Notes

Starters do not include heater packs. Select 1 carton of 3 heater packs. For heater pack selection, see **Tab 15.**

① Dual element fuse ratings.

② Class R fuse clips, except for Size 7 which uses Class L fuse clips. For starters with clips "Not Installed", select fuse clip kit on **Page V10-T6-8**.

③ To order without the START pushbutton, add modification code **P6**.

For Other Volts and Hertz Applications

For other than listed volts and hertz, select required controller by catalog number and replace the magnet coil alpha designation, eighth digit in catalog number, with proper code suffix from the table below.

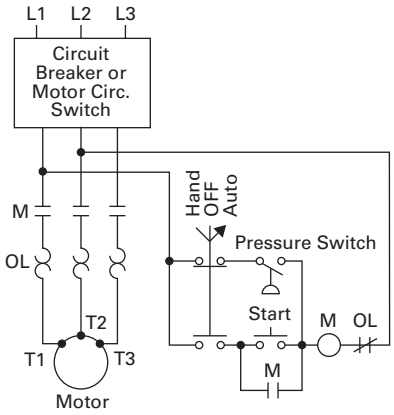
Example: For 600V 60 Hz coil, change EC25412**B**AC to EC25412**D**AC.

Coil Voltage

Coil Volts and Hertz	Suffix Code
120/60 or 110/50	**A**
240/60 or 220/50	**B**
480/60 or 440/50	**C**
600/60 or 550/50	**D**
208/60	**E**

Wiring Diagram

Typical Wiring Diagram



A200—Circuit Breaker

Product Description

- Three-phase magnetic
- Interchangeable heater OLR

These ECN55 pump controllers feature the A200 starters. They have a HAND/OFF/AUTO selector switch and START pushbutton mounted on the enclosure and a RESET button on the front—wiring is as illustrated in the wiring diagram on **Page V10-T6-12**.

Type 3R enclosure does not include top conduit hubs. Hubs are available in kit form—see **Page V10-T6-5**.

If branch circuit protective device is 45A or greater, C320FBR1 fuse kit (panel mounted) may be required for control circuit protection per NEC 430-72.

Stainless steel enclosure may be ordered by changing the seventh digit to **A**. Type 3R rating will still apply.

Product Selection

Class EC255—Combination A200 Pump Panel—Circuit Breaker

NEMA Size	Motor Voltage	Max. hp 50/60 Hz	Circuit Breaker Size	Narrow Width ① Catalog Number	Standard Width ② Catalog Number
1	230	1	7A	**EC25512BAC-E14**	**EC25512BAC**
		3	15A	**EC25512BAD-E14**	**EC25512BAD**
		7-1/2	30A	**EC25512BAE-E14**	**EC25512BAE**
	460	1	3A	**EC25512CAB-E14**	**EC25512CAB**
		3	7A	**EC25512CAC-E14**	**EC25512CAC**
		5	15A	**EC25512CAD-E14**	**EC25512CAD**
		10	30A	**EC25512CAE-E14**	**EC25512CAE**
2	230	10	50A	**EC25522BAF-E14**	**EC25522BAF**
	460	25		**EC25522CAF-E14**	**EC25522CAF**
3	230	30	100A	—	**EC25532BAG**
	460	50		—	**EC25532CAG**
4	230	50	150A	—	**EC25542BAH**
	460	100		—	**EC25542CAH**
5	230	60	250A	—	**EC25552BAJ**
		100	400A	—	**EC25552BAK**
	460	150	250A	—	**EC25552CAJ**
		200	400A	—	**EC25552CAK**
6	230	125	600A	—	**EC25562BAL**
		200	800A	—	**EC25562BAM**
	460	300	600A	—	**EC25562CAL**
		400	800A	—	**EC25562CAM**
7 ②	230	250	③	—	**EC25572BAU**
		300		—	**EC25572BAU**
	460	500		—	**EC25572CAU**
		600		—	**EC25572CAU**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15.**

① To order without the START pushbutton, add modification code **P6**.

② Consult factory in the event ground fault protection is required.

③ Supply hp, voltage, FLA and whether motor is design E or not when ordering the starter.

For Other Volts and Hertz Applications

For other than listed volts and hertz, select required controller by catalog number and replace the magnet coil alpha designation, eighth digit in catalog number with proper code suffix from the table below.

Example: For 600V 60 Hz coil, change EC25512**C**AC to EC25512**D**AC.

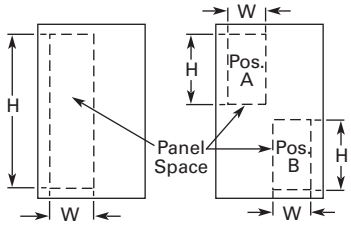
Coil Voltage

Coil Volts and Hertz	Suffix Code
120/60 or 110/50	**A**
240/60 or 220/50	**B**
480/60 or 440/50	**C**
600/60 or 550/50	**D**
208/60	**E**

Dimensions

Approximate Dimensions in Inches (mm)

Panel Space



NEMA Sizes 1–4 NEMA Size 5

Panel Size	NEMA Size	Position (see figure above)	Width W	Height H
Narrow ①	1–2	—	5.5 (140)	6.0 (152)
Standard	1–3	—	8.5 (216)	26.0 (660)
	4	—	8.5 (216)	39.0 (991)
	5	A	10.0 (254)	22.0 (559)
		B	15.0 (381)	12.0 (305)
Oversize	1–2	—	12.0 (318)	39.0 (991)
	3	—	11.0 (279)	39.0 (991)

Note

① Space is between disconnect switch or circuit breaker and starter.

Vacuum Starter Pump Panels

Contents

Freedom—Fusible Disconnect and Circuit Breaker

Product Description

- Three-phase magnetic
- Interchangeable heater OLR

Standard ECV54, 55 controllers have a HAND/OFF/AUTO selector switch and START pushbutton mounted on the enclosure and are wired as illustrated on **Page V10-T6-16**.

Type 3R enclosure does not include top conduit hubs. Hubs are available in kit form—see **Page V10-T6-5**.

If branch circuit protective device is 45A or greater, C320FBR1 fuse kit (panel mounted) may be required for control circuit protection per NEC 430-72.

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL Listed
- cUL (indicates appropriate CSA Standard investigation)
- ABS Type Approved
- OSHPD Certified (OSP-0015-10)

Additional Reference

Product Selection

Class ECV54—Combination Vacuum Pump Panel—Fusible Disconnect

NEMA Size	Motor Voltage	Max. hp 50/60 Hz	Fuse Clip Rating Amperes	Volts	With START Pushbutton Catalog Number
4	230	50	200	250	**ECV5442BAH**
	460	100		600	**ECV5442CAJ**
5	230	100	400	250	**ECV5452BAK**
	460	200		600	**ECV5452CAL**
6	230	200	600	250	**ECV5462BAM**
	460	400		600	**ECV5462CAN**

Class ECV55—Combination Vacuum Pump Panel—Circuit Breaker

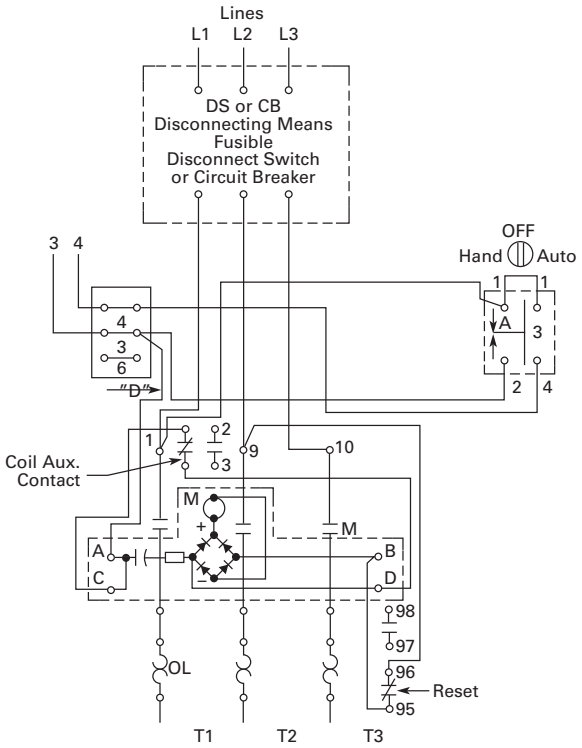
NEMA Size	Motor Voltage	Max. hp 50/60 Hz	Circuit Breaker Size	With START Pushbutton Catalog Number
4	230	50	150A	**ECV5542BAH**
	460	100		**ECV5542CAH**
5	230	75	250A	**ECV5552BAJ**
		100	400A	**ECV5552BAK**
	460	150	250A	**ECV5552CAJ**
		200	400A	**ECV5552CAK**
6	230	200	600A	**ECV5562BAL**
	460	400		**ECV5562CAL**

Note

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15.**

Wiring Diagram

Typical Wiring Diagram



Irrigation Pump Panel—C440 SSOL

Contents

6

Product Description

Eaton's irrigation pump controllers are combination starters designed to meet the requirements of the agricultural industry. The enclosure is UL Type 3R rated to provide weathertight protection and is available in two sizes. Irrigation application specific accessories and modifications are available to fit the customer's requirements.

The irrigation pump panels use Freedom series motor starting technology to control motors up to 100 hp at 460V. These controllers have two styles of overload protection available, interchangeable heater and solid-state overload (SSOL).

Features

- The interchangeable heater overload (C306) uses individual heater packs to allow customers the ability to use various heater styles
- The solid-state overload relay (C440) provides enhanced protection and adjustment ranges as compared to bimetallic overload relays.Trip Class 10, 20, and 30 are available, along with a very wide trip current range to make setup very easy

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL Listed
- cUL Listed (indicates appropriate CSA Standard investigation)
- ABS Type Approved
- OSHPD Certified (OSP-0015-10)

Additional Reference

Kits	**V10-T6-5**
Dimensions	**Tab 14**
Accessories and Modifications	**Tab 15**

Catalog Number Selection

Irrigation Pump Panel

EC P 54 12 B A B - __

Design
P = Irrigation

Class
54 = Type 3R pump panel—fusible disconnect
55 = Type 3R pump panel—circuit breaker disconnect

NEMA Size/Enclosure

12 = Size 1/3R	**32** = Size 3/3R
22 = Size 2/3R	**42** = Size 4/3R

Voltage
B = 240V/60 or 220/50
C = 460V/60 or 440/50

Cover Control
A = None

Disconnect Fuse Clip Ratings

A = None	**F** = 100A/250V R
B = 30A/250V R	**G** = 100A/600V R
C = 30A/600V R	**H** = 200A/250V R
D = 60A/250V R	**J** = 200A/600V R
E = 60A/600V R	

Circuit Breaker Ratings

B = 3A	**F** = 50A
C = 7A	**G** = 100A
D = 15A	**H** = 150A
E = 30A	

Modification Code/ Relay Code

Pump Panels—Interchangeable Heater Overload

Product Selection

Standard ECP54 controllers have a HAND/OFF/AUTO selector switch and START pushbutton mounted on the enclosure and are wired as illustrated on **Page V10-T6-22**.

Class ECP54—Combination Irrigation Pump Panel—Fusible Disconnect

NEMA Size	Motor Voltage ①	Max. hp 50/60 Hz	Fuse Clip Rating ② Amperes	Volts	Standard Width Catalog Number
1 ③	230	7-1/2	30	250	**ECP5412BAB**
	460	10		600	**ECP5412CAC**
	—	—	Not installed	Not installed	**ECP5412AAA**
2	230	15	60	250	**ECP5422BAD**
	460	25		600	**ECP5422CAE**
	—	—	Not installed	Not installed	**ECP5422AAA**
3	230	30	100	250	**ECP5432BAF**
	460	50		600	**ECP5432CAG**
	—	—	Not installed	Not installed	**ECP5432AAA**

Fuse Clips

C351—Fuse Clip Selection—Three-Pole (Three Fuses)

NEMA Size	Motor Voltage	Fuse Clip Rating Amperes	Volts	Fuse Clip Kit for Field Installation in Non-Fusible Starter For Non-Rejection Type Fuses Catalog Number	For Use with "R" Rejection Type Fuses Catalog Number
1	200/230	30	250	**C351KC21**	**C351KC21R**
	460–575		600	**C351KD22-61**	**C351KD22-61R**
2	200	60	250	**C351KD22-61**	**C351KD22-61R**
	230			**C351KD22-61**	**C351KD22-61R**
	460–575			**C351KD62**	**C351KD62R**
3	200	100	250	**C351KE23-63**	**C351KE23-63** ④
	230			**C351KE23-63**	**C351KE23-63** ④
	460–575		600	**C351KE23-63**	**C351KE23-63** ④

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15.**

① Dual element fuse ratings.

② Class R fuse clips.

③ For Compact NEMA Size 1 or Size 4 Pump Panel, add modification code **C60**. (Example: ECN5412AAA-**C60**).

Compact NEMA Size 1 and Size 4 Starters
Electrical Life at Rated Continuous Current

NEMA Size	Rated Current (Amp) AC3/AC4	Operations
1C	27/150	2,500,000/40,000
1	27/153	5,000,000/110,000

④ Fuse clip "R" rejection members for use with Class R fuses are supplied loose both in fuse clip kits and when fuse clips are factory installed.

For Other Volts and Hertz Applications

For other than listed volts and hertz, select required controller by catalog number and replace the magnet coil alpha designation, eighth digit in catalog number with proper code suffix from the table below.

Example: For 600V 60 Hz coil, change ECP5412**B**AB to ECP5412**D**AB.

Coil Voltage

Coil Volts and Hertz	Suffix Code
120/60 or 110/50	**A**
240/60 or 220/50	**B**
480/60 or 440/50	**C**
600/60 or 550/50	**D**
208/60	**E**

Pump Panels—Solid-State Overload

Product Selection

Class ECP54—Combination Irrigation Pump Panel with Solid-State Overload—Fusible Disconnect ①

Motor Voltage	NEMA Size	Maximum hp	Fuse Clip Amperes	Trip Range	Catalog Number
240V	1 ②	1	30	1.0–5.0	**ECP5412BAB-R63/B**
		3		4–20	**ECP5412BAB-R63/C**
		7-1/2		9–45	**ECP5412BAB-R63/D**
	2	10	60	9–45	**ECP5422BAD-R63/D**
		15			**ECP5422BAD-R63/D**
	3	25	100	20–100	**ECP5432BAF-R63/E**
480V	1 ②	1	30	1.0–5.0	**ECP5412CAC-R63/B**
		2			**ECP5412CAC-R63/B**
		5		4–20	**ECP5412CAC-R63/C**
		10			**ECP5412CAC-R63/C**
	2	20	60	9–45	**ECP5422CAE-R63/D**
		25			**ECP5422CAE-R63/D**
	3	50	100	20–100	**ECP5432CAG-R63/E**

Class ECP55—Combination Irrigation Pump Panel with Solid-State Overload—Circuit Breaker ①

Motor Voltage	NEMA Size	Maximum hp	Breaker Rating	Trip Range	Catalog Number
240V	1 ②	1	7	1.0–5.0	**ECP5512BAC-R63/B**
		3	15	4–20	**ECP5512BAD-R63/C**
		7-1/2	30	9–45	**ECP5512BAE-R63/D**
	2	10	50	9–45	**ECP5522BAF-R63/D**
		15		20–100	**ECP5522BAF-R63/E**
	3	25	100	20–100	**ECP5532BAG-R63/E**
	4 ②	50		28–140	**ECP5532BAH-R63/F**
480V	1 ②	1	30	1.0–5.0	**ECP5512CAB-R63/B**
		2			**ECP5512CAC-R63/B**
		5		4–20	**ECP5512CAD-R63/C**
		10			**ECP5512CAE-R63/C**
	2	20	60	9–45	**ECP5522CAE-R63/D**
		25			**ECP5522CAF-R63/D**
	3	50	100	20–100	**ECP5532CAG-R63/E**
	4 ②	100	150	28–140	**ECP5532CAG-R63/F**

Note

① Motor FLA based on NEC Table.

② For Compact NEMA Size 1 or Size 4 Pump Panel, add modification code **C60**. (Example: ECN5412AAA-**C60**).

Compact NEMA Size 1 and Size 4 Starters
Electrical Life at Rated Continuous Current

NEMA Size	Rated Current (Amp) AC3/AC4	Operations
1C	27/150	2,500,000/40,000
1	27/153	5,000,000/110,000
4C	135/516	500,000/40,000
4	135/822	800,000/70,000

Class ECP55—Combination Irrigation Pump Panel—Circuit Breaker

Motor Voltage	NEMA Size	Maximum hp	Breaker Rating	Catalog Number
240V	1 ①	1	7	**ECP5512BAC**
		3	15	**ECP5512BAD**
		7-1/2	30	**ECP5512BAE**
	2	10	50	**ECP5522BAF**
		15	70	**ECP5522BAW**
	3	25	100	**ECP5532BAG**
	4 ①	50	150	**ECP5542BAH**

Motor Voltage	NEMA Size	Maximum hp	Breaker Rating	Catalog Number
480V	1 ①	1	3	**ECP5512CAB**
		3	7	**ECP5512CAC**
		5	15	**ECP5512CAD**
		10	30	**ECP5512CAE**
	2	10	30	**ECP5522CAE**
		25	50	**ECP5522CAF**
	3	50	100	**ECP5532CAG**
	4 ①	100	175	**ECP5542CAN**

6

Overload Relays

Freedom Solid-State Overload Relays

NEMA Size	Full Load Current Adjustment Range (A)	Three-Phase without Ground Fault Auto/Manual Reset Overload Selectable Class 10/20/30	Three-Phase with Ground Fault Auto/Manual Reset Overload Selectable Class 10/20/30
00	0.33–1.65 ②	R63/A	R64/A
	1–5	R63/B	R64/B
	4–20	R63/C	R64/C
0 and 1	0.33–1.65 ②	R63/A	R64/A
	1–5	R63/B	R64/B
	4–20	R63/C	R64/C
	9–45	R63/D	R64/D
2	9–45	R63/D	R64/D
3	20–100	R63/E	R64/E
4	28–140	R63/F	R64/F
5	60–300 ③	R63/G	R64/G
6	120–600 ④	R63/H	R64/H

Notes

① Compact NEMA Size 1 or Size 4 Pump Panel, add modification code **C60**. (Example: ECN5412AAA-**C60**).

Compact NEMA Size 1 and Size 4 Starters
Electrical Life at Rated Continuous Current

NEMA Size	Rated Current (Amp) AC3/AC4	Operations
1C	27/150	2,500,000/40,000
1	27/153	5,000,000/110,000
4C	135/516	500,000/40,000
4	135/822	800,000/70,000

② Not UL Listed.

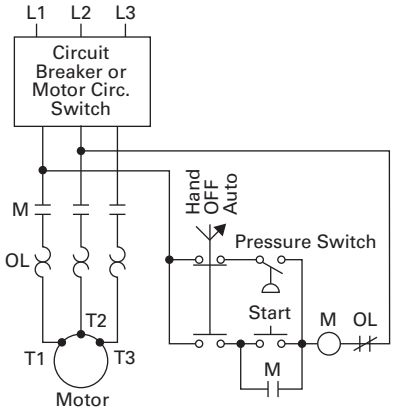
③ NEMA Size 5 starter available with 60–300A panel mounted CTs. Starter as an assembled unit with 1–5A C440 overload relay (C440A1A005SELAX or C440A2A005SELAX).

④ NEMA Size 6 starter available with 120–600A panel mounted CTs. Starter as an assembled unit with 1–5A C440 overload relay (C440A1A005SELAX or C440A2A005SELAX).

Features:
- Self powered
- Phase loss protection
- Current adjustment knob
- ±1% repeat accuracy
- 1NO and 1NC isolated contacts
- Predictive indication
- Enhanced protection and monitoring
- Communication capabilities

Wiring Diagram

Typical Wiring Diagram



Contents

Product Description

Eaton's duplex pump panels are controllers with or without disconnect, and designed to meet the requirement for two alternating pumps in critical installations. All duplex pump panels are provided standard with two three-phase magnetic starters and an automatic alternator to provide equal pump wear. During periods for heavy demand, both pumps will operate.

The enclosure options include UL Type 1, 12, 3R, or 4X.

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL Listed
- cUL Listed (indicates appropriate CSA Standard investigation)
- ABS Type Approved
- OSHPD Certified (OSP-0015-10)

Additional Reference

Catalog Number Selection

Freedom Duplex Pump Panels

EC N 68 2 1 A A F - __

Design
N = Freedom NEMA

Modification Codes
See **Tab 15**

Class	Page
68 = Duplex, non-combination	**V10-T6-26**
69 = Duplex, combination—fusible disconnect	**V10-T6-27**
70 = Duplex, combination—circuit breaker disconnect	**V10-T6-29**

NEMA Size
2 = Size 2
3 = Size 3
4 = Size 4
5 = Size 5
6 = Size 6
7 = Size 7
8 = Size 8
9 = Size 9

Enclosure Type
1 = Type 1—general purpose
2 = Type 3R—rainproof
3 = Type 4—watertight (painted steel)
4 = Type 4X—watertight (304-Grade stainless steel)
5 = Type 4X—corrosion (non-metallic)
6 = Type 7/9—bolted hazardous location
7 = Type 7/9—threaded hazardous location
8 = Type 12—dust-tight
9 = Type 4X—316-Grade

Disconnect Fuse Clip Ratings

A = None	**G** = 100A/600V R	**N** = 600A/600V R
B = 30A/250V R	**H** = 200A/250V R	**P** = 800A/600V L
C = 30A/600V R	**J** = 200A/600V R	**Q** = 1200A/600V L
D = 60A/250V R	**K** = 400A/250V R	**R** = 1600A/600V L
E = 60A/600V R	**L** = 400A/600V R	**S** = 2000A/600V L
F = 100A/250V R	**M** = 600A/250V R	**T** = By description

Circuit Breaker Ratings

A = None	**H** = 150A	**R** = 3000A
B = 3A	**J** = 250A	**T** = By description
C = 7A	**K** = 400A	**5** = 3A ①
D = 15A	**L** = 600A	**6** = 7A ①
E = 30A	**M** = 800A	**7** = 15A ①
F = 50A	**N** = 1000A	**8** = 30A ①
G = 100A	**P** = 1200A	**9** = 50A ①
	Q = 2000A	**I** = 100A ①
		2 = 70A

Cover Control
See table on **Page V10-T6-25**

Coil Voltage and/or Control Transformers
See tables below

Magnetic Coil Codes (System Voltage) ②

Code	Magnet Coil	Code	Magnet Coil	Code	Magnet Coil
A	120/60110/50	**K**	240/50	**U**	24/50
B	240/60220/50	**L**	380/50	**V**	32/50
C	460/60440/50	**M**	415/50	**W**	48/60
D	575/60550/50	**P**	12 Vdc	**X**	104–120/60
E	208/60	**Q**	24 Vdc	**Y**	48/50
G	550/50	**R**	48 Vdc	**Z**	By description
H	277/60	**S**	125 Vdc		
J	208–240/60	**T**	24/60		

Control Power Transformer Codes (System Voltage)

Code	Primary	Secondary
B	240/480–220/440 wired for 240V	120/60–110/50
C	240/480–220/440 wired for 480V	120/60–110/50
D	600/60–550/50	120/60–110/50
E	208/60	120/60
H	277/60	120/60
L	380/50	110/50
M	415/50	110/50
Q	208/60	24
R	240/480–220/440 wired for 240V	24
S	240/480–220/440 wired for 480V	24
T	600/60	24
U	277/60	24
V	380/50	24
W	415/50	24
X	240/480/600 wired for 480V	120
Y	240/480/600 wired for 480V	24
Z	By description	—

Notes

① Use for Sizes 0–3, HMCP 600V applications only.

② When control power transformer modification codes (**C1**–**C11**) are used or when starter class includes CPT (that is, ECN07, 18) see table to the right for system voltage code.

Cover Control

Non-Reversing

Flange Control Kits

For on-the-job conversion of Type 1, 3R, 4X and 12 enclosed starters. Knockouts are provided on the Type 1 flange. Type 3R, 4X and 12 have prepunched holes with removable hole plugs.

Factory Installed Pilot Devices

To order factory installed pilot devices, change the 9th character of the catalog number to the alpha shown in the table below. Example: to order an **ECN0514CAA** with START/STOP pushbuttons and a red pilot light, change the **A** to a **C**, for example, ECN0514C**C**A.

Type 1 Cover Control

All Other Cover Controls

Non-Reversing Cover Control

Description	Position 9 Alpha	Factory Installed Flange Control: Type 1 Non-Combination ①	Factory Installed Flange Control: All Others ②	Field Installation Kits: Type 1 Non-Combination ① Catalog Number	Field Installation Kits: All Others ② Catalog Number
No cover mounted pilot devices	**A**	■	■	**C400GK0**	—
START/STOP pushbuttons	**B**	■	■	**C400GK1**	**C400T1**
With red RUN pilot light	**C**	■	■	**C400GK12** ③	—
With red RUN/green OFF lights	**D**	■	■	**C400GK16** ③	—
ON/OFF pushbuttons	**E**	—	■	—	**C400T2**
With red RUN pilot light	**F**	—	■	—	—
With red RUN/green OFF lights	**G**	—	■	—	—
HAND/OFF/AUTO selector switch	**H**	■	■	**C400GK3**	**C400T12**
With red RUN pilot light	**J**	■	■	**C400GK32** ③	—
With red RUN/green OFF lights	**K**	■	■	**C400GK36** ③	—
START pushbutton	**L**	—	■	—	**C400T3**
ON pushbutton	**M**	—	■	—	**C400T4**
OFF pushbutton	**N**	—	■	—	**C400T5**
Red RUN pilot light	**P**	■	■	**C400GK42** ③	**C400T9** ③
Green OFF	**Q**	■	■	**C400GK41** ③	**C400T10** ③
Red RUN/green OFF pilot lights	**R**	■	■	**C400GK46** ③	**C400T11** ③
START/STOP selector switch	**S**	—	■	—	**C400T13**
With red RUN pilot light	**T**	—	■	—	—
With red RUN/green OFF lights	**U**	—	■	—	—
ON/OFF selector switch	**V**	—	■	—	**C400T14**
With red RUN pilot light	**W**	—	■	—	—
With red RUN/green OFF lights	**X**	—	■	—	—

Notes

① Type 1, NEMA Sizes 00–4 non-combination ONLY.

② Type 1, NEMA Sizes 5–9 non-combination PLUS all Type 3R, 4X, 12 non-combination PLUS all combination—NEMA sizes only.

③ Add code letter from the table below to catalog number for voltage—kits only. Example: C400T9**B**.

Rating	Code Letter	Rating	Code Letter	Rating	Code Letter
120V 60 Hz	**A**	240V 60 Hz	**B**	480V 60 Hz	**C**
208V 60 Hz	**E**	380V 50 Hz	**L**	600V 60 Hz	**D**

Non-Combination

Features

- Full voltage non-reversing non-combination
- Three-phase magnetic, three-pole
- Interchangeable heater OLR
- 600V maximum

Alternator

In normal operation, the alternator automatically selects alternate pumps for each succeeding cycle to equalize pump wear. During periods of heavy demand, both pumps will operate.

Product Selection

Class ECN68—Non-Combination Duplex Pump Panels with Automatic Alternator ①②

NEMA Size	Motor Voltage	Max. hp Rating	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X ③ Watertight and Dust-Tight Stainless Steel Catalog Number	Type 12 Dust-Tight Industrial External Reset ④ Catalog Number	Component Starter (Open) ⑤ Catalog Number
0	—	—	120	**ECN6801AAA**	**ECN6802AAA**	**ECN6804AAA**	**ECN6808AAA**	**AN16BN0AC**
	200	3	208	**ECN6801EAA**	**ECN6802EAA**	**ECN6804EAA**	**ECN6808EAA**	**AN16BN0EC**
	230		240	**ECN6801BAA**	**ECN6802BAA**	**ECN6804BAA**	**ECN6808BAA**	**AN16BN0BC**
	460	5	480	**ECN6801CAA**	**ECN6802CAA**	**ECN6804CAA**	**ECN6808CAA**	**AN16BN0CC**
	575		600	**ECN6801DAA**	**ECN6802DAA**	**ECN6804DAA**	**ECN6808DAA**	**AN16BN0DC**
1	—	—	120	**ECN6811AAA**	**ECN6812AAA**	**ECN6814AAA**	**ECN6818AAA**	**AN16DN0AB**
	200	7-1/2	208	**ECN6811EAA**	**ECN6812EAA**	**ECN6814EAA**	**ECN6818EAA**	**AN16DN0EB**
	230		240	**ECN6811BAA**	**ECN6812BAA**	**ECN6814BAA**	**ECN6818BAA**	**AN16DN0BB**
	460	10	480	**ECN6811CAA**	**ECN6812CAA**	**ECN6814CAA**	**ECN6818CAA**	**AN16DN0CB**
	575		600	**ECN6811DAA**	**ECN6812DAA**	**ECN6814DAA**	**ECN6818DAA**	**AN16DN0DB**
2	—	—	120	**ECN6821AAA**	**ECN6822AAA**	**ECN6824AAA**	**ECN6828AAA**	**AN16GN0AB**
	200	10	208	**ECN6821EAA**	**ECN6822EAA**	**ECN6824EAA**	**ECN6828EAA**	**AN16GN0EB**
	230	15	240	**ECN6821BAA**	**ECN6822BAA**	**ECN6824BAA**	**ECN6828BAA**	**AN16GN0BB**
	460	25	480	**ECN6821CAA**	**ECN6822CAA**	**ECN6824CAA**	**ECN6828CAA**	**AN16GN0CB**
	575		600	**ECN6821DAA**	**ECN6822DAA**	**ECN6824DAA**	**ECN6828DAA**	**AN16GN0DB**
3	—	—	120	**ECN6831AAA**	**ECN6832AAA**	**ECN6834AAA**	**ECN6838AAA**	**AN16KN0A**
	200	25	208	**ECN6831EAA**	**ECN6832EAA**	**ECN6834EAA**	**ECN6838EAA**	**AN16KN0E**
	230	30	240	**ECN6831BAA**	**ECN6832BAA**	**ECN6834BAA**	**ECN6838BAA**	**AN16KN0B**
	460	50	480	**ECN6831CAA**	**ECN6832CAA**	**ECN6834CAA**	**ECN6838CAA**	**AN16KN0C**
	575		600	**ECN6831DAA**	**ECN6832DAA**	**ECN6834DAA**	**ECN6838DAA**	**AN16KN0D**
4	—	—	120	**ECN6841AAA**	**ECN6842AAA**	**ECN6844AAA**	**ECN6848AAA**	**AN16NN0A**
	200	40	208	**ECN6841EAA**	**ECN6842EAA**	**ECN6844EAA**	**ECN6848EAA**	**AN16NN0E**
	230	50	240	**ECN6841BAA**	**ECN6842BAA**	**ECN6844BAA**	**ECN6848BAA**	**AN16NN0B**
	460	100	480	**ECN6841CAA**	**ECN6842CAA**	**ECN6844CAA**	**ECN6848CAA**	**AN16NN0C**
	575		600	**ECN6841DAA**	**ECN6842DAA**	**ECN6844DAA**	**ECN6848DAA**	**AN16NN0D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each motor). For heater pack selection, see **Tab 15**.

① Circuitry arranged for two-pole pilot devices.

② All duplexes come standard with alternator. To remove, add modification code **D12**.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN6804AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

④ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

⑤ Requires two starters.

Combination

Features

- Full voltage non-reversing combination
- Three-phase magnetic, three-pole
- Interchangeable heater OLR
- 600V maximum

Alternator

In normal operation, the alternator automatically selects alternate pumps for each succeeding cycle to equalize pump wear. During periods of heavy demand, both pumps will operate.

Product Selection

Class ECN69—Combination Duplex Pump Panels with Automatic Alternator—Fusible Disconnect ①②

NEMA Size	Motor Voltage	Max. hp Rating Dual Element Fuses	Magnet Coil Voltage ③	Fuse Clip Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X ④ Watertight and Dust-Tight Stainless Steel Catalog Number	Type 12 Dust-Tight Industrial External Reset ⑤⑥ Catalog Number	Component Starter (Open) ⑦ Catalog Number
0	230	3	120	30A	ECN6901AAB	ECN6902AAB	ECN6904AAB	ECN6908AAB	AN16BN0AC
	460	5			ECN6901AAC	ECN6902AAC	ECN6904AAC	ECN6908AAC	AN16BN0AC
	200	3	208		ECN6901EAB	ECN6902EAB	ECN6904EAB	ECN6908EAB	AN16BN0EC
	230		240		ECN6901BAB	ECN6902BAB	ECN6904BAB	ECN6908BAB	AN16BN0BC
	460	5	480		ECN6901CAC	ECN6902CAC	ECN6904CAC	ECN6908CAC	AN16BN0CC
	575		600		ECN6901DAC	ECN6902DAC	ECN6904DAC	ECN6908DAC	AN16BN0DC
1	230	7-1/2	120	30A	ECN6911AAB	ECN6912AAB	ECN6914AAB	ECN6918AAB	AN16DN0AB
	460	10			ECN6911AAC	ECN6912AAC	ECN6914AAC	ECN6918AAC	AN16DN0AB
	200	7-1/2	208		ECN6911EAB	ECN6912EAB	ECN6914EAB	ECN6918EAB	AN16DN0EB
	230		240		ECN6911BAB	ECN6912BAB	ECN6914BAB	ECN6918BAB	AN16DN0BB
	460	10	480		ECN6911CAC	ECN6912CAC	ECN6914CAC	ECN6918CAC	AN16DN0CB
	575		600		ECN6911DAC	ECN6912DAC	ECN6914DAC	ECN6918DAC	AN16DN0DB
2	230	15	120	60A	ECN6921AAD	ECN6922AAD	ECN6924AAD	ECN6928AAD	AN16GN0AB
	460	25			ECN6921AAE	ECN6922AAE	ECN6924AAE	ECN6928AAE	AN16GN0AB
	200	10	208		ECN6921EAD	ECN6922EAD	ECN6924EAD	ECN6928EAD	AN16GN0EB
	230	15	240		ECN6921BAD	ECN6922BAD	ECN6924BAD	ECN6928BAD	AN16GN0BB
	460	25	480		ECN6921CAE	ECN6922CAE	ECN6924CAE	ECN6928CAE	AN16GN0CB
	575		600		ECN6921DAE	ECN6922DAE	ECN6924DAE	ECN6928DAE	AN16GN0DB
3	230	30	120	100A	ECN6931AAF	ECN6932AAF	ECN6934AAF	ECN6938AAF	AN16KN0A
	460	50			ECN6931AAG	ECN6932AAG	ECN6934AAG	ECN6938AAG	AN16KN0A
	200	25	208		ECN6931EAF	ECN6932EAF	ECN6934EAF	ECN6938EAF	AN16KN0E
	230	30	240		ECN6931BAF	ECN6932BAF	ECN6934BAF	ECN6938BAF	AN16KN0B
	460	50	480		ECN6931CAG	ECN6932CAG	ECN6934CAG	ECN6938CAG	AN16KN0C
	575		600		ECN6931DAG	ECN6932DAG	ECN6934DAG	ECN6938DAG	AN16KN0D
4	230	50	120	200A	ECN6941AAH	ECN6942AAH	ECN6944AAH	ECN6948AAH	AN16NN0A
	460	100			ECN6941AAJ	ECN6942AAJ	ECN6944AAJ	ECN6948AAJ	AN16NN0A
	200	40	208		ECN6941EAH	ECN6942EAH	ECN6944EAH	ECN6948EAH	AN16NN0E
	230	50	240		ECN6941BAH	ECN6942BAH	ECN6944BAH	ECN6948BAH	AN16NN0B
	460	100	480		ECN6941CAJ	ECN6942CAJ	ECN6944CAJ	ECN6948CAJ	AN16NN0C
	575		600		ECN6941DAJ	ECN6942DAJ	ECN6944DAJ	ECN6948DAJ	AN16NN0D

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each motor). For heater pack selection, see **Tab 15**.

① Circuitry arranged for two-pole pilot devices.

② All duplexes come standard with alternator. To remove, add modification code **D12**.

③ For 200V and 575V motors—starters with 120V coil (for separate control) are available. To order, substitute the letter **A** for the eighth character of the listed catalog number.

④ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECN690**4**AAB. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

⑤ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

⑥ Type 12 enclosure is without safety door interlock.

⑦ Requires two starters.

Class ECN69—Combination Duplex Pump Panels with Automatic Alternator—Non-Fusible Disconnect ①②

NEMA Size	Motor Voltage	Max. hp Rating Dual Element Fuses	Magnet Coil Voltage	Disconnect Amps.	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X ③ Watertight and Dust-Tight Stainless Steel Catalog Number	Type 12 Dust-Tight Industrial External Reset ④⑤ Catalog Number	Component Starter (Open) ⑥ Catalog Number
0	—	—	120	30A	**ECN6901AAA**	**ECN6902AAA**	**ECN6904AAA**	**ECN6908AAA**	**AN16BN0AC**
	200	3	208		**ECN6901EAA**	**ECN6902EAA**	**ECN6904EAA**	**ECN6908EAA**	**AN16BN0EC**
	230		240		**ECN6901BAA**	**ECN6902BAA**	**ECN6904BAA**	**ECN6908BAA**	**AN16BN0BC**
	460	5	480		**ECN6901CAA**	**ECN6902CAA**	**ECN6904CAA**	**ECN6908CAA**	**AN16BN0CC**
	575		600		**ECN6901DAA**	**ECN6902DAA**	**ECN6904DAA**	**ECN6908DAA**	**AN16BN0DC**
1	—	—	120	30A	**ECN6911AAA**	**ECN6912AAA**	**ECN6914AAA**	**ECN6918AAA**	**AN16DN0AB**
	200	7-1/2	208		**ECN6911EAA**	**ECN6912EAA**	**ECN6914EAA**	**ECN6918EAA**	**AN16DN0EB**
	230		240		**ECN6911BAA**	**ECN6912BAA**	**ECN6914BAA**	**ECN6918BAA**	**AN16DN0BB**
	460	10	480		**ECN6911CAA**	**ECN6912CAA**	**ECN6914CAA**	**ECN6918CAA**	**AN16DN0CB**
	575		600		**ECN6911DAA**	**ECN6912DAA**	**ECN6914DAA**	**ECN6918DAA**	**AN16DN0DB**
2	—	—	120	60A	**ECN6921AAA**	**ECN6922AAA**	**ECN6924AAA**	**ECN6928AAA**	**AN16GN0AB**
	200	10	208		**ECN6921EAA**	**ECN6922EAA**	**ECN6924EAA**	**ECN6928EAA**	**AN16GN0EB**
	230	15	240		**ECN6921BAA**	**ECN6922BAA**	**ECN6924BAA**	**ECN6928BAA**	**AN16GN0BB**
	460	25	480		**ECN6921CAA**	**ECN6922CAA**	**ECN6924CAA**	**ECN6928CAA**	**AN16GN0CB**
	575		600		**ECN6921DAA**	**ECN6922DAA**	**ECN6924DAA**	**ECN6928DAA**	**AN16GN0DB**
3	—	—	120	100A	**ECN6931AAA**	**ECN6932AAA**	**ECN6934AAA**	**ECN6938AAA**	**AN16KN0A**
	200	25	208		**ECN6931EAA**	**ECN6932EAA**	**ECN6934EAA**	**ECN6938EAA**	**AN16KN0E**
	230	30	240		**ECN6931BAA**	**ECN6932BAA**	**ECN6934BAA**	**ECN6938BAA**	**AN16KN0B**
	460	50	480		**ECN6931CAA**	**ECN6932CAA**	**ECN6934CAA**	**ECN6938CAA**	**AN16KN0C**
	575		600		**ECN6931DAA**	**ECN6932DAA**	**ECN6934DAA**	**ECN6938DAA**	**AN16KN0D**
4	—	—	120	200A	**ECN6941AAA**	**ECN6942AAA**	**ECN6944AAA**	**ECN6948AAA**	**AN16NN0A**
	200	40	208		**ECN6941EAA**	**ECN6942EAA**	**ECN6944EAA**	**ECN6948EAA**	**AN16NN0E**
	230	50	240		**ECN6941BAA**	**ECN6942BAA**	**ECN6944BAA**	**ECN6948BAA**	**AN16NN0B**
	460	100	480		**ECN6941CAA**	**ECN6942CAA**	**ECN6944CAA**	**ECN6948CAA**	**AN16NN0C**
	575		600		**ECN6941DAA**	**ECN6942DAA**	**ECN6944DAA**	**ECN6948DAA**	**AN16NN0D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each motor). For heater pack selection, see **Tab 15**.

① Circuitry arranged for two-pole pilot devices.

② All duplexes come standard with alternator. To remove, add modification code **D12**.

③ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN690**4**AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

④ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

⑤ Type 12 enclosure is without safety door interlock.

⑥ Requires two starters.

Class ECN70—Combination Duplex Pump Panels with Automatic Alternator—Circuit Breaker ①②

NEMA Size	Motor Voltage	Max. hp Rating	Magnet Coil Voltage ③	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X ④ Watertight and Dust-Tight Stainless Steel Catalog Number	Type 12 Dust-Tight Industrial External Reset ⑤⑥ Catalog Number	Component Starter (Open) ⑦ Catalog Number
0	200	1	208	7A	**ECN7001EAC**	**ECN7002EAC**	**ECN7004EAC**	**ECN7008EAC**	**AN16BN0EC**
		3		15A	**ECN7001EAD**	**ECN7002EAD**	**ECN7004EAD**	**ECN7008EAD**	
	230	1	240	7A	**ECN7001BAC**	**ECN7002BAC**	**ECN7004BAC**	**ECN7008BAC**	**AN16BN0BC**
		3		15A	**ECN7001BAD**	**ECN7002BAD**	**ECN7004BAD**	**ECN7008BAD**	
	460	3/4	480	3A	**ECN7001CAB**	**ECN7002CAB**	**ECN7004CAB**	**ECN7008CAB**	**AN16BN0CC**
		2		7A	**ECN7001CAC**	**ECN7002CAC**	**ECN7004CAC**	**ECN7008CAC**	
		5		15A	**ECN7001CAD**	**ECN7002CAD**	**ECN7004CAD**	**ECN7008CAD**	
	575	1	600	3A	**ECN7001DAB**	**ECN7002DAB**	**ECN7004DAB**	**ECN7008DAB**	**AN16BN0DC**
		3		7A	**ECN7001DAC**	**ECN7002DAC**	**ECN7004DAC**	**ECN7008DAC**	
				15A	**ECN7001DAD**	**ECN7002DAD**	**ECN7004DAD**	**ECN7008DAD**	
1	200	1	208	7A	**ECN7011EAC**	**ECN7012EAC**	**ECN7014EAC**	**ECN7018EAC**	**AN16DN0EB**
		2		15A	**ECN7011EAD**	**ECN7012EAD**	**ECN7014EAD**	**ECN7018EAD**	
		7-1/2		30A	**ECN7011EAE**	**ECN7012EAE**	**ECN7014EAE**	**ECN7018EAE**	
	230	1	240	7A	**ECN7011BAC**	**ECN7012BAC**	**ECN7014BAC**	**ECN7018BAC**	**AN16DN0BB**
		2		15A	**ECN7011BAD**	**ECN7012BAD**	**ECN7014BAD**	**ECN7018BAD**	
		7-1/2		30A	**ECN7011BAE**	**ECN7012BAE**	**ECN7014BAE**	**ECN7018BAE**	
	460	3/4	480	3A	**ECN7011CAB**	**ECN7012CAB**	**ECN7014CAB**	**ECN7018CAB**	**AN16DN0CB**
		2		7A	**ECN7011CAC**	**ECN7012CAC**	**ECN7014CAC**	**ECN7018CAC**	
		5		15A	**ECN7011CAD**	**ECN7012CAD**	**ECN7014CAD**	**ECN7018CAD**	
		10		30A	**ECN7011CAE**	**ECN7012CAE**	**ECN7014CAE**	**ECN7018CAE**	
	575	1	600	3A	**ECN7011DAB**	**ECN7012DAB**	**ECN7014DAB**	**ECN7018DAB**	**AN16DN0DB**
		3		7A	**ECN7011DAC**	**ECN7012DAC**	**ECN7014DAC**	**ECN7018DAC**	
		7-1/2		15A	**ECN7011DAD**	**ECN7012DAD**	**ECN7014DAD**	**ECN7018DAD**	
		10		30A	**ECN7011DAE**	**ECN7012DAE**	**ECN7014DAE**	**ECN7018DAE**	
2	200	10	208	50A	**ECN7021EAF**	**ECN7022EAF**	**ECN7024EAF**	**ECN7028EAF**	**AN16GN0EB**
	230	15	240		**ECN7021BAF**	**ECN7022BAF**	**ECN7024BAF**	**ECN7028BAF**	**AN16GN0BB**
	460	25	480		**ECN7021CAF**	**ECN7022CAF**	**ECN7024CAF**	**ECN7028CAF**	**AN16GN0CB**
	575		600		**ECN7021DAF**	**ECN7022DAF**	**ECN7024DAF**	**ECN7028DAF**	**AN16GN0DB**
3	200	25	208	100A	**ECN7031EAG**	**ECN7032EAG**	**ECN7034EAG**	**ECN7038EAG**	**AN16KN0E**
	230	30	240		**ECN7031BAG**	**ECN7032BAG**	**ECN7034BAG**	**ECN7038BAG**	**AN16KN0B**
	460	50	480		**ECN7031CAG**	**ECN7032CAG**	**ECN7034CAG**	**ECN7038CAG**	**AN16KN0C**
	575		600		**ECN7031DAI**	**ECN7032DAI**	**ECN7034DAI**	**ECN7038DAI**	**AN16KN0D**
4	200	40	208	150A	**ECN7041EAH**	**ECN7042EAH**	**ECN7044EAH**	**ECN7048EAH**	**AN16NN0E**
	230	50	240		**ECN7041BAH**	**ECN7042BAH**	**ECN7044BAH**	**ECN7048BAH**	**AN16NN0B**
	460	100	480		**ECN7041CAH**	**ECN7042CAH**	**ECN7044CAH**	**ECN7048CAH**	**AN16NN0C**
	575		600		**ECN7041DAH**	**ECN7042DAH**	**ECN7044DAH**	**ECN7048DAH**	**AN16NN0D**

Notes

Starters do not include heater packs. Select two cartons of three heater packs (two overload relays—one for each motor). For heater pack selection, see **Tab 15**.

① Circuitry arranged for two-pole pilot devices.

② All duplexes come standard with alternator. To remove, add modification code **D12**.

③ For 200V and 575V motors—starters with 120V coil (for separate control) are available. To order, substitute the letter **A** for the eighth character of the listed catalog number.

④ The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECN700**4**EAC. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

⑤ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

⑥ Type 12 enclosure is without safety door interlock.

⑦ Requires two starters.

HVAC Starters

7.1 Freedom Full Voltage HVAC Starters

Freedom Full Voltage HVAC Starters

Contents

Product Description

Eaton's ECH line of combination starters was developed specifically for customers in the HVAC industry. The ECH product combines the requirements of motor overload and short-circuit protection into one package. These starters were designed to be compact and to offer the basic features prevalent in the HVAC marketplace. The line includes the Freedom line of FVNR NEMA starters with either (C306) interchangeable heaters or solid-state overload relays, a CPT, HOA and red pilot light.

Features

- Compact design
- Type 1 enclosure
- CPT available
- Bimetal or solid-state overload options
- 30 mm pilot devices
- HOA
- Red RUN pilot
- Disconnect switch or HMCPE
- NEMA Sizes 0–2

Interchangeable Heater Features

C306 overload relays are designed for use with CE or CN non-reversing and reversing contactors. Four sizes are available for overload protection up to 144A.

- Selectable manual or automatic reset operation
- Interchangeable heater packs adjustable ±24% to match motor FLA and calibrated for use with 1.0 and 1.15 service factor motors. Heater packs for 32A overload relay will mount in 75A overload relay—useful in derating applications such as jogging
- Class 10 or 20 heater packs
- Load lugs built into relay base
- Bimetallic, ambient compensated operated. Trip free mechanism
- Electrically isolated NO-NC contacts (pull RESET button to test). (Electrical Ratings see **Tab 17**)
- Overload trip indication
- Shrouded or fingerproof terminals to reduce possibility of electrical shock
- Meets UL 508 single-phasing requirements
- UL listed, CSA certified, NEMA compliance

Solid-State Overload Features

- Reliable, accurate, electronic motor protection
- Easy to select, install and maintain
- Flexible, intelligent design

Size/Range

- Broad FLA range (0.33–100A)
- Selectable trip class (10A, 10, 20, 30)
- Direct mounting to NEMA contactors
- Most compact electronic overload in its class

Motor Control

- Two B600 alarm (NO) and fault (NC) contacts
- Test/Trip button

Motor Protection

- Thermal overload
- Phase loss
- Selectable (ON/OFF) phase unbalance
- Selectable (ON/OFF) ground fault (if selected GF SSOL relay)

User Interface

- Large FLA selection dial
- Trip status indicator
- Operating mode LED
- DIP switch selectable trip class, phase unbalance and ground fault
- Selectable Auto/Manual reset

Feature Options

- Remote reset
- 120 Vac
- 24 Vac
- 24 Vdc
- Tamper-proof cover
- Communications modules

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL Listed
- cUL Listed (indicates appropriate CSA Standard investigation)
- ABS Type Approved
- OSHPD Certified (OSP-0015-10)

Additional Reference

Catalog Number Selection

Freedom HVAC Starters

EC H 22 0 1 A H ___ - ___ ___ ___

Design Type
H = HVAC control

Modifications
See table on **Page V10-T7-8**

Disconnect (Fuse Block or MCP)

Class	Page
16 = Combination non-reversing starter—fusible disconnect	**V10-T7-4**
18 = Combination non-reversing starter—fusible disconnect with CPT	**V10-T7-5**
22 = Combination non-reversing starter—circuit breaker	**V10-T7-6**
24 = Combination non-reversing starter—circuit breaker with CPT	**V10-T7-7**

Cover Control
See table below

Magnet Coil/CPT Voltage

Without CPT	CPT Primary/Secondary
A = 120V/60 Hz	**B** = 240V/120V
B = 240V/60 Hz	**C** = 480V/120V
C = 460V/60 Hz	**D** = 575V/120V
D = 575V/60 Hz	**E** = 208V/120V
E = 208V/60 Hz	**S** = 480V/24V
T = 24V/60 Hz	**T** = 600V/24V

NEMA Size
0 = Size 0
1 = Size 1
2 = Size 2
3 = Size 3

Enclosure Type
1 = Type 1
2 = Type 3R
8 = Type 12

Cover Control

Pilot Device Factory Installation

Description	Position 9 Alpha
None	**A**
HAND/OFF/AUTO	**H**
HAND/OFF/AUTO with red RUN pilot	**J**

Product Selection

Class ECH16—Combination Non-Reversing Starter—Fusible Disconnect

NEMA Size	Motor Voltage	Maximum hp	Coil Voltage	Type 1 General Purpose Catalog Number ①	Type 3R Rainproof Catalog Number ①	Type 12 Dust-Tight Industrial Catalog Number ①	Type 1 with HOA Catalog Number ①	Type 1 with HOA and Red RUN Pilot Catalog Number ①	Component Starter (Open) Catalog Number ②
0	—	—	120	ECH1601AA_	ECH1602AA_	ECH1608AA_	ECH1601AH_	ECH1601AJ_	AN16BN0AC
	—	—	24	ECH1601TA_	ECH1602TA_	ECH1608TA_	ECH1601TH_	ECH1601TJ_	AN16BN0TC
	200	3	208	ECH1601EA_	ECH1602EA_	ECH1608EA_	ECH1601EH_	ECH1601EJ_	AN16BN0EC
	240		240	ECH1601BA_	ECH1602BA_	ECH1608BA_	ECH1601BH_	ECH1601BJ_	AN16BN0BC
	460	5	460	ECH1601CA_	ECH1602CA_	ECH1608CA_	ECH1601CH_	ECH1601CJ_	AN16BN0CC
	575		575	ECH1601DA_	ECH1602DA_	ECH1608DA_	ECH1601DH_	ECH1601DJ_	AN16BN0DC
1	—	—	120	ECH1611AA_	ECH1612AA_	ECH1618AA_	ECH1611AH_	ECH1611AJ_	AN16DN0AB
	—	—	24	ECH1611TA_	ECH1612TA_	ECH1618TA_	ECH1611TH_	ECH1611TJ_	AN16DN0TB
	200	7-1/2	208	ECH1611EA_	ECH1612EA_	ECH1618EA_	ECH1611EH_	ECH1611EJ_	AN16DN0EB
	240		240	ECH1611BA_	ECH1612BA_	ECH1618BA_	ECH1611BH_	ECH1611BJ_	AN16DN0BB
	460	10	460	ECH1611CA_	ECH1612CA_	ECH1618CA_	ECH1611CH_	ECH1611CJ_	AN16DN0CB
	575		575	ECH1611DA_	ECH1612DA_	ECH1618DA_	ECH1611DH_	ECH1611DJ_	AN16DN0DB
2	—	—	120	ECH1621AA_	ECH1622AA_	ECH1628AA_	ECH1621AH_	ECH1621AJ_	AN16GN0AB
	—	—	24	ECH1621TA_	ECH1622TA_	ECH1628TA_	ECH1621TH_	ECH1621TJ_	AN16GN0TB
	200	10	208	ECH1621EA_	ECH1622EA_	ECH1628EA_	ECH1621EH_	ECH1621EJ_	AN16GN0EB
	240	15	240	ECH1621BA_	ECH1622BA_	ECH1628BA_	ECH1621BH_	ECH1621BJ_	AN16GN0BB
	460	25	460	ECH1621CA_	ECH1622CA_	ECH1628CA_	ECH1621CH_	ECH1621CJ_	AN16GN0CB
	575		575	ECH1621DA_	ECH1622DA_	ECH1628DA_	ECH1621DH_	ECH1621DJ_	AN16GN0DB
3	—	—	120	ECH1631AA_	ECH1632AA_	ECH1638AA_	ECH1631AH_	ECH1631AJ_	AN16KN0A
	—	—	24	ECH1631TA_	ECH1632TA_	ECH1638TA_	ECH1631TH_	ECH1631TJ_	AN16KN0T
	200	25	208	ECH1631EA_	ECH1632EA_	ECH1638EA_	ECH1631EH_	ECH1631EJ_	AN16KN0E
	240	30	240	ECH1631BA_	ECH1632BA_	ECH1638BA_	ECH1631BH_	ECH1631BJ_	AN16KN0B
	460	50	460	ECH1631CA_	ECH1632CA_	ECH1638CA_	ECH1631CH_	ECH1631CJ_	AN16KN0C
	575		575	ECH1631DA_	ECH1632DA_	ECH1638DA_	ECH1631DH_	ECH1631DJ_	AN16KN0D

Notes

① A "–" denotes catalog numbers are incomplete without the fuse block code.
To complete the catalog number, select the appropriate code from the following table:

Rating	Fuse Block Code
No block	**A**
30A/600V "J"	**C**
60A/600V "J"	**E** (Size 2 only)
100A/600V "J"	**G**

② If the solid-state overload option is selected, refer to Publication Number TD03408001E, Relay for MCCs and Enclosed Control Technical Data, for component selection.

Class ECH18—Combination Non-Reversing Starter—Fusible Disconnect with CPT

NEMA Size	Motor Voltage	Maximum hp	CPT Primary/ Secondary (Coil Voltage)	Type 1 General Purpose Catalog Number ①	Type 3R Rainproof Catalog Number ①	Type 12 Dust-Tight Industrial Catalog Number ①	Type 1 with HOA Catalog Number ①	Type 1 with HOA and Red RUN Pilot Catalog Number ①	Component Starter (Open) Catalog Number ②
0	200	3	208/120	**ECH1801EA_**	**ECH1802EA_**	**ECH1808EA_**	**ECH1801EH_**	**ECH1801EJ_**	**AN16BN0EC**
	240		240/120	**ECH1801BA_**	**ECH1802BA_**	**ECH1808BA_**	**ECH1801BH_**	**ECH1801BJ_**	**AN16BN0BC**
	460	5	460/120	**ECH1801CA_**	**ECH1802CA_**	**ECH1808CA_**	**ECH1801CH_**	**ECH1801CJ_**	**AN16BN0CC**
	575		575/120	**ECH1801DA_**	**ECH1802DA_**	**ECH1808DA_**	**ECH1801DH_**	**ECH1801DJ_**	**AN16BN0DC**
1	200	7-1/2	208/120	**ECH1811EA_**	**ECH1812EA_**	**ECH1818EA_**	**ECH1811EH_**	**ECH1811EJ_**	**AN16DN0EB**
	240		240/120	**ECH1811BA_**	**ECH1812BA_**	**ECH1818BA_**	**ECH1811BH_**	**ECH1811BJ_**	**AN16DN0BB**
	460	10	460/120	**ECH1811CA_**	**ECH1812CA_**	**ECH1818CA_**	**ECH1811CH_**	**ECH1811CJ_**	**AN16DN0CB**
	575		575/120	**ECH1811DA_**	**ECH1812DA_**	**ECH1818DA_**	**ECH1811DH_**	**ECH1811DJ_**	**AN16DN0DB**
2	200	10	208/120	**ECH1821EA_**	**ECH1822EA_**	**ECH1828EA_**	**ECH1821EH_**	**ECH1821EJ_**	**AN16GN0EB**
	240	15	240/120	**ECH1821BA_**	**ECH1822BA_**	**ECH1828BA_**	**ECH1821BH_**	**ECH1821BJ_**	**AN16GN0BB**
	460	25	460/120	**ECH1821CA_**	**ECH1822CA_**	**ECH1828CA_**	**ECH1821CH_**	**ECH1821CJ_**	**AN16GN0CB**
	575		575/120	**ECH1821DA_**	**ECH1822DA_**	**ECH1828DA_**	**ECH1821DH_**	**ECH1821DJ_**	**AN16GN0DB**
3	200	25	208/120	**ECH1831EA_**	**ECH1832EA_**	**ECH1838EA_**	**ECH1831EH_**	**ECH1831EJ_**	**AN16KN0E**
	240	30	240/120	**ECH1831BA_**	**ECH1832BA_**	**ECH1838BA_**	**ECH1831BH_**	**ECH1831BJ_**	**AN16KN0B**
	460	50	460/120	**ECH1831CA_**	**ECH1832CA_**	**ECH1838CA_**	**ECH1831CH_**	**ECH1831CJ_**	**AN16KN0C**
	575		575/120	**ECH1831DA_**	**ECH1832DA_**	**ECH1838DA_**	**ECH1831DH_**	**ECH1831DJ_**	**AN16KN0D**

Notes

① A "–" denotes catalog numbers are incomplete without the fuse block code.
To complete the catalog number, select the appropriate code from the following table:

Rating	Fuse Block Code
No block	**A**
30A/600V "J"	**C**
60A/600V "J"	**E** (Size 2 only)
100A/600V "J"	**G**

② If the solid-state overload option is selected, refer to Publication Number TD03408001E, Relay for MCCs and Enclosed Control Technical Data, for component selection.

Class ECH22—Combination Non-Reversing Starter—Circuit Breaker

NEMA Size	Motor Voltage	Maximum hp	Coil Voltage	Type 1 General Purpose Catalog Number ①	Type 3R Rainproof Catalog Number ①	Type 12 Dust-Tight Industrial Catalog Number ①	Type 1 with HOA Catalog Number ①	Type 1 with HOA and Red RUN Pilot Catalog Number ①	Component Starter (Open) Catalog Number ②
0	—	—	120	**ECH2201AA_**	**ECH2202AA_**	**ECH2208AA_**	**ECH2201AH_**	**ECH2201AJ_**	**AN16BN0AC**
	—	—	24	**ECH2201TA_**	**ECH2202TA_**	**ECH2208TA_**	**ECH2201TH_**	**ECH2201TJ_**	**AN16BN0TC**
	200	3	208	**ECH2201EA_**	**ECH2202EA_**	**ECH2208EA_**	**ECH2201EH_**	**ECH2201EJ_**	**AN16BN0EC**
	240		240	**ECH2201BA_**	**ECH2202BA_**	**ECH2208BA_**	**ECH2201BH_**	**ECH2201BJ_**	**AN16BN0BC**
	460	5	460	**ECH2201CA_**	**ECH2202CA_**	**ECH2208CA_**	**ECH2201CH_**	**ECH2201CJ_**	**AN16BN0CC**
	575		575	**ECH2201DA_**	**ECH2202DA_**	**ECH2208DA_**	**ECH2201DH_**	**ECH2201DJ_**	**AN16BN0DC**
1	—	—	120	**ECH2211AA_**	**ECH2212AA_**	**ECH2218AA_**	**ECH2211AH_**	**ECH2211AJ_**	**AN16DN0AB**
	—	—	24	**ECH2211TA_**	**ECH2212TA_**	**ECH2218TA_**	**ECH2211TH_**	**ECH2211TJ_**	**AN16DN0TB**
	200	7-1/2	208	**ECH2211EA_**	**ECH2212EA_**	**ECH2218EA_**	**ECH2211EH_**	**ECH2211EJ_**	**AN16DN0EB**
	240		240	**ECH2211BA_**	**ECH2212BA_**	**ECH2218BA_**	**ECH2211BH_**	**ECH2211BJ_**	**AN16DN0BB**
	460	10	460	**ECH2211CA_**	**ECH2212CA_**	**ECH2218CA_**	**ECH2211CH_**	**ECH2211CJ_**	**AN16DN0CB**
	575		575	**ECH2211DA_**	**ECH2212DA_**	**ECH2218DA_**	**ECH2211DH_**	**ECH2211DJ_**	**AN16DN0DB**
2	—	—	120	**ECH2221AA_**	**ECH2222AA_**	**ECH2228AA_**	**ECH2221AH_**	**ECH2221AJ_**	**AN16GN0AB**
	—	—	24	**ECH2221TA_**	**ECH2222TA_**	**ECH2228TA_**	**ECH2221TH_**	**ECH2221TJ_**	**AN16GN0TB**
	200	10	208	**ECH2221EA_**	**ECH2222EA_**	**ECH2228EA_**	**ECH2221EH_**	**ECH2221EJ_**	**AN16GN0EB**
	240	15	240	**ECH2221BA_**	**ECH2222BA_**	**ECH2228BA_**	**ECH2221BH_**	**ECH2221BJ_**	**AN16GN0BB**
	460	25	460	**ECH2221CA_**	**ECH2222CA_**	**ECH2228CA_**	**ECH2221CH_**	**ECH2221CJ_**	**AN16GN0CB**
	575		575	**ECH2221DA_**	**ECH2222DA_**	**ECH2228DA_**	**ECH2221DH_**	**ECH2221DJ_**	**AN16GN0DB**
3	—	—	120	**ECH2231AA_**	**ECH2232AA_**	**ECH2238AA_**	**ECH2231AH_**	**ECH2231AJ_**	**AN16KN0A**
	—	—	24	**ECH2231TA_**	**ECH2232TA_**	**ECH2238TA_**	**ECH2231TH_**	**ECH2231TJ_**	**AN16KN0T**
	200	25	208	**ECH2231EA_**	**ECH2232EA_**	**ECH2238EA_**	**ECH2231EH_**	**ECH2231EJ_**	**AN16KN0E**
	240	30	240	**ECH2231BA_**	**ECH2232BA_**	**ECH2238BA_**	**ECH2231BH_**	**ECH2231BJ_**	**AN16KN0B**
	460	50	460	**ECH2231CA_**	**ECH2232CA_**	**ECH2238CA_**	**ECH2231CH_**	**ECH2231CJ_**	**AN16KN0C**
	575		575	**ECH2231DA_**	**ECH2232DA_**	**ECH2238DA_**	**ECH2231DH_**	**ECH2231DJ_**	**AN16KN0D**

Notes

① A "–" denotes catalog numbers are incomplete without the magnetic circuit protector code. To complete the catalog number, select the appropriate code from the following table:

Rating	Magnetic Circuit Protector Code	Rating	Magnetic Circuit Protector Code
—	**A**	30A	**E**
3A	**B**	50A	**F**
7A	**C**	100A	**G**
15A	**D**		

② If the solid-state overload option is selected, refer to Publication Number TD03408001E, Relay for MCCs and Enclosed Control Technical Data, for component selection.

Class ECH24—Combination Non-Reversing Starter—Circuit Breaker with CPT

NEMA Size	Motor Voltage	Maximum hp	CPT Primary/ Secondary (Coil Voltage)	Type 1 General Purpose Catalog Number ①	Type 3R Rainproof Catalog Number ①	Type 12 Dust-Tight Industrial Catalog Number ①	Type 1 with HOA Catalog Number ①	Type 1 with HOA and Red RUN Pilot Catalog Number ①	Component Starter (Open) Catalog Number ②
0	200	3	208/120	**ECH2401EA_**	**ECH2402EA_**	**ECH2408EA_**	**ECH2401EH_**	**ECH2401EJ_**	**AN16BN0EC**
	240		240/120	**ECH2401BA_**	**ECH2402BA_**	**ECH2408BA_**	**ECH2401BH_**	**ECH2401BJ_**	**AN16BN0BC**
	460	5	460/120	**ECH2401CA_**	**ECH2402CA_**	**ECH2408CA_**	**ECH2401CH_**	**ECH2401CJ_**	**AN16BN0CC**
	575		575/120	**ECH2401DA_**	**ECH2402DA_**	**ECH2408DA_**	**ECH2401DH_**	**ECH2401DJ_**	**AN16BN0DC**
1	200	7-1/2	208/120	**ECH2411EA_**	**ECH2412EA_**	**ECH2418EA_**	**ECH2411EH_**	**ECH2411EJ_**	**AN16DN0EB**
	240		240/120	**ECH2411BA_**	**ECH2412BA_**	**ECH2418BA_**	**ECH2411BH_**	**ECH2411BJ_**	**AN16DN0BB**
	460	10	460/120	**ECH2411CA_**	**ECH2412CA_**	**ECH2418CA_**	**ECH2411CH_**	**ECH2411CJ_**	**AN16DN0CB**
	575		575/120	**ECH2411DA_**	**ECH2412DA_**	**ECH2418DA_**	**ECH2411DH_**	**ECH2411DJ_**	**AN16DN0DB**
2	200	10	208/120	**ECH2421EA_**	**ECH2422EA_**	**ECH2428EA_**	**ECH2421EH_**	**ECH2421EJ_**	**AN16GN0EB**
	240	15	240/120	**ECH2421BA_**	**ECH2422BA_**	**ECH2428BA_**	**ECH2421BH_**	**ECH2421BJ_**	**AN16GN0BB**
	460	25	460/120	**ECH2421CA_**	**ECH2422CA_**	**ECH2428CA_**	**ECH2421CH_**	**ECH2421CJ_**	**AN16GN0CB**
	575		575/120	**ECH2421DA_**	**ECH2422DA_**	**ECH2428DA_**	**ECH2421DH_**	**ECH2421DJ_**	**AN16GN0DB**
3	200	25	208/120	**ECH2431EA_**	**ECH2432EA_**	**ECH2438EA_**	**ECH2431EH_**	**ECH2431EJ_**	**AN16KN0E**
	240	30	240/120	**ECH2431BA_**	**ECH2432BA_**	**ECH2438BA_**	**ECH2431BH_**	**ECH2431BJ_**	**AN16KN0B**
	460	50	460/120	**ECH2431CA_**	**ECH2432CA_**	**ECH2438CA_**	**ECH2431CH_**	**ECH2431CJ_**	**AN16KN0C**
	575		575/120	**ECH2431DA_**	**ECH2432DA_**	**ECH2438DA_**	**ECH2431DH_**	**ECH2431DJ_**	**AN16KN0D**

Notes

① A "–" denotes catalog numbers are incomplete without the magnetic circuit protector code. To complete the catalog number, select the appropriate code from the following table:

Rating	Magnetic Circuit Protector Code	Rating	Magnetic Circuit Protector Code
—	**A**	30A	**E**
3A	**B**	50A	**F**
7A	**C**	100A	**G**
15A	**D**		

② If the solid-state overload option is selected, refer to Publication Number TD03408001E, Relay for MCCs and Enclosed Control Technical Data, for component selection.

Modification Codes

HVAC Modification Codes

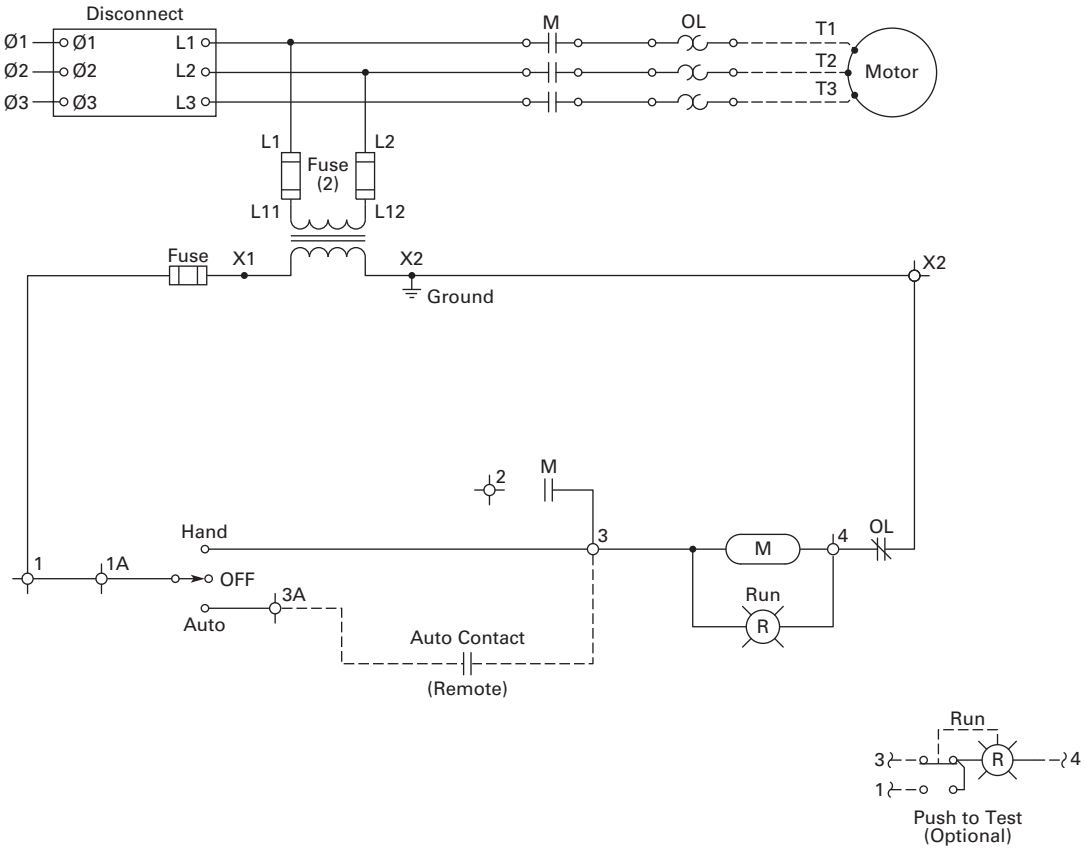
Modification	Description	Catalog Number Suffix
Auxiliary contacts	1NO—wired	**A27**
	1NC—wired	**A28**
	1NO 1NC—wired	**A29**
Solid-state overload (standard)	Size 0 and 1: 0.33–1.65 ①	**R63/A**
	Size 0 and 1: 1–5	**R63/B**
	Size 0 and 1: 4–20	**R63/C**
	Size 2: 9–45	**R63/D**
	Size 3: 20–100	**R63/E**
Solid-state overload (with ground fault)	Size 0 and 1: 0.33–1.65 ①	**R64/A**
	Size 0 and 1: 1–5	**R64/B**
	Size 0 and 1: 4–20	**R64/C**
	Size 2: 9–45	**R64/D**
	Size 3: 20–100	**R64/E**
Heaters	0.254–0.411A	**H5/D1**
	0.375–0.607A	**H5/D2**
	0.560–0.907A	**H5/D3**
	0.814–1.32A	**H5/D4**
	1.20–1.96A	**H5/D5**
	1.79–2.90A	**H5/D6**
	2.15–3.49A	**H5/D7**
	3.23–5.23A	**H5/D8**
	4.55–7.40A	**H5/D9**
	6.75–11.0A	**H5/D10**
	9.14–14.0A	**H5/D11**
	14.0–22.8A	**H5/D12**
	18.7–30.7A	**H5/D13**
	23.5–38.5A	**H5/D14**
	29.0–44.1A	**H5/D15**
	39.6–57.4A	**H5/D16**
	53.9–74.9A	**H5/D17**
	18.0–24.5A	**H5/D18**
	24.6–33.4A	**H5/D19**
	33.5–45.6A	**H5/D20**
	45.7–62.1A	**H5/D21**
	62.2–84.6A	**H5/D22**
Labels and timers	Carton label	**L10**
	Pneumatic timer (0.1–30 seconds maximum)	**T1**
	Pneumatic timer (10–180 seconds maximum)	**T2**
	Solid-state ON delay timer (1–30 seconds)	**T4**
	Solid-state ON delay timer (30–300 seconds)	**T5**

Note

① Not UL Listed.

Wiring Diagram

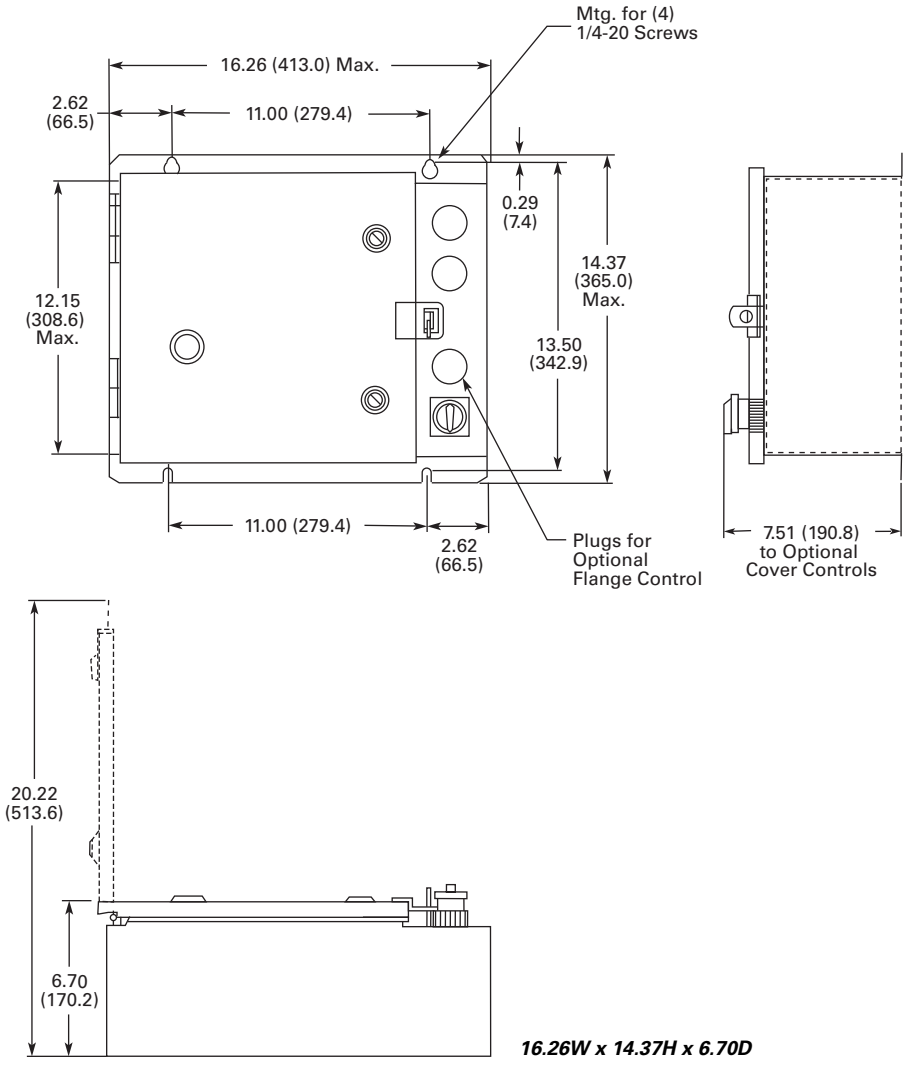
HVAC Combination Starter with CPT, HOA and Indicating Light



Dimensions

Approximate Dimensions in Inches (mm)

Box 7, Type 1



16.26W x 14.37H x 6.70D

NEMA Vacuum Break Contactors and Starters

NEMA Vacuum Break Starter

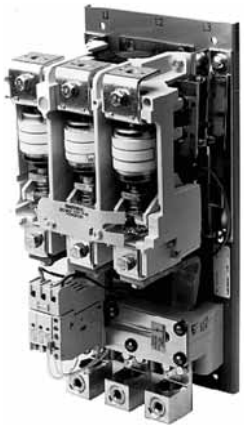
Type 12 Non-Reversing Vacuum Starter with HMCP

Type 12 Non-Reversing Vacuum Starter with Fused Disconnect

8.1 Special Purpose and Mining Rating

8

Special Purpose and Mining Rating



Contents

Product Description

- Three-phase magnetic
- Three-pole full voltage
- Non-reversing and reversing
- 600 and 1500 Vac maximum
- Starters with interchangeable heater OLR

Application Description

Eaton's vacuum contactors are designed for starting and controlling three-phase, 50/60 Hz, AC motors. Motor full load current should not exceed the contactor current rating. These contactors are built in several versions—the nameplate on a specific contactor states the authorized ratings.

Low voltage vacuum contactors can be applied to a wide range of voltages up to 1500V. These applications include full voltage control of three-phase squirrel cage motors, primary control of low voltage wound rotor motors and circuit switching for low voltage capacitors for power factor improvement.

Operation

The contact structures of these vacuum break contactors are located inside sealed ceramic tubes that have been evacuated of air. Any arc occurring across the contacts upon opening is automatically extinguished because ionized air is not available to sustain it—the arc breaks when the current passes through zero. The arc typically does not survive beyond the first half cycle once the contacts begin to separate. The large arc chutes normally associated with starters of this size are not required. The ceramic tube with the moving and stationary contacts enclosed is called a **vacuum interrupter** or a **bottle**, and there is one bottle for each pole of the contactor. A metal bellows (like a small, circular accordion) within the bottle allows the moving contact to be closed and pulled open from the outside without leaking air into the bottle. Both the bellows and the metal-to-ceramic seals of these state-of-the-art bottles have been refined to the point where the possibility of loss of vacuum has been virtually eliminated.

Contact Force and Altitude

A vacuum contactor is affected by atmospheric pressure on the bellows of the vacuum bottles. Up to an altitude of 6600 ft, the contactor is designed to tolerate normal variations in barometric pressure. If the contactor is to be operated above 6600 ft above sea level, consult Eaton.

Features and Benefits

- Rugged, compact, lightweight
- Quiet operation
- Front removable coil and auxiliaries
- Electrical and mechanical interlocking capability
- Low chop interrupters eliminate the need for surge suppressors
- Contact wear indication allows for planned maintenance program
- Long service life
- Manual push-to-reset button on Sizes 5 and 6
- Freedom overload
- SSOL

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL Listed
- cUL Listed (indicates appropriate CSA Standard investigation)
- CE Mark available
- ABS Type Approved
- OSHPD Certified (OSP-0015-10)

Additional Reference

Catalog Number Selection

NEMA Vacuum Break

EC V 05 5 1 A A A - __

Design
V = Vacuum

Modification Codes
See **Tab 15**

Class	Page
01 = Non-reversing contactor—three-pole	**V10-T8-7**
02 = Reversing contactor—three-pole	**V10-T8-8**
05 = Non-combination non-reversing starters	**V10-T8-9**
06 = Non-combination reversing starters	**V10-T8-10**
07 = Non-combination non-reversing starters with CPT	**V10-T8-11**
16 = Combination non-reversing starters—fusible and non-fusible disconnect	**V10-T8-12**
17 = Combination reversing starters—fusible and non-fusible disconnect	**V10-T8-13**
18 = Combination non-reversing starters—fusible and non-fusible disconnect with CPT	**V10-T8-14**
22 = Combination non-reversing starters—circuit breaker	**V10-T8-15**
23 = Combination reversing starters—circuit breaker	**V10-T8-16**
24 = Combination non-reversing starters—circuit breaker with CPT	**V10-T8-17**

Disconnect Fuse Clip Ratings	
A = None	**L** = 400A/600V R
H = 200A/250V R	**M** = 600A/250V R
J = 200A/600V R	**N** = 600A/600V R
K = 400A/250V R	

Circuit Breaker Ratings	
A = None	**K** = 400A
H = 150A	**L** = 600A
J = 250A	**M** = 800A

Cover Control
Non-reversing starters see table on **Page V10-T8-5** Reversing starters see table on **Page V10-T8-6**
Contactors
3 = Three-pole

NEMA Size
4
5
6

Coil Voltage or Motor Voltage	
A = 120V	**D** = 575V
B = 230V	**E** = 200V
C = 460V	**V** = 380V

Enclosure Type
1 = 1—general purpose
2 = 3R—rainproof
3 = 4—painted steel
4 = 4X—304-Grade stainless steel
8 = 12—dust-tight
9 = 4X—316-Grade stainless steel

Alternate "Open" Catalog Numbers

Listed "Open" Catalog Number	Alternate "Open" Catalog Number	Listed "Open" Catalog Number	Alternate "Open" Catalog Number
AV10FNOA	**V200M4CJC**	**CV10FN3A**	**V201K4CJ**
AV10GNOAB	**V200M5CJC**	**CV10GN3A**	**V201K5CJZ1**
AV10JNOAB	**V200M6CJC**	**CV10JN3A**	**V201K6CJZ1**

Note

Above are NEMA rated devices for applications up to 600V. For special purpose devices up to 1500V consult Eaton.

Cover Control

Non-Reversing

Flange Control Kits

For on-the-job conversion of Type 1, 3R, 4X and 12 enclosed starters. Knockouts are provided on the Type 1 flange. Type 3R, 4X and 12 have prepunched holes with removable hole plugs.

Factory Installed

To order factory installed pilot devices, change the ninth character of the catalog number to the alpha shown in the table below. Example: to order an **ECV0548AAA** with START/STOP pushbuttons and a red pilot light, change the **A** to a **C**, that is, ECV0548A**C**A.

Non-Reversing Cover Control

Non-Reversing Cover Control Field Kits and Factory Installation

Description	Factory Installed Flange Control Position 9 Alpha	Field Installation Kits Type 1 Non-Combination ① Catalog Number	Field Installation Kits All Others ② Catalog Number
No cover mounted pilot devices	**A**	**C400GK0**	—
START/STOP pushbuttons	**B**	**C400GK1**	**C400T1**
With red RUN pilot light	**C**	**C400GK12** ③	—
With red RUN/green OFF lights	**D**	**C400GK16** ③	—
ON/OFF pushbuttons	**E**	—	**C400T2**
With red RUN pilot light	**F**	—	—
With red RUN/green OFF lights	**G**	—	—
HAND/OFF/AUTO selector switch	**H**	**C400GK3**	**C400T12**
With red RUN pilot light	**J**	**C400GK32** ③	—
With red RUN/green OFF lights	**K**	**C400GK36** ③	—
START pushbutton	**L**	—	**C400T3**
ON pushbutton	**M**	—	**C400T4**
OFF pushbutton	**N**	—	**C400T5**
Red RUN pilot light	**P**	**C400GK42** ③	**C400T9** ③
Green OFF	**Q**	**C400GK41** ③	**C400T10** ③
Red RUN/green OFF pilot lights	**R**	**C400GK46** ③	**C400T11** ③
START/STOP selector switch	**S**	—	**C400T13**
With red RUN pilot light	**T**	—	—
With red RUN/green OFF lights	**U**	—	—
ON/OFF selector switch	**V**	—	**C400T14**
With red RUN pilot light	**W**	—	—
With red RUN/green OFF lights	**X**	—	—

Notes

① Type 1 non-combination, Size 4.

② Type 1 non-combination, Sizes 5 and 6; Type 3R, 4X, 12 non-combination, all sizes; all combination control.

③ Add code letter from table below to catalog number for voltage—kits only. Example: C400T9**B**.

Rating	Code Letter	Rating	Code Letter	Rating	Code Letter
120V 60 Hz	**A**	240V 60 Hz	**B**	480V 60 Hz	**C**
208V 60 Hz	**E**	380V 50 Hz	**L**	600V 60 Hz	**D**

Reversing

Flange Control Kits

For on-the-job conversion of Type1, 3R, 4X and 12 enclosed starters. Knockouts are provided on the Type1 flange. Type 3R, 4X and 12 have prepunched holes with removable hole plugs.

Factory Installed

To order factory installed pilot devices, change the ninth character of the catalog number to the alpha shown in the table below. Example: to order an **ECV1748AAH** with FOR/REV/STOP pushbuttons and 2 red pilot lights, change the **A** to a **C**, that is, ECV1748A**C**H.

Reversing Cover Control Field Kits and Factory Installation

Description	Factory Installed Flange Control Position 9 Alpha	Field Installation Kits Type 1 Non-Combination ① Catalog Number	Field Installation Kits All Others ② Catalog Number
No cover mounted pilot devices	**A**	**C400GK0**	—
FOR/REV/STOP pushbuttons	**B**	**C400GR1**	**C400T6**
With 2 red pilot lights	**C**	**C400GR14** ③	—
With 2 red/1 green pilot lights	**D**	—	—
UP/STOP/DOWN pushbuttons	**E**	**C400GR2**	—
With 2 red pilot lights	**F**	**C400GR24** ③	—
FOR/OFF/REV selector switch	**H**	—	**C400T15**
With 2 red pilot lights	**J**	—	—
With 2 red/1 green pilot lights	**K**	—	—
Two red pilot lights	**P**	**C400GK44** ③	④
One green pilot light	**Q**	**C400GK41** ③	**C400T10** ③
Two red/one green pilot lights	**R**	—	—
OPEN/OFF/CLOSE selector switch	**V**	—	**C400T16**
With 2 red pilot lights	**W**	—	—
With 2 red/1 green pilot lights	**X**	—	—

Notes

① Type 1 non-combination, Size 4.

② Type 1 non-combination, Sizes 5 and 6; Type 3R, 4X, 12 non-combination, all sizes; all combination control.

③ Add code letter from table below to catalog number for voltage—kits only. Example: C400T9**B**.

Rating	Code Letter	Rating	Code Letter	Rating	Code Letter
120V 60 Hz	**A**	240V 60 Hz	**B**	480V 60 Hz	**C**
208V 60 Hz	**E**	380V 50 Hz	**L**	600V 60 Hz	**D**

④ Order quantity two of **C400T9** ③.

Contactors

Product Selection

Class ECV01—Non-Reversing Contactor—Three-Pole

NEMA Size	Enclosed Ampere Rating	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ①	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial Catalog Number	Component Contactor (Open) ③ Catalog Number
4	135	—	—	110/120	**ECV0141A3A**	**ECV0142A3A**	**ECV0144A3A**	**ECV0148A3A**	**CV10FN3A**
		200	40						
		230	50						
		380	75						
		460	100						
		575	100						
5	270	—	—	110/120	**ECV0151A3A**	**ECV0152A3A**	**ECV0154A3A**	**ECV0158A3A**	**CV10GN3A**
		200	75						
		230	100						
		380	150						
		460	200						
		575	200						
6	540	—	—	110/120	**ECV0161A3A**	**ECV0162A3A**	**ECV0164A3A**	**ECV0168A3A**	**CV10JN3A**
		200	150						
		230	200						
		380	300						
		460	400						
		575	400						

Notes

① Wired for separate control.

② These are the catalog numbers for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECV0144A3A.
To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5.** For details on these alternate enclosures, see **Tab 13**.

③ Alternate catalog numbers for those listed can be found in the table on **Page V10-T8-4**.

Class ECV02—Reversing Contactor—Three-Pole

NEMA Size	Enclosed Ampere Rating	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ①	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial Catalog Number	Component Contactor (Open) ③ Catalog Number
4	135	—	—	110/120	**ECV0241A3A**	**ECV0242A3A**	**ECV0244A3A**	**ECV0248A3A**	**V211K4CJ**
		200	40						
		230	50						
		380	75						
		460	100						
		575	100						
5	270	—	—	110/120	**ECV0251A3A**	**ECV0252A3A**	**ECV0254A3A**	**ECV0258A3A**	**V211K5CJZ1**
		200	75						
		230	100						
		380	150						
		460	200						
		575	200						
6	540	—	—	110/120	**ECV0261A3A**	**ECV0262A3A**	**ECV0264A3A**	**ECV0268A3A**	**V211K6CJZ1**
		200							
		230	150						
		380	300						
		460	400						
		575	400						

8

Field Modification Kits

Auxiliary Electrical Contacts

Two Type J auxiliary contacts may be mounted on each side to provide four auxiliary, isolated 600V, 10A double break contacts for use in control circuits.

Auxiliary Contacts

Contact Arrangement	Catalog Number
1NO-1NC	**J11**
2NO	**J20**
2NC	**J02**

Horizontal Mechanical Interlock

Size	Catalog Number
4	**180C113G04**
5	**180C113G12**
6	**180C113G13**

Notes

① Wired for separate control.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit. Example: ECV0244A3A. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**. To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ Alternate catalog numbers for those listed can be found in the table on **V10-T8-4**.

Non-Combination Starters

Product Selection

Class ECV05—Non-Combination Non-Reversing Starter

NEMA Size	Enclosed Ampere Rating	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ①	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③ Catalog Number	Component Starter (Open) ④ Catalog Number
4	135	—	—	110/120	**ECV0541AAA**	**ECV0542AAA**	**ECV0544AAA**	**ECV0548AAA**	**AV10FNOA**
		200	40						
		230	50						
		380	75						
		460	100						
		575	100						
5	270	—	—	110/120	**ECV0551AAA**	**ECV0552AAA**	**ECV0554AAA**	**ECV0558AAA**	**AV10GNOAB**
		200	75						
		230	100						
		380	150						
		460	200						
		575	200						
6	540	—	—	110/120	**ECV0561AAA**	**ECV0562AAA**	**ECV0564AAA**	**ECV0568AAA**	**AV10JNOAB**
		200	150						
		230	200						
		380	300						
		460	400						
		575	400						

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see modification codes in **Tab 15**.

① Wired for separate control.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECV0544AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Alternate catalog numbers for those listed can be found in the table on **Page V10-T8-4**.

Class ECV06—Non-Combination Reversing Starter

NEMA Size	Enclosed Ampere Rating	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ①	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③ Catalog Number	Component Starter (Open) Catalog Number
4	135	—	—	110/120	**ECV0641AAA**	**ECV0642AAA**	**ECV0644AAA**	**ECV0648AAA**	**V210M4CJC**
		200	40						
		230	50						
		380	75						
		460	100						
		575							
5	270	—	—	110/120	**ECV0651AAA**	**ECV0652AAA**	**ECV0654AAA**	**ECV0658AAA**	**V210M5CJC**
		200	75						
		230	100						
		380	150						
		460	200						
		575							
6	540	—	—	110/120	**ECV0661AAA**	**ECV0662AAA**	**ECV0664AAA**	**ECV0668AAA**	**V210M6CJC**
		200	150						
		230	200						
		380	300						
		460	400						
		575							

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see modification codes in **Tab 15**.

① Wired for separate control.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECV0644AAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

Class ECV07—Non-Combination Non-Reversing Starter with CPT

NEMA Size	Enclosed Ampere Rating	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ② Catalog Number	Component Starter (Open) ③ Catalog Number
4	135	200	40	110/120	**ECV0741EAA**	**ECV0742EAA**	**ECV0744EAA**	**ECV0748EAA**	**AV10FNOA**
		230	50		**ECV0741BAA**	**ECV0742BAA**	**ECV0744BAA**	**ECV0748BAA**	
		380	75		**ECV0741VAA**	**ECV0742VAA**	**ECV0744VAA**	**ECV0748VAA**	
		460	100		**ECV0741CAA**	**ECV0742CAA**	**ECV0744CAA**	**ECV0748CAA**	
		575			**ECV0741DAA**	**ECV0742DAA**	**ECV0744DAA**	**ECV0748DAA**	
5	270	200	75	110/120	**ECV0751EAA**	**ECV0752EAA**	**ECV0754EAA**	**ECV0758EAA**	**AV10GNOAB**
		230	100		**ECV0751BAA**	**ECV0752BAA**	**ECV0754BAA**	**ECV0758BAA**	
		380	150		**ECV0751VAA**	**ECV0752VAA**	**ECV0754VAA**	**ECV0758VAA**	
		460	200		**ECV0751CAA**	**ECV0752CAA**	**ECV0754CAA**	**ECV0758CAA**	
		575			**ECV0751DAA**	**ECV0752DAA**	**ECV0754DAA**	**ECV0758DAA**	
6	540	200	150	110/120	**ECV0761EAA**	**ECV0762EAA**	**ECV0764EAA**	**ECV0768EAA**	**AV10JNOAB**
		230	200		**ECV0761BAA**	**ECV0762BAA**	**ECV0764BAA**	**ECV0768BAA**	
		380	300		**ECV0761VAA**	**ECV0762VAA**	**ECV0764VAA**	**ECV0768VAA**	
		460	400		**ECV0761CAA**	**ECV0762CAA**	**ECV0764CAA**	**ECV0768CAA**	
		575			**ECV0761DAA**	**ECV0762DAA**	**ECV0764DAA**	**ECV0768DAA**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see modification codes in **Tab 15**.

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECV074**4**EAA. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Alternate catalog numbers for those listed can be found in the table on **Page V10-T8-4**.

Combination Starters

Product Selection

Class ECV16—Combination Non-Reversing Starter—Fusible and Non-Fusible Disconnect

NEMA Size	Motor Voltage	Max. hp Rating Dual Element Fuses	Magnet Coil Voltage ①	Fuse Clip Amperes/ Disconnect Amperes	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) ⑤ Catalog Number
Fusible									
4	200	40	110/120	200A	**ECV1641AAH**	**ECV1642AAH**	**ECV1644AAH**	**ECV1648AAH**	**AV10FNOA**
	230	50			**ECV1641AAH**	**ECV1642AAH**	**ECV1644AAH**	**ECV1648AAH**	
	380	75			**ECV1641AAJ**	**ECV1642AAJ**	**ECV1644AAJ**	**ECV1648AAJ**	
	460	100			**ECV1641AAJ**	**ECV1642AAJ**	**ECV1644AAJ**	**ECV1648AAJ**	
	575				**ECV1641AAJ**	**ECV1642AAJ**	**ECV1644AAJ**	**ECV1648AAJ**	
5	200	75	110/120	400A	**ECV1651AAK**	**ECV1652AAK**	**ECV1654AAK**	**ECV1658AAK**	**AV10GNOA**
	230	100			**ECV1651AAK**	**ECV1652AAK**	**ECV1654AAK**	**ECV1658AAK**	
	380	150			**ECV1651AAL**	**ECV1652AAL**	**ECV1654AAL**	**ECV1658AAL**	
	460	200			**ECV1651AAL**	**ECV1652AAL**	**ECV1654AAL**	**ECV1658AAL**	
	575				**ECV1651AAL**	**ECV1652AAL**	**ECV1654AAL**	**ECV1658AAL**	
6	200	150	110/120	600A	**ECV1661AAM**	**ECV1662AAM**	**ECV1664AAM**	**ECV1668AAM**	**AV10JNOA**
	230	200			**ECV1661AAM**	**ECV1662AAM**	**ECV1664AAM**	**ECV1668AAM**	
	380	300			**ECV1661AAN**	**ECV1662AAN**	**ECV1664AAN**	**ECV1668AAN**	
	460	400			**ECV1661AAN**	**ECV1662AAN**	**ECV1664AAN**	**ECV1668AAN**	
	575				**ECV1661AAN**	**ECV1662AAN**	**ECV1664AAN**	**ECV1668AAN**	
Non-Fusible									
4	—	—	110/120	200A	**ECV1641AAA**	**ECV1642AAA**	**ECV1644AAA**	**ECV1648AAA**	**AV10FNOA**
	200	40							
	230	50							
	380	75							
	460	100							
	575								
5	—	—	110/120	400A	**ECV1651AAA**	**ECV1652AAA**	**ECV1654AAA**	**ECV1658AAA**	**AV10GNOA**
	200	75							
	230	100							
	380	150							
	460	200							
	575								
6	—	—	110/120	600A	**ECV1661AAA**	**ECV1662AAA**	**ECV1664AAA**	**ECV1668AAA**	**AV10JNOA**
	200	150							
	230	200							
	380	300							
	460	400							
	575								

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see modification codes in **Tab 15**.

① Wired for separate control.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECV1644AAH. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification code **E11**.

⑤ Alternate catalog numbers for those listed can be found in the table on **Page V10-T8-4**.

Class ECV17—Combination Reversing Starter—Fusible and Non-Fusible Disconnect

NEMA Size	Motor Voltage	Max. hp Rating Dual Element Fuses	Magnet Coil Voltage	Fuse Clip Amperes/ Disconnect Amperes	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) Catalog Number
Fusible									
4	200	40	110/120	200A	**ECV1741AAH**	**ECV1742AAH**	**ECV1744AAH**	**ECV1748AAH**	**V210M4CJC**
	230	50			**ECV1741AAH**	**ECV1742AAH**	**ECV1744AAH**	**ECV1748AAH**	
	380	75			**ECV1741AAJ**	**ECV1742AAJ**	**ECV1744AAJ**	**ECV1748AAJ**	
	460	100			**ECV1741AAJ**	**ECV1742AAJ**	**ECV1744AAJ**	**ECV1748AAJ**	
	575				**ECV1741AAJ**	**ECV1742AAJ**	**ECV1744AAJ**	**ECV1748AAJ**	
5	200	75	110/120	400A	**ECV1751AAK**	**ECV1752AAK**	**ECV1754AAK**	**ECV1758AAK**	**V210M5CJC**
	230	100			**ECV1751AAK**	**ECV1752AAK**	**ECV1754AAK**	**ECV1758AAK**	
	380	150			**ECV1751AAL**	**ECV1752AAL**	**ECV1754AAL**	**ECV1758AAL**	
	460	200			**ECV1751AAL**	**ECV1752AAL**	**ECV1754AAL**	**ECV1758AAL**	
	575				**ECV1751AAL**	**ECV1752AAL**	**ECV1754AAL**	**ECV1758AAL**	
6	200	150	110/120	600A	**ECV1761AAM**	**ECV1762AAM**	**ECV1764AAM**	**ECV1768AAM**	**V210M6CJC**
	230	200			**ECV1761AAM**	**ECV1762AAM**	**ECV1764AAM**	**ECV1768AAM**	
	380	300			**ECV1761AAN**	**ECV1762AAN**	**ECV1764AAN**	**ECV1768AAN**	
	460	400			**ECV1761AAN**	**ECV1762AAN**	**ECV1764AAN**	**ECV1768AAN**	
	575				**ECV1761AAN**	**ECV1762AAN**	**ECV1764AAN**	**ECV1768AAN**	
Non-Fusible									
4	—	—	110/120	200A	**ECV1741AAA**	**ECV1742AAA**	**ECV1744AAA**	**ECV1748AAA**	**V210M4CJC**
	200	40							
	230	50							
	380	75							
	460	100							
	575								
5	—	—	110/120	400A	**ECV1751AAA**	**ECV1752AAA**	**ECV1754AAA**	**ECV1758AAA**	**V210M5CJC**
	200	75							
	230	100							
	380	150							
	460	200							
	575								
6	—	—	110/120	600A	**ECV1761AAA**	**ECV1762AAA**	**ECV1764AAA**	**ECV1768AAA**	**V210M6CJC**
	200	150							
	230	200							
	380	300							
	460	400							
	575								

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see modification codes in **Tab 15**.

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECV174**4**AAH. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification code **E11**.

Class ECV18—Combination Non-Reversing Starter—Fusible and Non-Fusible Disconnect with CPT

NEMA Size	Motor Voltage	Max. hp Rating Dual Element Fuses	Magnet Coil Voltage	Fuse Clip Amperes/ Disconnect Amperes	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
Fusible									
4	200	40	110/120	200A	**ECV1841EAH**	**ECV1842EAH**	**ECV1844EAH**	**ECV1848EAH**	**AV10FNOA**
	230	50			**ECV1841BAH**	**ECV1842BAH**	**ECV1844BAH**	**ECV1848BAH**	
	380	75			**ECV1841VAJ**	**ECV1842VAJ**	**ECV1844VAJ**	**ECV1848VAJ**	
	460	100			**ECV1841CAJ**	**ECV1842CAJ**	**ECV1844CAJ**	**ECV1848CAJ**	
	575				**ECV1841DAJ**	**ECV1842DAJ**	**ECV1844DAJ**	**ECV1848DAJ**	
5	200	75	110/120	400A	**ECV1851EAK**	**ECV1852EAK**	**ECV1854EAK**	**ECV1858EAK**	**AV10GNOA**
	230	100			**ECV1851BAK**	**ECV1852BAK**	**ECV1854BAK**	**ECV1858BAK**	
	380	150			**ECV1851VAL**	**ECV1852VAL**	**ECV1854VAL**	**ECV1858VAL**	
	460	200			**ECV1851CAL**	**ECV1852CAL**	**ECV1854CAL**	**ECV1858CAL**	
	575				**ECV1851DAL**	**ECV1852DAL**	**ECV1854DAL**	**ECV1858DAL**	
6	200	150	110/120	600A	**ECV1861EAM**	**ECV1862EAM**	**ECV1864EAM**	**ECV1868EAM**	**AV10JNOA**
	230	200			**ECV1861BAM**	**ECV1862BAM**	**ECV1864BAM**	**ECV1868BAM**	
	380	300			**ECV1861VAN**	**ECV1862VAN**	**ECV1864VAN**	**ECV1868VAN**	
	460	400			**ECV1861CAN**	**ECV1862CAN**	**ECV1864CAN**	**ECV1868CAN**	
	575				**ECV1861DAN**	**ECV1862DAN**	**ECV1864DAN**	**ECV1868DAN**	
Non-Fusible									
4	200	40	110/120	200A	**ECV1841EAA**	**ECV1842EAA**	**ECV1844EAA**	**ECV1848EAA**	**AV10FNOA**
	230	50			**ECV1841BAA**	**ECV1842BAA**	**ECV1844BAA**	**ECV1848BAA**	
	380	75			**ECV1841VAA**	**ECV1842VAA**	**ECV1844VAA**	**ECV1848VAA**	
	460	100			**ECV1841CAA**	**ECV1842CAA**	**ECV1844CAA**	**ECV1848CAA**	
	575				**ECV1841DAA**	**ECV1842DAA**	**ECV1844DAA**	**ECV1848DAA**	
5	200	75	110/120	400A	**ECV1851EAA**	**ECV1852EAA**	**ECV1854EAA**	**ECV1858EAA**	**AV10GNOA**
	230	100			**ECV1851BAA**	**ECV1852BAA**	**ECV1854BAA**	**ECV1858BAA**	
	380	150			**ECV1851VAA**	**ECV1852VAA**	**ECV1854VAA**	**ECV1858VAA**	
	460	200			**ECV1851CAA**	**ECV1852CAA**	**ECV1854CAA**	**ECV1858CAA**	
	575				**ECV1851DAA**	**ECV1852DAA**	**ECV1854DAA**	**ECV1858DAA**	
6	200	150	110/120	600A	**ECV1861EAA**	**ECV1862EAA**	**ECV1864EAA**	**ECV1868EAA**	**AV10JNOA**
	230	200			**ECV1861BAA**	**ECV1862BAA**	**ECV1864BAA**	**ECV1868BAA**	
	380	300			**ECV1861VAA**	**ECV1862VAA**	**ECV1864VAA**	**ECV1868VAA**	
	460	400			**ECV1861CAA**	**ECV1862CAA**	**ECV1864CAA**	**ECV1868CAA**	
	575				**ECV1861DAA**	**ECV1862DAA**	**ECV1864DAA**	**ECV1868DAA**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see modification codes in **Tab 15**.

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECV1844EAH. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification code **E11**.

④ Alternate catalog numbers for those listed can be found in the table on **Page V10-T8-4**.

Class ECV22—Combination Non-Reversing Starter—Circuit Breaker

NEMA Size	Motor Voltage	Max. hp Rating	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) ⑤ Catalog Number
4	200	40	110/120	150A	**ECV2241AAH**	**ECV2242AAH**	**ECV2244AAH**	**ECV2248AAH**	**AV10FNOA**
	230	50							
	380	75							
	460	100							
	575								
5	200	60	110/120	250A	**ECV2251AAJ**	**ECV2252AAJ**	**ECV2254AAJ**	**ECV2258AAJ**	**AV10GNOA**
	230	75							
	460	150							
	575	200							
	200	75	110/120	400A	**ECV2251AAK**	**ECV2252AAK**	**ECV2254AAK**	**ECV2258AAK**	**AV10GNOA**
	230	100							
	380	150							
	460	200							
6	200	100	110/120	600A	**ECV2261AAL**	**ECV2262AAL**	**ECV2264AAL**	**ECV2268AAL**	**AV10JNOA**
	230	150							
	460	300							
	575								
	230	200	110/120	800A	**ECV2261AAM**	**ECV2262AAM**	**ECV2264AAM**	**ECV2268AAM**	**AV10JNOA**
	460	400							
	575								

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see modification codes in **Tab 15**.

① Wired for separate control.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECV224**4**AAH. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification code **E11**.

⑤ Alternate catalog numbers for those listed can be found in the table on **Page V10-T8-4**.

Class ECV23—Combination Reversing Starter—Circuit Breaker

NEMA Size	Motor Voltage	Max. hp Rating	Magnet Coil Voltage ①	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ② Catalog Number	Type 12 Dust-Tight Industrial External Reset ③④ Catalog Number	Component Starter (Open) Catalog Number
4	200	40	110/120	150A	**ECV2341AAH**	**ECV2342AAH**	**ECV2344AAH**	**ECV2348AAH**	**V210M4CJC**
	230	50							
	380	75							
	460	100							
	575								
5	200	60	110/120	250A	**ECV2351AAJ**	**ECV2352AAJ**	**ECV2354AAJ**	**ECV2358AAJ**	**V210M5CJC**
	230	75							
	460	150							
	575	200							
	200	75	110/120	400A	**ECV2351AAK**	**ECV2352AAK**	**ECV2354AAK**	**ECV2358AAK**	**V210M5CJC**
	230	100							
	380	150							
	460	200							
6	200	100	110/120	600A	**ECV2361AAL**	**ECV2362AAL**	**ECV2364AAL**	**ECV2368AAL**	**V210M6CJC**
	230	150							
	460	300							
	575								
	230	200	110/120	800A	**ECV2361AAM**	**ECV2362AAM**	**ECV2364AAM**	**ECV2368AAM**	**V210M6CJC**
	460	400							
	575								

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see modification codes in **Tab 15**.

① Wired for separate control.

② The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECV234**4**AAH. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

③ All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

④ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification code **E11**.

Class ECV24—Combination Non-Reversing Starter—Circuit Breaker with CPT

NEMA Size	Motor Voltage	Max. hp Rating	Magnet Coil Voltage	Circuit Breaker Size	Type 1 General Purpose Catalog Number	Type 3R Rainproof Catalog Number	Type 4X Watertight and Dust-Tight Stainless Steel ① Catalog Number	Type 12 Dust-Tight Industrial External Reset ②③ Catalog Number	Component Starter (Open) ④ Catalog Number
4	200	40	110/120	150A	**ECV2441EAH**	**ECV2442EAH**	**ECV2444EAH**	**ECV2448EAH**	**AV10FNOA**
	230	50			**ECV2441BAH**	**ECV2442BAH**	**ECV2444BAH**	**ECV2448BAH**	
	380	75			**ECV2441VAH**	**ECV2442VAH**	**ECV2444VAH**	**ECV2448VAH**	
	460	100			**ECV2441CAH**	**ECV2442CAH**	**ECV2444CAH**	**ECV2448CAH**	
	575				**ECV2441DAH**	**ECV2442DAH**	**ECV2444DAH**	**ECV2448DAH**	
5	200	60	110/120	250A	**ECV2451EAJ**	**ECV2452EAJ**	**ECV2454EAJ**	**ECV2458EAJ**	**AV10GNOA**
	230	75			**ECV2451BAJ**	**ECV2452BAJ**	**ECV2454BAJ**	**ECV2458BAJ**	
	460	150			**ECV2451CAJ**	**ECV2452CAJ**	**ECV2454CAJ**	**ECV2458CAJ**	
	575	200			**ECV2451DAJ**	**ECV2452DAJ**	**ECV2454DAJ**	**ECV2458DAJ**	
	200	75	110/120	400A	**ECV2451EAK**	**ECV2452EAK**	**ECV2454EAK**	**ECV2458EAK**	**AV10GNOA**
	230	100			**ECV2451BAK**	**ECV2452BAK**	**ECV2454BAK**	**ECV2458BAK**	
	380	150			**ECV2451VAK**	**ECV2452VAK**	**ECV2454VAK**	**ECV2458VAK**	
	460	200			**ECV2451CAK**	**ECV2452CAK**	**ECV2454CAK**	**ECV2458CAK**	
6	200	100	110/120	600A	**ECV2461EAL**	**ECV2462EAL**	**ECV2464EAL**	**ECV2468EAL**	**AV10JNOA**
	230	150			**ECV2461BAL**	**ECV2462BAL**	**ECV2464BAL**	**ECV2468BAL**	
	460	300			**ECV2461CAL**	**ECV2462CAL**	**ECV2464CAL**	**ECV2468CAL**	
	575				**ECV2461DAL**	**ECV2462DAL**	**ECV2464DAL**	**ECV2468DAL**	
	230	200	110/120	800A	**ECV2461BAM**	**ECV2462BAM**	**ECV2464BAM**	**ECV2468BAM**	**AV10JNOA**
	460	400			**ECV2461CAM**	**ECV2462CAM**	**ECV2464CAM**	**ECV2468CAM**	
	575				**ECV2461DAM**	**ECV2462DAM**	**ECV2464DAM**	**ECV2468DAM**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see modification codes in **Tab 15**.

① The catalog numbers listed in the Type 4X column are for Type 4X 304-Grade stainless steel, as indicated by the **seventh** digit.
Example: ECV244**4**EAH. To order Type 4X 316-Grade stainless steel, change that digit to **9**. To order Type 4 painted steel, change that digit to **3**.
To order non-metallic, change that digit to **5**. For details on these alternate enclosures, see **Tab 13**.

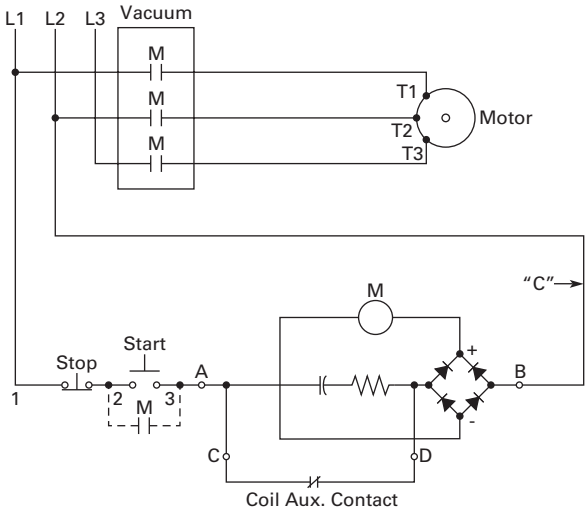
② All Type 12 enclosures are standardized with external reset. For internal reset, order modification code **R5**.

③ Type 12 enclosure is without safety door interlock. When safety door interlock is required, add modification code **E11**.

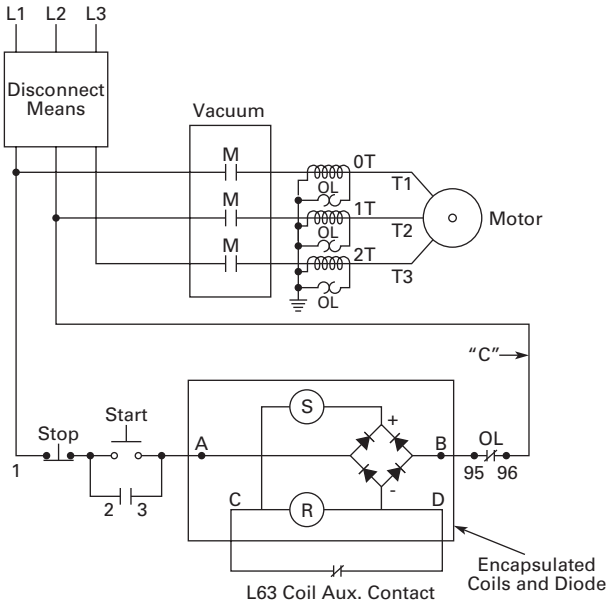
④ Alternate catalog numbers for those listed can be found in the table on **Page V10-T8-4**.

Wiring Diagrams

Typical Wiring Diagrams



Size 4 Contactor



Sizes 5 and 6 Starter

Type 7/9 Hazardous Location Starters

Type 7/9 Explosion Proof Enclosed Control

Other Hazardous Location Controls

9.1 NEMA Cast Aluminum Enclosed Starters

9

NEMA Cast Aluminum Enclosed Starters

Contents

Product Description

Eaton's combination and non-combination hazardous location cast aluminum motor starters are used in areas where hazardous materials are handled or stored. These units provide disconnecting means, under voltage protection, circuit protection and motor running protection.

Features

- 65,000 AI cUL classified—highest interrupt rated enclosure in the industry
- Copper-free cast aluminum
- Precision machine flame path between box and cover
- Bolt-on slotted mounting feet
- Stainless steel block hinges
- Stainless steel, captive quad-lead cover bolts (disengaged in 1-1/2 turns)
- External stainless steel breaker operating handle
- Breaker and operator shafts are stainless steel
- Ground lug package and installation instructions for termination of ground wire enclosed
- Four point control terminal block, NEMA 1B with wire markers
- Breaker operators can be locked in the ON or OFF position (combination starters only)
- Four plugged 3/4 in NPSM outlets drilled and tapped for control devices
- Standard outlets top and bottom
- Plugged 1/2 in outlets top and bottom for breather/drain
- Components are mounted on a galvanized steel removable pan
- O-ring gasket ensures watertight integrity

Standard Materials

- Bodies and covers: copper-free aluminum
- Cover bolts: stainless steel
- O-ring: neoprene
- Hinges: stainless steel

Finishes

- Bodies and covers: corrosion resistant grey epoxy power coat inside and outside standard to provide Type 4X

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL Classified—Standard 886 File #104565
  - Class I, Groups B, C and D
  - Class II, Groups E, F and G
  - Class III
  - Type 4, 4X, 7 and 9
  - Zone 1, IIB + H2
- CSA Certified—Standard C22.2 File #28361
  - Class I, Groups B, C and D
  - Class II, Groups E, F and G
  - Class III
  - Type 4, 4X, 7 and 9
  - Zone 1, IIB + H2

Code Definitions

Class I locations require the type of explosion-proof electrical equipment where, in case of explosion, the hazardous flames would be contained. In Class II or III locations, dust, fibers and flyings are the combustible materials and it is only necessary to keep these materials out of the electrical equipment (where an arc may take place) and to maintain safe external temperatures.

A brief explanation of the three classifications covering hazardous locations follows:

Class I Locations—are those in which flammable gases or vapors are, or may be, present in the air in quantities sufficient to produce explosive or ignitable mixtures.

Class I, Div. 1—are those where such hazardous concentrations of flammable liquids or vapors exist under normal operating conditions.

Class I, Div. 2—are those where such hazardous concentrations of flammable liquids or vapors are handled in closed containers or closed systems.

Class II Locations—are those where the presence of combustible dust presents a fire or explosion hazard.

Class II, Div. 1—are those where dust is suspended in the air under normal operating conditions, in quantities sufficient to produce explosive or ignitable mixtures.

Class II, Div. 2—are those where such dust is not normally in the air, but where deposits of it accumulating on the electrical equipment will interfere with safe dissipation of heat, causing a fire hazard.

Class III Locations—are those where easily ignitable fibers or flyings are present but not likely to be suspended in the air in quantities sufficient to produce ignitable mixtures.

Class III, Div. 1—are those where ignitable fibers or materials producing combustible flyings are handled, manufactured or used.

Class III, Div. 2—are those where easily ignitable fibers are stored or handled (except in process or manufacture).

Further refinement created for the purpose of testing and approving electrical equipment divides Class I into four separate designations: A, B, C, D and Class II into three separate designations; E, F and G. Underwriters Laboratories test and approve electrical equipment for the following specific groups:

Class I, Group A—atmospheres containing acetylene.

Class I, Group B—atmospheres containing hydrogen, gases and vapors of equivalent hazard such as manufactured gas.

Class I, Group C—atmospheres containing ethyl-ether vapors, ethylene or cyclopropane.

Class I, Group D—atmospheres containing gasoline, hexane, naphtha, benzine, butane, propane, alcohol, acetone, benzol, lacquer solvent vapors or natural gas.

Class II, Group E—atmospheres containing metal dust, including aluminum, magnesium and their commercial alloys, and other metals of similarly hazardous characteristics.

Class II, Group F—atmospheres containing carbon black, coal or coke dust.

Class II, Group G—atmospheres containing flour, starch or grain dusts.

Additional Reference

Catalog Number Selection

Type 7/9 Hazardous Location

EC N 22 1 6 B A C - __

Design

N = Freedom NEMA
S = Soft starter ①

Class		Page
05 =	Type 7/9 non-combination non-reversing starter	**V10-T9-6**
06 =	Type 7/9 non-combination reversing starter	**V10-T9-7**
07 =	Type 7/9 non-combination starter with CPT	**V10-T9-8**
22 =	Type 7/9 combination non-reversing starter—circuit breaker	**V10-T9-9**
23 =	Type 7/9 combination reversing starter—circuit breaker	**V10-T9-10**
24 =	Type 7/9 combination starter with CPT—circuit breaker	**V10-T9-11**

NEMA Size

A = Size 00	**3** = Size 3
0 = Size 0	**4** = Size 4
1 = Size 1	**5** = Size 5
2 = Size 2	

Enclosure Type

6 = Type 7/9—bolted

Modification Codes

See **Tab 15**

Circuit Breaker Ratings

A = None	**W** = 70A	**5** = 3A ⑤
B = 3A	**G** = 100A/R3C	**6** = 7A ⑤
C = 7A	**X** = 100A/T3C	**7** = 15A ⑤
D = 15A	**H** = 150A	**8** = 30A ⑤
E = 30A	**J** = 250A	**9** = 50A ⑤
F = 50A	**K** = 400A	**I** = 100A ⑤

Cover Control

Non-rev. starters see **Table**
Rev. starters see **Table**

Motor Voltage/Power Supply ②③

A = 120/60 110/50
B = 240/60 220/50 Freedom; 230/60 ***IT***.
C = 480/60 440/50 Freedom; 460/60 ***IT***.
D = 600/60 550/50
E = 208/60 Freedom; 200/60 ***IT***.
Q = 24 Vdc ④
L = 380V/50 Hz

Notes

① For soft starter information see **Tab 5**.

② ***IT***: If CPT is selected, power supply to be 120V–24 Vdc.

③ Freedom: When control power transformer modification codes (**C1**–**C11**) are used or when starter class includes CPT (that is, ECN07, 24) see table below for system voltage code.

Code	Primary	Secondary
B	240/480–220/440 wired for 240V	120/60–110/50
C	240/480–220/440 wired for 480V	120/60–110/50
D	600/60–550/50	120/60–110/50
E	208/60	120/60

④ Power supply omitted.

⑤ Use for Sizes 0–3, HMCP 600V applications only.

Cover Control

To order factory installed pilot devices, change the ninth character of the catalog number to the alpha shown in the table below.

Example: to order an **ECN0516CAA** with START/STOP pushbuttons and a red pilot light, change the **A** to a **C**, that is, ECN0516C**C**A.

Cover Control

Non-Reversing and Reversing Cover Control

Description	Factory Installed Flange Control Position 9 Alpha
Non-Reversing Cover Control	
No cover mounted pilot devices	**A**
START/STOP pushbuttons	**B**
With red RUN pilot light	**C**
With red RUN/green OFF lights	**D**
ON/OFF pushbuttons	**E**
With red RUN pilot light	**F**
With red RUN/green OFF lights	**G**
HAND/OFF/AUTO selector switch	**H**
With red RUN pilot light	**J**
With red RUN/green OFF lights	**K**
START pushbutton	**L**
ON pushbutton	**M**
OFF pushbutton	**N**
Red RUN pilot light	**P**
Green OFF pilot light	**Q**
Red RUN/green OFF pilot lights	**R**
START/STOP selector switch	**S**
With red RUN pilot light	**T**
With red RUN/green OFF lights	**U**
ON/OFF selector switch	**V**
With red RUN Pilot Light	**W**
With red RUN/green OFF lights	**X**
Reversing Cover Control	
No cover mounted pilot devices	**A**
FOR/REV/STOP pushbuttons	**B**
With 2 red pilot lights	**C**
With 2 red/1 green pilot lights	**D**
UP/STOP/DOWN pushbuttons	**E**
With 2 red pilot lights	**F**
FOR/OFF/REV selector switch	**H**
With 2 red pilot lights	**J**
With 2 red/1 green pilot lights	**K**
Two red pilot lights	**P**
One green pilot light	**Q**
Two red/1 green pilot lights	**R**
OPEN/OFF/CLOSE selector switch	**V**
With 2 red pilot lights	**W**
With 2 red/1 green pilot lights	**X**

Freedom Full Voltage Non-Combination

Features

- Full voltage
- Standard interchangeable heater OLR
- Optional electronic overload
- 600V maximum

Product Selection

Class ECN05—Type 7/9 Non-Combination Non-Reversing Starter

NEMA Size	Motor Voltage	Maximum hp Rating ①	Magnet Coil Voltage	Three-Pole Type 7/9 Bolted Catalog Number	Component Starter (Open) Catalog Number
0	—	—	120	**ECN0506AAA**	**AN16BN0AC**
	200	3	208	**ECN0506EAA**	**AN16BN0EC**
	230		240	**ECN0506BAA**	**AN16BN0BC**
	460	5	480	**ECN0506CAA**	**AN16BN0CC**
	575		600	**ECN0506DAA**	**AN16BN0DC**
1	—	—	120	**ECN0516AAA**	**AN16DN0AB**
	200	7-1/2	208	**ECN0516EAA**	**AN16DN0EB**
	230		240	**ECN0516BAA**	**AN16DN0BB**
	460	10	480	**ECN0516CAA**	**AN16DN0CB**
	575		600	**ECN0516DAA**	**AN16DN0DB**
2	—	—	120	**ECN0526AAA**	**AN16GN0AB**
	200	10	208	**ECN0526EAA**	**AN16GN0EB**
	230	15	240	**ECN0526BAA**	**AN16GN0BB**
	460	25	480	**ECN0526CAA**	**AN16GN0CB**
	575		600	**ECN0526DAA**	**AN16GN0DB**
3	—	—	120	**ECN0536AAA**	**AN16KN0A**
	200	25	208	**ECN0536EAA**	**AN16KN0E**
	230	30	240	**ECN0536BAA**	**AN16KN0B**
	460	50	480	**ECN0536CAA**	**AN16KN0C**
	575		600	**ECN0536DAA**	**AN16KN0D**
4	—	—	120	**ECN0546AAA**	**AN16NN0A**
	200	40	208	**ECN0546EAA**	**AN16NN0E**
	230	50	240	**ECN0546BAA**	**AN16NN0B**
	460	100	480	**ECN0546CAA**	**AN16NN0C**
	575		600	**ECN0546DAA**	**AN16NN0D**
5	—	—	120	**ECN0556AAA**	**AN16SN0AB**
	200	75	208	**ECN0556EAA**	**AN16SN0EB**
	230	100	240	**ECN0556BAA**	**AN16SN0BB**
	460	200	480	**ECN0556CAA**	**AN16SN0CB**
	575		600	**ECN0556DAA**	**AN16SN0DB**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see modification codes in **Tab 15**.

① Maximum horsepower rating of starters for 380V 50 Hz applications:

NEMA Size	00	0	1	2	3	4	5	6
Horsepower	1-1/2	5	10	25	50	75	150	300

Class ECN06—Type 7/9 Non-Combination Reversing Starter

NEMA Size	Motor Voltage	Maximum hp Rating ①	Magnet Coil Voltage	Three-Pole Type 7/9 Bolted Catalog Number	Component Starter (Open) Catalog Number
0	—	—	120	**ECN0606AAA**	**AN56BN0AC**
	200	3	208	**ECN0606EAA**	**AN56BN0EC**
	230		240	**ECN0606BAA**	**AN56BN0BC**
	460	5	480	**ECN0606CAA**	**AN56BN0CC**
	575		600	**ECN0606DAA**	**AN56BN0DC**
1	—	—	120	**ECN0616AAA**	**AN56DN0AB**
	200	7-1/2	208	**ECN0616EAA**	**AN56DN0EB**
	230		240	**ECN0616BAA**	**AN56DN0BB**
	460	10	480	**ECN0616CAA**	**AN56DN0CB**
	575		600	**ECN0616DAA**	**AN56DN0DB**
2	—	—	120	**ECN0626AAA**	**AN56GN0AB**
	200	10	208	**ECN0626EAA**	**AN56GN0EB**
	230	15	240	**ECN0626BAA**	**AN56GN0BB**
	460	25	480	**ECN0626CAA**	**AN56GN0CB**
	575		600	**ECN0626DAA**	**AN56GN0DB**
3	—	—	120	**ECN0636AAA**	**AN56KN0A**
	200	25	208	**ECN0636EAA**	**AN56KN0E**
	230	30	240	**ECN0636BAA**	**AN56KN0B**
	460	50	480	**ECN0636CAA**	**AN56KN0C**
	575		600	**ECN0636DAA**	**AN56KN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see modification codes in **Tab 15**.

① Maximum horsepower rating of starters for 380V 50 Hz applications:

NEMA Size	00	0	1	2	3	4	5	6
Horsepower	1-1/2	5	10	25	50	75	150	300

Class ECN07—Type 7/9 Non-Combination Non-Reversing Starter with CPT

NEMA Size	Primary Voltage ①	Maximum hp Rating ②	Magnet Coil Voltage	Three-Pole Type 7/9 Bolted Catalog Number	Component Starter (Open) Catalog Number
0	208	3	120	**ECN0706EAA**	**AN16BN0AC**
	240			**ECN0706BAA**	
	480	5		**ECN0706CAA**	
	600			**ECN0706DAA**	
1	208	7-1/2	120	**ECN0716EAA**	**AN16DN0AB**
	240			**ECN0716BAA**	
	480	10		**ECN0716CAA**	
	600			**ECN0716DAA**	
2	208	10	120	**ECN0726EAA**	**AN16GN0AB**
	240	15		**ECN0726BAA**	
	480	25		**ECN0726CAA**	
	600			**ECN0726DAA**	
3	208	25	120	**ECN0736EAA**	**AN16KN0A**
	240	30		**ECN0736BAA**	
	480	50		**ECN0736CAA**	
	600			**ECN0736DAA**	
4	208	40	120	**ECN0746EAA**	**AN16NN0A**
	240	50		**ECN0746BAA**	
	480	100		**ECN0746CAA**	
	600			**ECN0746DAA**	
5	208	75	120	**ECN0756EAA**	**AN16SN0AB**
	240	100		**ECN0756BAA**	
	480	200		**ECN0756CAA**	
	600			**ECN0756DAA**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see modification codes in **Tab 15**.

① For other control power transformer primary and/or secondary voltage options, see **Tab 2**.

② Maximum horsepower rating of starters for 380V 50 Hz applications:

NEMA Size	00	0	1	2	3	4	5	6
Horsepower	1-1/2	5	10	25	50	75	150	300

Freedom Full Voltage Combination

Features

- Full voltage
- Standard interchangeable heater OLR
- Optional electronic overload
- 600V maximum

Product Selection

ECN22—Type 7/9 Combination Non-Reversing Starter—Circuit Breaker

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ①	Circuit Breaker Size	Three-Pole Type 7/9 Bolted Catalog Number	Component Starter (Open) Catalog Number
0	200	1	208	7A	**ECN2206EAC**	**AN16BN0EC**
		3		15A	**ECN2206EAD**	
	230	1	240	7A	**ECN2206BAC**	**AN16BN0BC**
		3		15A	**ECN2206BAD**	
	460	1	480	3A	**ECN2206CAB**	**AN16BN0CC**
		3		7A	**ECN2206CAC**	
		5		15A	**ECN2206CAD**	
	575	1	600	3A	**ECN2206DA5**	**AN16BN0DC**
		3		7A	**ECN2206DA6**	
		5		15A	**ECN2206DA7**	
1	200	1	208	7A	**ECN2216EAC**	**AN16DN0EB**
		3		15A	**ECN2216EAD**	
		5		30A	**ECN2216EAE**	
		7-1/2		50A	**ECN2216EAF**	
	230	1	240	7A	**ECN2216BAC**	**AN16DN0BB**
		3		15A	**ECN2216BAD**	
		5		30A	**ECN2216BAE**	
		7-1/2		50A	**ECN2216BAF**	
	460	1	480	3A	**ECN2216CZB**	**AN16DN0CB**
		3		7A	**ECN2216CAC**	
		5		15A	**ECN2216CAD**	
		10		30A	**ECN2216CAE**	
	575	1	600	3A	**ECN2216DA5**	**AN16DN0DB**
		3		7A	**ECN2216DA6**	
		5		15A	**ECN2216DA7**	
		10		30A	**ECN2216DA8**	
2	200	10	208	50A	**ECN2226EAF**	**AN16GN0EB**
	230	10	240	50A	**ECN2226BAF**	**AN16GN0BB**
		15		70A	**ECN2226BAW**	
	460	25	480	50A	**ECN2226CAF**	**AN16GN0CB**
	575	15	600	30A	**ECN2226DA8**	**AN16GN0DB**
		25		50A	**ECN2226DA9**	
3	200	20	208	100A	**ECN2236EAG**	**AN16KN0E**
		25			**ECN2236EAG**	
	230	25	240	100A	**ECN2236BAG**	**AN16KN0B**
		30			**ECN2236BAG**	
	460	50	480	100A	**ECN2236CAG**	**AN16KN0C**
	575	30	600	50A	**ECN2236DA9**	**AN16KN0D**
		50		100A	**ECN2236DAI**	
4	200	40	208	150A	**ECN2246EAH**	**AN16NN0E**
	230	50	240		**ECN2246BAH**	**AN16NN0B**
	460	100	480		**ECN2246CAH**	**AN16NN0C**
	575		600		**ECN2246DAH**	**AN16NN0D**

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see modification codes in **Tab 15**.

① Starters with 120V coil (for separate control) are available. To order, substitute the letter **A** for the eighth character of the listed catalog number.

ECN23—Type 7/9 Combination Reversing Starter—Circuit Breaker

NEMA Size	Motor Voltage	Maximum hp Rating	Magnet Coil Voltage ①	Circuit Breaker Size	Three-Pole Type 7/9 Bolted Catalog Number	Component Starter (Open) Catalog Number
0	200	1	208	7A	**ECN2306EAC**	**AN56BN0EC**
		3		15A	**ECN2306EAD**	
	230	1	240	7A	**ECN2306BAC**	**AN56BN0BC**
		3		15A	**ECN2306BAD**	
	460	1	480	3A	**ECN2306CAB**	**AN56BN0CC**
		3		7A	**ECN2306CAC**	
		5		15A	**ECN2306CAD**	
	575	1	600	3A	**ECN2306DA5**	**AN56BN0DC**
		3		7A	**ECN2306DA6**	
		5		15A	**ECN2306DA7**	
1	200	1	208	7A	**ECN2316EAC**	**AN56DN0EB**
		3		15A	**ECN2316EAD**	
		5		30A	**ECN2316EAE**	
		7-1/2		50A	**ECN2316EAF**	
	230	1	240	7A	**ECN2316BAC**	**AN56DN0BB**
		3		15A	**ECN2316BAD**	
		5		30A	**ECN2316BAE**	
		7-1/2		50A	**ECN2316BAF**	
	460	1	480	3A	**ECN2316CAB**	**AN56DN0CB**
		3		7A	**ECN2316CAC**	
		5		15A	**ECN2316CAD**	
		10		30A	**ECN2316CAE**	
	575	1	600	3A	**ECN2316DA5**	**AN56DN0DB**
		3		7A	**ECN2316DA6**	
		5		15A	**ECN2316DA7**	
		10		30A	**ECN2316DA8**	
2	200	10	208	50A	**ECN2326EAF**	**AN56GN0EB**
	230	10	240	50A	**ECN2326BAF**	**AN56GN0BB**
		15		70A	**ECN2326BAW**	
	460	25	480	50A	**ECN2326CAF**	**AN56GN0CB**
	575	15	600	30A	**ECN2326DA8**	**AN56GN0DB**
		25		50A	**ECN2326DA9**	
3	200	20	208	100A	**ECN2336EAG**	**AN56KN0E**
		25			**ECN2336EAG**	
	230	25	240	100A	**ECN2336BAG**	**AN56KN0B**
		30			**ECN2336BAG**	
	460	50	480	100A	**ECN2336CAG**	**AN56KN0C**
	575	30	600	50A	**ECN2336DA9**	**AN56KN0D**
		50		100A	**ECN2336DAI**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see modification codes in **Tab 15**.

① Starters with 120V coil (for separate control) are available. To order, substitute the letter **A** for the eighth character of the listed catalog number.

ECN24—Type 7/9 Combination Non-Reversing Starter with CPT—Circuit Breaker

NEMA Size	Primary Voltage ①	Maximum hp Rating	Magnet Coil Voltage	Circuit Breaker Size	Three-Pole NEMA 7/9 Bolted Catalog Number	Component Starter (Open) Catalog Number
0	200	1	120	7A	**ECN2406EAC**	**AN16BN0AC**
		3		15A	**ECN2406EAD**	
	230	1	120	7A	**ECN2406BAC**	**AN16BN0AC**
		3		15A	**ECN2406BAD**	
	460	1	120	3A	**ECN2406CAB**	**AN16BN0AC**
		3		7A	**ECN2406CAC**	
		5		15A	**ECN2406CAD**	
	575	1	120	3A	**ECN2406DA5**	**AN16BN0AC**
		3		7A	**ECN2406DA6**	
		5		15A	**ECN2406DA7**	
1	200	1	120	7A	**ECN2416EAC**	**AN16DN0AB**
		3		15A	**ECN2416EAD**	
		5		30A	**ECN2416EAE**	
		7-1/2		50A	**ECN2416EAF**	
	230	1	120	7A	**ECN2416BAC**	**AN16DN0AB**
		3		15A	**ECN2416BAD**	
		5		30A	**ECN2416BAE**	
		7-1/2		50A	**ECN2416BAF**	
	460	1	120	3A	**ECN2416CAB**	**AN16DN0AB**
		3		7A	**ECN2416CAC**	
		5		15A	**ECN2416CAD**	
		10		30A	**ECN2416CAE**	
	575	1	120	3A	**ECN2416DA5**	**AN16DN0AB**
		3		7A	**ECN2416DA6**	
		5		15A	**ECN2416DA7**	
		10		30A	**ECN2416DA8**	
2	200	10	120	50A	**ECN2426EAF**	**AN16GN0AB**
	230	10	120	50A	**ECN2426BAF**	**AN16GN0AB**
		15		70A	**ECN2426BAW**	
	460	25	120	50A	**ECN2426CAF**	**AN16GN0AB**
	575	15	120	30A	**ECN2426DA8**	**AN16GN0AB**
		25		50A	**ECN2426DA9**	
3	200	20	120	100A	**ECN2436EAG**	**AN16KN0A**
		25			**ECN2436EAG**	
	230	25	120	100A	**ECN2436BAG**	**AN16KN0A**
		30			**ECN2436BAG**	
	460	50	120	100A	**ECN2436CAG**	**AN16KN0A**
	575	30	120	50A	**ECN2436DA9**	**AN16KN0A**
		50		100A	**ECN2436DAI**	
4	200	40	120	150A	**ECN2446EAH**	**AN16NN0A**
	230	50			**ECN2446BAH**	
	460	100			**ECN2446CAH**	
	575				**ECN2446DAH**	

Notes

Starters do not include heater packs. Select one carton of three heater packs. For heater pack selection, see **Tab 15**.

Starters with electronic overload, see modification codes in **Tab 15**.

① For other control power transformer primary and/or secondary voltage options, see **Tab 2**.

Other Hazardous Location Control

Product Description

Besides Freedom starters, Eaton offers Type 7/9 cast aluminum enclosures for solid-state reduced voltage starters and lighting contactors.

Freedom Starters

For information on hazardous location versions, please consult your Eaton representative.

Solid-State Reduced Voltage Starters

Type 7/9 versions are listed in **Tab 5**.

The ***IT.*** soft starters are designed to be the smallest, most compact soft starters on the market today. The built-in overload (ranges from 0.25 to 1000A) and run bypass contactor (greatly reducing the amount of heat generated) make installation and setup quick and easy.

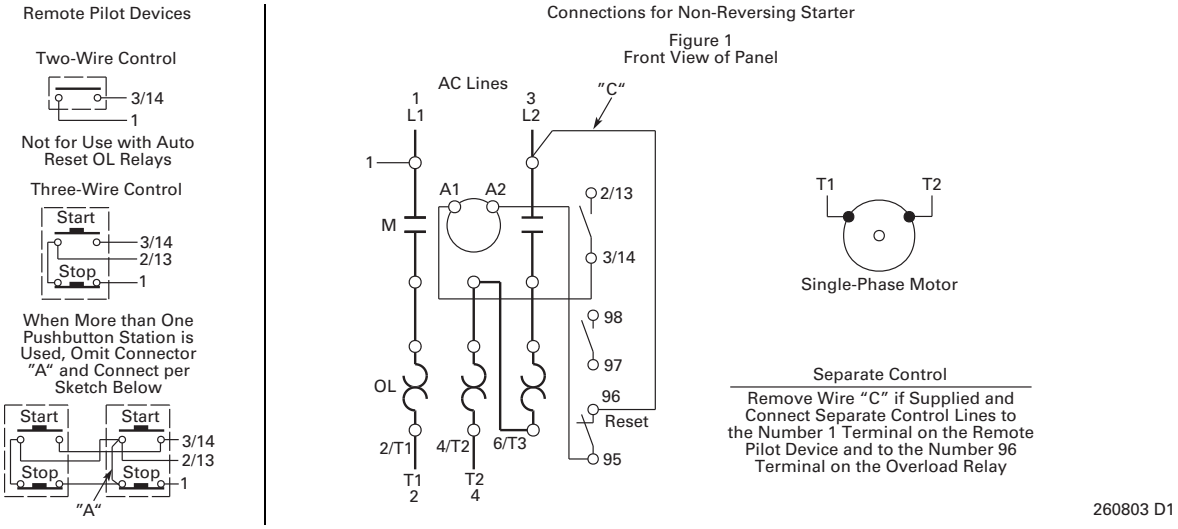
With this small size and low heat dissipation it can easily fit in the place of existing soft starters, Wye-Delta starters or across-the-line starters where others cannot. To make the retrofit more flexible, we also offer soft starters as open components or as a completed kit on a back panel for easy and quick installation into your existing enclosure.

Lighting Contactors

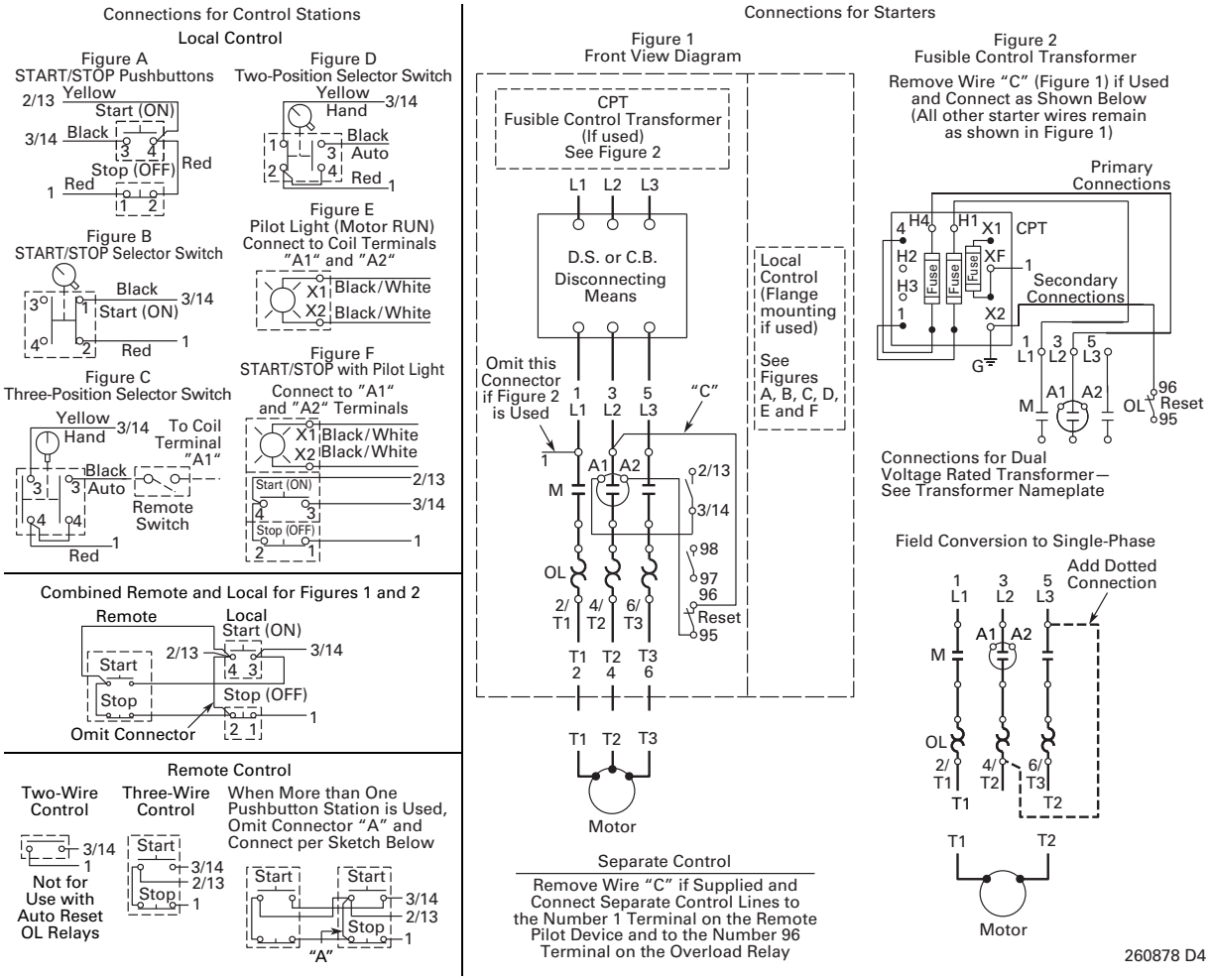
Type 7/9 versions are listed in **Tab 4**.

Wiring Diagrams

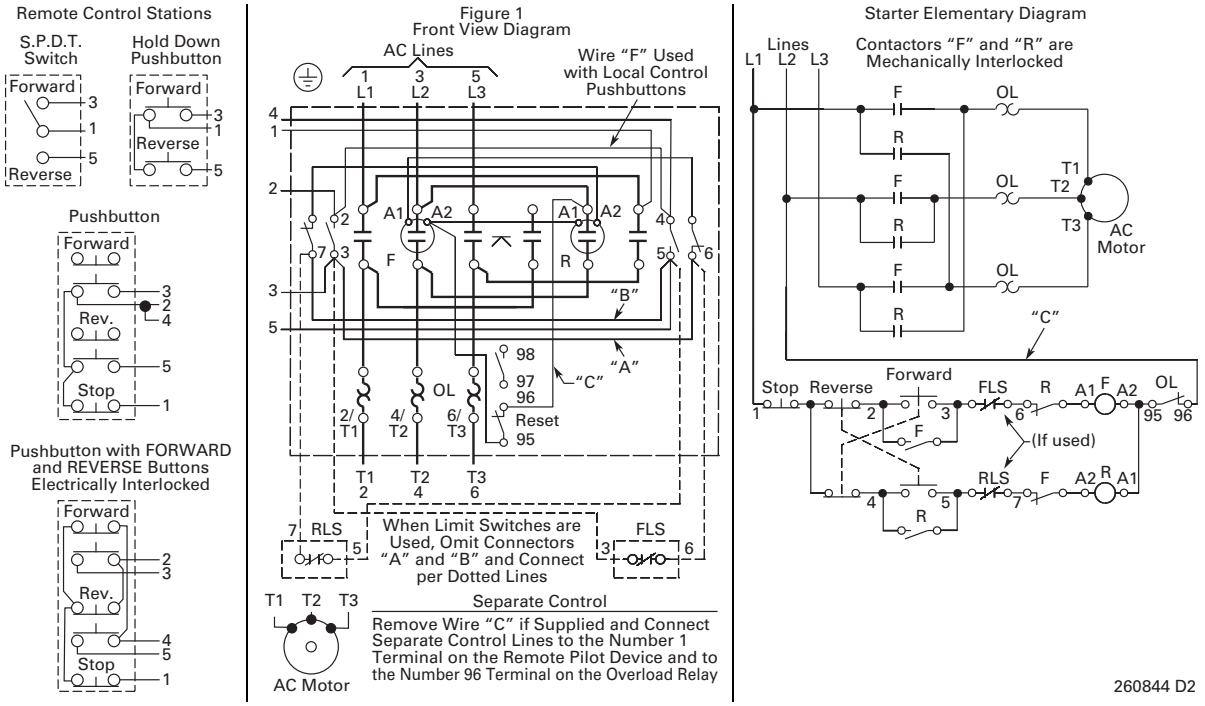
Freedom Non-Reversing Starter—Single-Phase Non-Combination



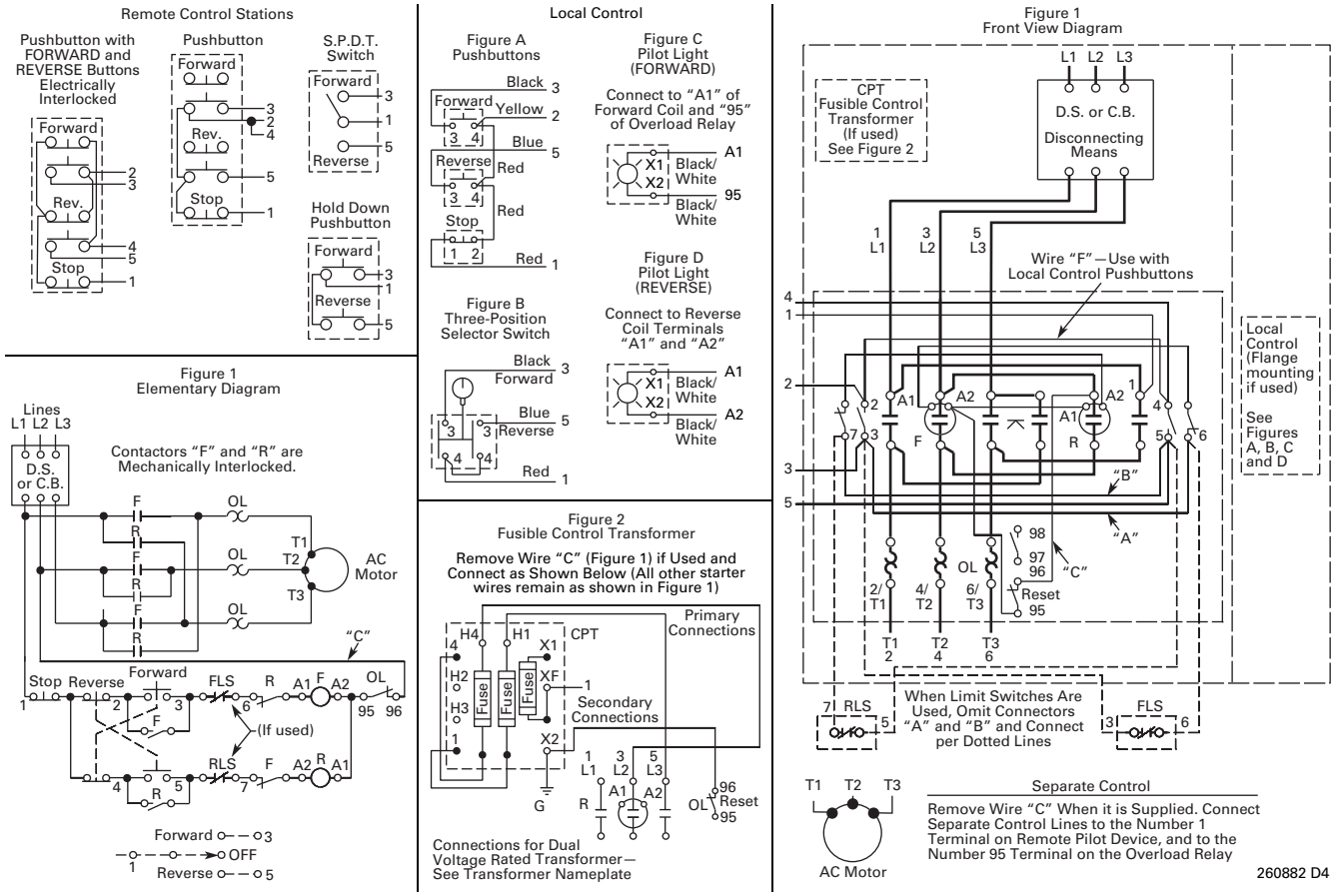
Freedom Non-Reversing Starter—Combination



Freedom Reversing Starter—Non-Combination

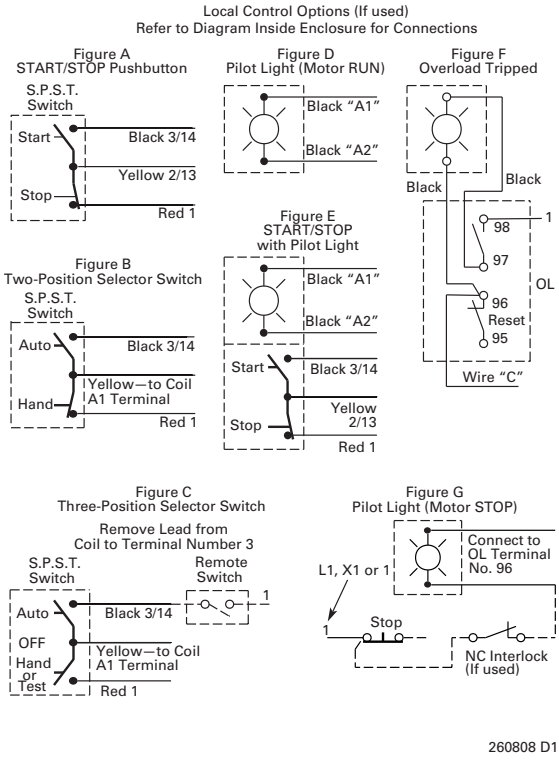


Freedom Reversing Starter—Combination

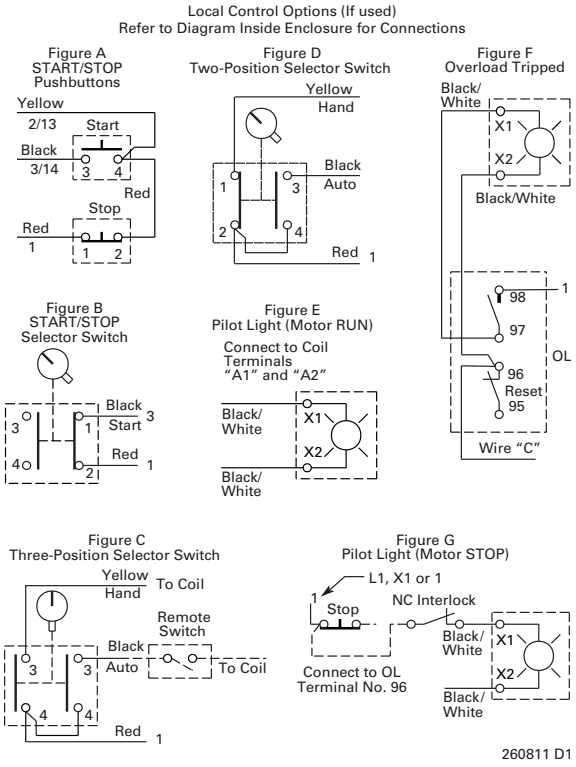


Non-Reversing Cover Control

Type 1 C400GK Control Options

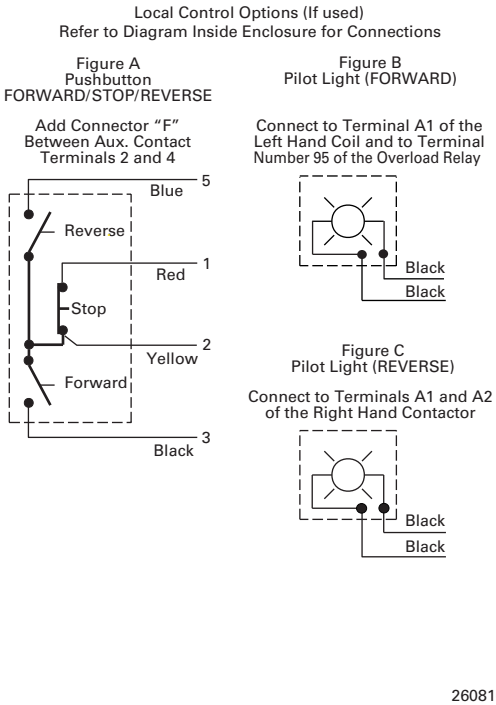


C400T Control Options

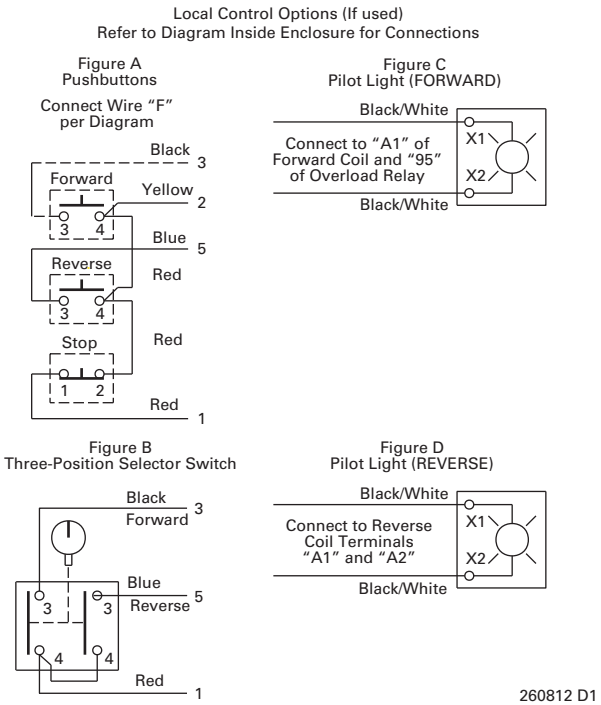


Reversing Cover Control

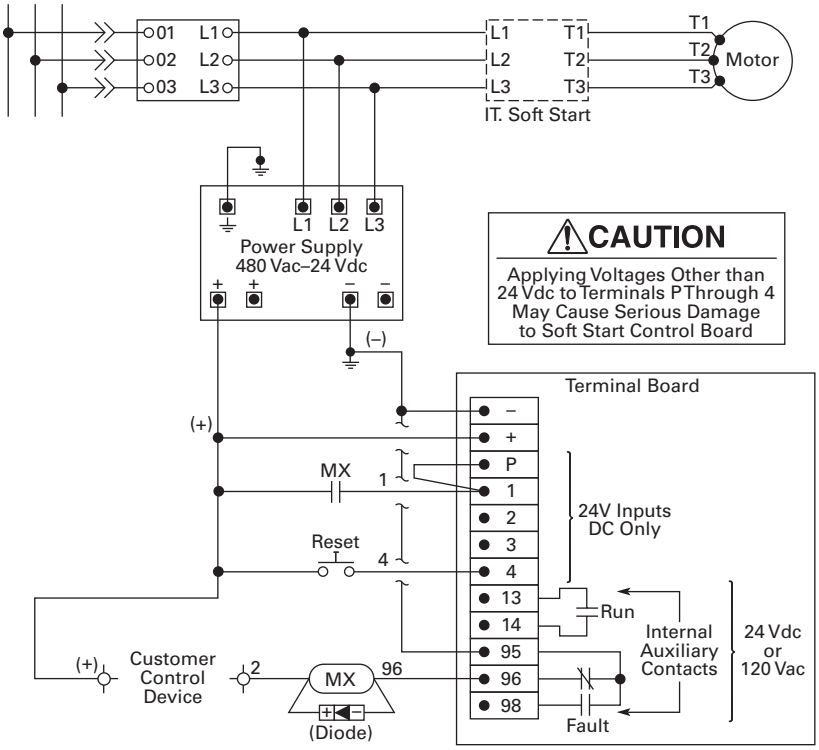
Type 1 C400GR Control Options



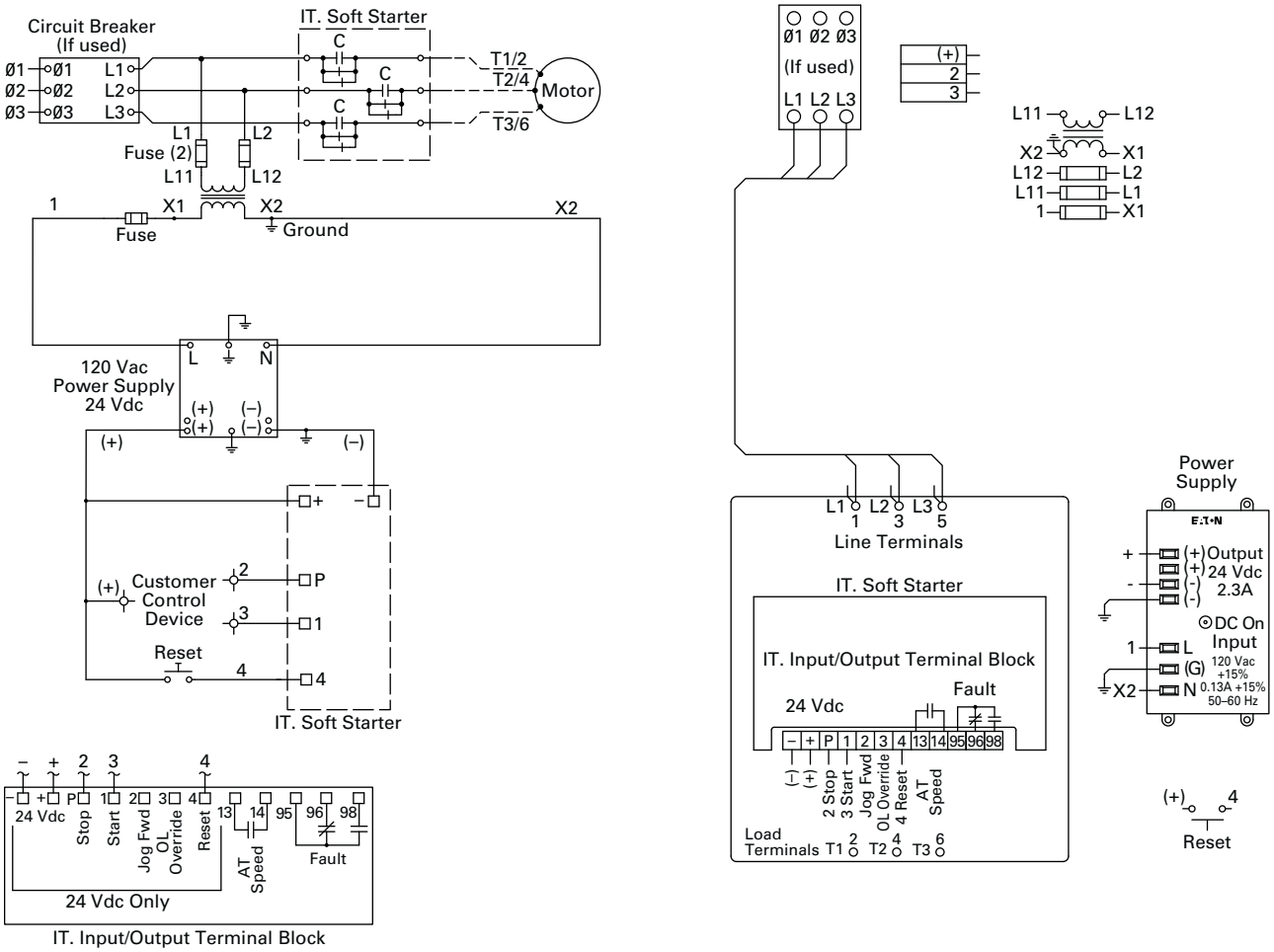
C400T Control Options



S801+/S811+ Wiring Diagram



S801+/S811+ with External 120 Vac Control



Dimensions

Approximate Dimensions in Inches

NEMA Size Freedom

Freedom Full Voltage Non-Reversing Starters

Rough Outside Dimensions	Non-Combination Sizes	Standard Conduit	Combination Sizes	Standard Conduit
17 x 14	0, 1, 2	1-1/2	—	—
28 x 14	3	2	0, 1, 2	1-1/2
32 x 18	4	2-1/2	3	2
46 x 16	5	3	4, 5	3

Reduced Voltage Solid-State

S801+/S811+ Intelligent Technologies Solid-State Soft Starters

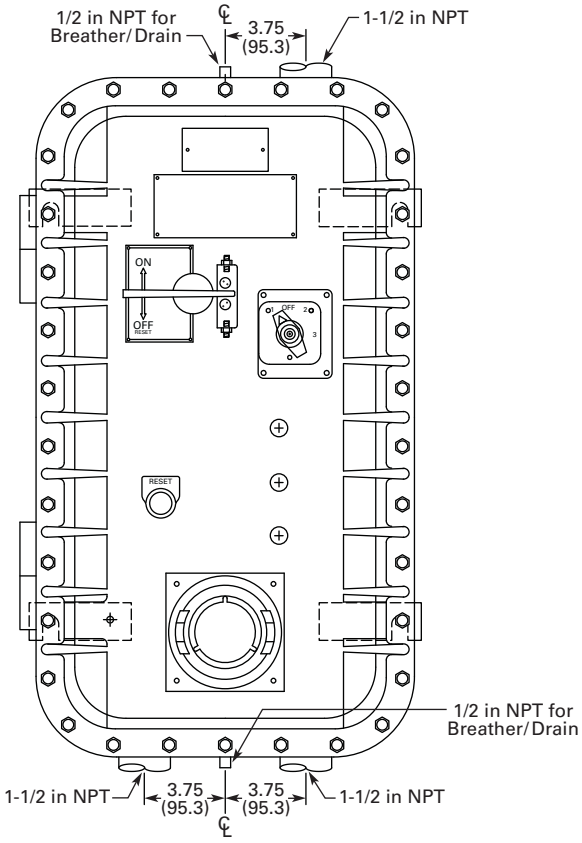
Rough Outside Dimensions	Non-Combination	Standard Conduit	Combination	Standard Conduit
17 x 14	66A	1-1/2	—	—
28 x 14	135A	2	66A	2
32 x 18	—	—	135A	2-1/2
46 x 16	304A	3	304A	3

S752 Intelligent Technologies Solid-State Soft Starters

Rough Outside Dimensions	Non-Combination	Standard Conduit	Combination	Standard Conduit
18 x 15	50A	1-1/2	—	—
28 x 14	—	—	50A	1-1/2

Approximate Dimensions in Inches (mm)

Type 7/9 Freedom Starters



Dimensions	A	B	C	D	E
Height	27.63 (701.8)	31.63 (803.4)	46.00 (1168.4)	16.63 (422.4)	17.50 (444.5)
Width	14.13 (358.9)	18.13 (460.5)	26.19 (665.2)	14.13 (358.9)	15.10 (383.5)
Depth	11.38 (289.1)	12.19 (309.6)	14.94 (379.5)	9.50 (241.3)	10.50 (266.7)
Weight in Lbs (kg)	125 (57)	195 (89)	500 (227)	80 (36)	95 (43)
I.D. Height	24	28	37	11	12
I.D. Width	10	14	17	9	10

Multi-Pak Grouping

Feeder Modules

10.1 Modules and Enclosures

Modules and Enclosures

Contents

10

Product Description

Eaton's Multi-Pak group control provides a convenient and economical method of grouping a number of starters and/or control devices. They are an effective solution for applications where the quantity of equipment required or the floor space available does not permit application of control centers or the use of individual starters. The result is a lower field installation cost and a less cluttered appearance. The Multi-Pak is ideally suited for wall mount installations, requiring only 32 in L x 26 in H space for four compartments or 48 in L x 26 in H for six compartments. Combinations of 4, 6, 8, 10, 12, 14, and so on, compartments can be easily made. Multi-Pak is available in module form or can be completely factory assembled.

Application Description

Multi-Pak starters are designed to save time, space and expense in installing motor control devices—whether for residential, commercial or industrial buildings. The modular assembly allows versatile, on-the-job arrangement of Sizes 1–4 combination starters with ambient compensated relays, incoming or feeder circuit breakers or fusible disconnect switches, pushbuttons, control transformers, timers, relays and fuses. The enclosures and separate, prewired modules are field-stocked and can be ordered individually, permitting field tailoring to suit the application.

Features

Enclosures

The Type 1 enclosures are partitioned into either four or six compartments to hold combination starter modules, incoming or feeder circuit breakers, fusible switches or other auxiliary devices. The barriers can be removed to provide oversized spaces. Each enclosure holds up to four Size 1 or 2 full voltage, non-reversing combination starter modules; up to two Size 3 or 4 starter modules or a combination of both size ranges.

The compartments have hinged doors interlocked to prevent opening when the breaker switch is in the ON position. The disconnect operating mechanism can be padlocked in the OFF position.

In addition to the barriered compartments, the enclosure contains two wiring troughs. The top section is a wireway fitted with three power terminal straps, each having terminals for extension to adjoining enclosures and to all four compartments. The incoming line and extension terminals are suitable for either copper or aluminum conductors from No. 6 to 350 kcmil. At the bottom of the enclosure is another wiring trough for interconnecting wiring and outgoing cables.

The Multi-Pak enclosure adapts easily to installation requirements. Multiple units can be arranged to suit the space available—horizontally on a single line or two-high. Knockouts are provided at the top, bottom and sides of the enclosures for conduit connection. Conduit can be installed and cables pulled as dictated by the construction schedule. Combination starter modules and incoming or feeder devices can be installed days, months or years later.

Hinged front doors provide easy access to each module. The doors are gasketed with fire retardant material. Knockouts on the doors provide pushbuttons and indicating light mountings.

Combination Starter Modules

Starter modules consist of an A200 magnetic linestarter prewired with a motor circuit protector or a fusible DS disconnect switch on a panel. Full voltage non-reversing and reversing combination starters are available. An external RESET button is mounted on the starter module door. With its versatile modular design, the Multi-Pak starter permits a variety of motor control groupings. One module can contain many different arrangements of devices such as combination linestarters with control transformers, and/or relays, two-feeder circuit breakers or fusible switches.

Feeder Modules

Like combination starter modules, breaker/switch modules are factory assembled on a formed steel panel. They are shipped complete with a door for field mounting. The module and door for feeder breakers through 100A or 30A and 60A fusible switches are normally furnished with a single breaker or switch in the top position with provisions for field mounting a second device in the lower position. A kit contains the operator, spacers, insulation and necessary hardware for adding a second device. Feeder modules for higher ratings are single units only.

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL Listed
- cUL Listed
- ABS Type Approved

Additional Reference

Product Selection

Starter Modules

When Ordering Specify

- Orders for modules, kits, and so on for field assembly should be ordered by catalog number
- Orders for factory assembled units should be placed on the customer support center. All modules, kits, and so on should be ordered by catalog number with a written description of desired modifications. (Use the modification number where possible)
- Provide a sketch or written description to define the desired locations of the modules in each enclosure along with your order

Starter Modules with Fusible Disconnect ①

NEMA Size	Maximum Horsepower 208/230 Volts NEC Fuses	Maximum Horsepower 208/230 Volts Dual Element	Maximum Horsepower 460–575 Volts NEC Fuses	Maximum Horsepower 460–575 Volts Dual Element	NEC Fuse Clip Rating Volts	NEC Fuse Clip Rating Amps	Compartments Required	Coil Voltage 120 Catalog Number	Coil Voltage 240 Catalog Number	Coil Voltage 480 Catalog Number	Coil Voltage 550 Catalog Number
Class 204—Three-Phase Non-Reversing Combination Starters											
1	3	7-1/2	5	10	600 ②	30	1	**6263A08G05**	**6263A08G01** ③	**6263A08G01** ③	**6263A08G09**
	7-1/2	—	10	—	600 ②	60	1	**6263A08G06**	**6263A08G02** ③	**6263A08G02** ③	**6263A08G10**
2	7-1/2	15	15	25	600 ②	60	1	**6263A08G07**	**6263A08G03** ③	**6263A08G03** ③	**6263A08G11**
	15	—	—	—	250	100	1	**6263A08G08**	**6263A08G04** ③	**6263A08G04** ③	—
3	15	30	—	—	250	100	2	**6263A09G01**	**6263A09G02**	—	—
	30	—	—	—	250	200	2	**6263A09G03**	**6263A09G04**	—	—
	—	—	30	50	600	100	2	**6263A09G05**	—	**6263A09G06**	**6263A09G07**
	—	—	50	—	600	200	2	**6263A09G08**	—	**6263A09G09**	**6263A09G10**
Class 214—Three-Phase Reversing Combination Starters											
1	3	7-1/2	—	—	250	30	2	**6263A10G01**	**6263A10G02**	—	—
	—	—	5	10	600	30	2	**6263A10G03**	—	**6263A10G04**	**6263A10G05**
	7-1/2	—	—	—	250	60	2	**6263A10G06**	**6263A10G07**	—	—
	—	—	10	—	600	60	2	**6263A10G08**	—	**6263A10G09**	**6263A10G10**
2	7-1/2	15	—	—	250	60	2	**6263A10G11**	**6263A10G12**	—	—
	—	—	15	25	600	60	2	**6263A10G13**	—	**6263A10G14**	**6263A10G15**
	15	—	—	—	250	100	2	**6263A10G16**	**6263A10G17**	—	—

Starter Modules with HMCP Circuit Breaker ①

NEMA Size	Maximum Horsepower 208/230 Volts	Maximum Horsepower 460–575 Volts	HMCP Trip Rating in Amperes	Compartments Required	Coil Voltage 120 Catalog Number	Coil Voltage 240 Catalog Number	Coil Voltage 480 Catalog Number	Coil Voltage 550 Catalog Number
Class 206—Three-Phase Non-Reversing Combination Starters								
1	—	1	0.69–2.5	1	**6263A01G08**	**6263A01G07**	**6263A01G07**	**6263A01G09**
	1	2	1.5–5.7	1	**6263A01G11**	**6263A01G10**	**6263A01G10**	**6263A01G12**
	3	5	3.4–12.6	1	**6263A01G14**	**6263A01G13**	**6263A01G13**	**6263A01G15**
	7-1/2	10	6.9–25.2	1	**6263A01G03**	**6263A01G01** ③	**6263A01G01** ③	**6263A01G05**
2	15	25	11.5–42.1	1	**6263A01G04**	**6263A01G02** ③	**6263A01G02** ③	**6263A01G06**
3	30	50	23–84.5	2	**6362A02G01**	**6362A02G02**	**6362A02G03**	**6362A02G04**
4	50	100	34.6–126.7	2	**6263A03G01**	**6263A03G02**	**6263A03G03**	**6263A03G04**
Class 216—Three-Phase Reversing Combination Starters								
1	3–7-1/2 ④	5–10 ④	3.4–25.2	2	**6263A04G01**	**6263A04G02**	**6263A04G03**	**6263A04G04**
2	10–15	15–25	6.9–42.1	2	**6263A04G05**	**6263A04G06**	**6263A04G07**	**6263A04G08**

Notes

① Does not include heaters. See **Pages V10-T10-7** to **V10-T10-9**.
② 600 volt clips are factory installed. A conversion kit for 250 volt fuses is included with starter modules.
③ Dual voltage coil wired for 480 volts; can be field converted to 240 volts.
④ For smaller hp, order by description for proper selection of MCP.

Feeder Switch and Circuit Breaker Modules

When Ordering Specify

- Orders for modules, kits, and so on for field assembly should be ordered by catalog number
- Orders for factory assembled units should be placed on the customer support center. All modules, kits, and so on should be ordered by style number with a written description of desired modifications. (Use the modification number where possible)
- Provide a sketch or written description to define the desired locations of the modules in each enclosure along with your order

Fusible Main and Feeder Switch Modules (Three-Pole) ①②

Volts	Switch Amperes	Fuse Clip Amperes	Compartments Required	Catalog Number
Fusible Switch with NEC Fuse Clips—Module with One Switch				
250	30	30	1	**6263A14G01**
600	30	30	1	**6263A14G02**
250	60	60	1	**6263A14G03**
600	60	60	1	**6263A14G04**
250	60	100	1	**6263A14G05**
250	100	100	2	**6263A15G01**
600	100	100	2	**6263A15G02**
250	100	200	2	**6263A15G03**
600	100	200	2	**6263A15G04**

Main and Feeder Air Circuit Breaker Modules ①③

Amperes	Poles	Compartments Required	Module with One 600 Volt Thermal/Magnetic Breaker Catalog Number
Type HFD			
15	3	1	**6263A16G01**
20	3	1	**6263A16G02**
30	3	1	**6263A16G03**
40	3	1	**6263A16G04**
50	3	1	**6263A16G05**
70	3	1	**6263A16G06**
90	3	1	**6263A16G07**
100	3	1	**6263A16G08**
125	3	2	**6263A17G01**
150	3	2	**6263A17G02**
175	3	2	**6263A17G03**
200	3	2	**6263A17G04**
225	3	2	**6263A17G05**

Notes

① Includes door.

② Two switches 60 amperes and below can be mounted in one compartment. Order by description. If second fusible switch is to be mounted in the field, order modification kit catalog number **6263A18G01**, as shown in table on **Page V10-T10-10**. Doors for fusible switch modules have cutout for second operating handle.

③ Two breakers 100 amperes and below can be mounted in one compartment. Order by description. If second breaker is to be mounted in the field, order modification kit catalog number **6263A18G02**, as shown in table on **Page V10-T10-10**. Doors for breaker modules have cutout for second operating handle.

Enclosures and Blank Doors

When Ordering Specify

- Total number of compartments required
- Quantity of four compartment and/or six compartment enclosures required. (Include future space requirements)

Compartments

Compartments ☐

Four ☐ Six ☐

Enclosures and Blank Doors Product Selection

Description	Catalog Number
Type 1 enclosure ①	
With four compartments	**6262A70G01**
With six compartments	**6262A70G02**
Dust and weather resistant enclosure to house Type 1 enclosure	
With four compartments	**6262A70G05**
With six compartments	**6262A70G06**
Blank door for one compartment	**6262A70G03**
Blank door for two compartments and blank back pan for two compartments	**6262A70G04**

Note

① Incoming line and extension terminals included are suitable for either copper or aluminum conductors from 6–350 kcmil.

Heater Selection

The full load current shown on each motor nameplate should be checked with the heater application tables to assure that the heaters chosen with each starter unit agree with this table and with the actual motor protection requirements. Do not rely on code marking on the heater to indicate current rating. In making this check, the following Notes 1–3 regarding special conditions should be considered.

Notes on Overload Heater Application

1. The heater application tables provide 115–125% protection for motors rated 40°C having a service factor of 1.15 and 1.25.
2. Use one smaller heater when:
   a. The motor is rated 50° or 55°C.
   b. The motor has a service factor of 1.00.
   c. A maximum of 115 protection is desired.
3. Overload relays are ambient compensated, therefore base heater selection on motor current, and disregard ambient temperature differences.

The relay will provide protection against abnormal load conditions to current values exceeding normal locked rotor current. The relay should be protected against short-circuits by providing branch circuit protection per National Electric Code, but not to exceed the maximum fuse ratings listed in the heater tables.

Note: To provide continued protection against fire and shock hazard, the complete overload relay must be replaced if burn out of the current element occurs.

Overload Relays, Three-Pole Protection

Heater Selection—Starter Size 1 ①

Motor Full Load Current in Amperes ②	Style Number	Maximum Breaker or Fuse	Catalog Number
0.51–0.55	117C524G10	2	**FH10**
0.56–0.62	117C524G11	2	**FH11**
0.63–0.68	117C524G12	2.5	**FH12**
0.69–0.75	117C524G13	3	**FH13**
0.76–0.83	117C524G14	3	**FH14**
0.84–0.91	117C524G15	3	**FH15**
0.92–1.00	117C524G16	3	**FH16**
1.01–1.11	117C524G17	4	**FH17**
1.12–1.22	117C524G18	4	**FH18**
1.23–1.34	117C524G19	5	**FH19**
1.35–1.47	117C524G20	5	**FH20**
1.48–1.62	117C524G21	5	**FH21**
1.63–1.78	117C524G22	6	**FH22**
1.79–1.95	117C524G23	6	**FH23**
1.96–2.15	117C524G24	8	**FH24**

Notes

① Use in fusible starters only. Do not use with circuit breakers.
② Ambient compensated.

Heater Selection—Starter Size 1 and 2

Motor Full Load Current in Amperes ①	Style Number	Maximum Breaker or Fuse	Catalog Number
2.16–2.35 ②	117C524G25	8	**FH25**
2.36–2.58 ②	117C524G26	8	**FH26**
2.59–2.83 ②	117C524G27	10	**FH27**
2.84–3.11 ②	117C524G28	10	**FH28**
3.12–3.42 ②	117C524G29	12	**FH29**
3.43–3.73 ②	117C524G30	12	**FH30**
3.74–4.07	117C524G31	15	**FH31**
4.08–4.39	117C524G32	15	**FH32**
4.40–4.87	117C524G33	15	**FH33**
4.88–5.3	117C524G34	20	**FH34**
5.4–5.9	117C524G35	20	**FH35**
6.0–6.4	117C524G36	20	**FH36**
6.5–7.1	117C524G37	25	**FH37**
7.2–7.8	117C524G38	25	**FH38**
7.9–8.5	117C524G39	30	**FH39**
8.6–9.4	117C524G40	30	**FH40**
9.5–10.3	117C524G41	35	**FH41**
10.4–11.3	117C524G42	35	**FH42**
11.4–12.4	117C524G43	40	**FH43**
12.5–13.5	117C524G44	45	**FH44**
13.6–14.9	117C524G45	45	**FH45**
15.0–16.3	117C524G46	50	**FH46**
16.4–18.0	117C524G47	60	**FH47**
18.1–19.8	117C524G48	60	**FH48**
19.9–21.7	117C524G49	70	**FH49**
21.8–23.9	117C524G50	80	**FH50**
24.0–26.2	117C524G51	80	**FH51**
26.3–28.7	117C524G52	90	**FH52**

Heater Selection—Starter Size 2

Motor Full Load Current in Amperes ①	Style Number	Maximum Breaker or Fuse	Catalog Number
28.8–31.4	117C524G53	100	**FH53**
31.5–34.5	117C524G54	125	**FH54**
34.6–37.9	117C524G55	125	**FH55**
38.0–41.5	117C524G56	125	**FH56**
41.6–45.5	117C524G57	150	**FH57**

Notes

① Ambient compensated.

② Use in fusible starters only. Do not use with circuit breakers.

Heater Selection—Starter Size 3 and 4

Motor Full Load Current in Amperes ①	Style Number	Maximum Breaker or Fuse	Catalog Number
19.0–20.8	179C319G02	80	**FH72**
20.9–22.9	179C319G03	90	**FH73**
23.0–25.2	179C319G04	100	**FH74**
26.3–27.8	179C319G05	100	**FH75**
27.9–30.6	179C319G06	110	**FH76**
30.7–33.5	179C319G07	125	**FH77**
33.6–37.5	179C319G08	150	**FH78**
37.6–41.5	179C319G09	150	**FH79**
41.6–46.3	179C319G10	175	**FH80**
46.4–50.0	179C319G11	200	**FH81**
51.0–55.0	179C319G12	200	**FH82**
56.0–61.0	179C319G13	225	**FH83**
62.0–66.0	179C319G14	250	**FH84**
67.0–73.0	179C319G15	250	**FH85**
74.0–79.0	179C319G16	250	**FH86**
80.0–87.0	179C319G17	300	**FH87**
88.0–90.0	179C319G18	350	**FH88**

Heater Selection—Starter Size 4

Motor Full Load Current in Amperes ①	Style Number	Maximum Breaker or Fuse	Catalog Number
88.0–95.0	179C319G18	350	**FH88**
96.0–105.0	179C319G19	300	**FH89**
106.0–116.0	179C319G20	300	**FH90**
117.0–128.0	179C319G21	350	**FH91**

Note

① Ambient compensated.

Accessories

Transformer Kits

Includes transformer, fuse clip mounting and fuse clip.

Transformer Sizes [1]

Size	VA Capacity Freedom	Vacuum	Size	VA Capacity Freedom	Vacuum
0	50	—	4	200	100
1, 2	100	—	5	200	150
3	150	—	6	250	350

Control Transformer Kits

Continuous VA	Primary 208/277V Secondary 120V, 60 Hz Catalog Number	Primary 240/480V, 60 Hz 220/440V, 50 Hz Secondary 120V, 60 Hz 110V, 50 Hz Catalog Number	Primary 380V Secondary 110V, 50 Hz Catalog Number	Primary 600V, 60 Hz 550V, 50 Hz Secondary 120V, 60 Hz 110V, 50 Hz Catalog Number	Primary 240/480V, 60 Hz Secondary 24V, 60 Hz Catalog Number
50	**C341AE**	**C341AC**	**C341AL**	**C341AD**	**C341AS**
75	**C341BE**	**C341BC**	**C341BL**	**C341BD**	**C341BS**
100	**C341CE**	**C0100E2AFB**	**C341CL**	**C341CD**	**C341CS**
150	**C341DE**	**C341DC**	**C341DL**	**C341DD**	**C341DS**
200	**C341EE**	**C341EC**	**C341EL**	**C341ED**	**C341ES**
250	**C341FE**	**C341FC**	**C341FL**	**C341FD**	**C341FS**
300	**C341GE**	**C341GC**	**C341GL**	**C341GD**	**C341GS**
350	**C341HE**	**C341HC**	**C341HL**	**C341HD**	**C341HS**
500	**C341JE**	**C341JC**	**C341JL**	**C341JD**	**C341JS**

Breaker/Switch Modification Kits

Kit includes all necessary hardware for mounting Type T 30 or 60 ampere Visi-Flex switch or any Type FD or HMCP circuit breaker in the lower blank location in any of the switch or breaker modules as noted. The switch or breaker is not included with the kit.

Breaker/Switch Kits

Description	Catalog Number
Modification kit for second fusible switch	**6263A18G01**
Modification kit for second circuit breaker	**6263A18G02**

Terminal Kits

Terminal Kits

Description	Catalog Number
Neutral or replacement kit	**6263A18G08**

Note

[1] Non-reversing, single contactor only.

Modification Codes

Factory Installed Modifications

Description	Modification Number
Pushbutton ①	
Two-unit	**1**
Three-unit	**1**
Two- or three-unit selector switch ①	**2**
Indicating light (specify color) ①	**3**
Push-to-test indicating light ①	**4**
Extra auxiliary contact (per contact)	**5**
Control relay (D15) ②	
Two-pole	**6**
Four-pole	**6**
Timing relay ②	**7**
Substitute mark 75 breaker for standard or feeder unit	**8**
Control transformer ③	
Size 1	**9**
Size 2	**9**
Size 3	**9**
Size 4	**9**

Notes

① Three devices per module maximum.
② Refer to factory for spacing.
③ Primary and secondary fusing supplied.

For more modification codes, see **Tab 15**.

Dimensions

Approximate Dimensions in Inches (mm)

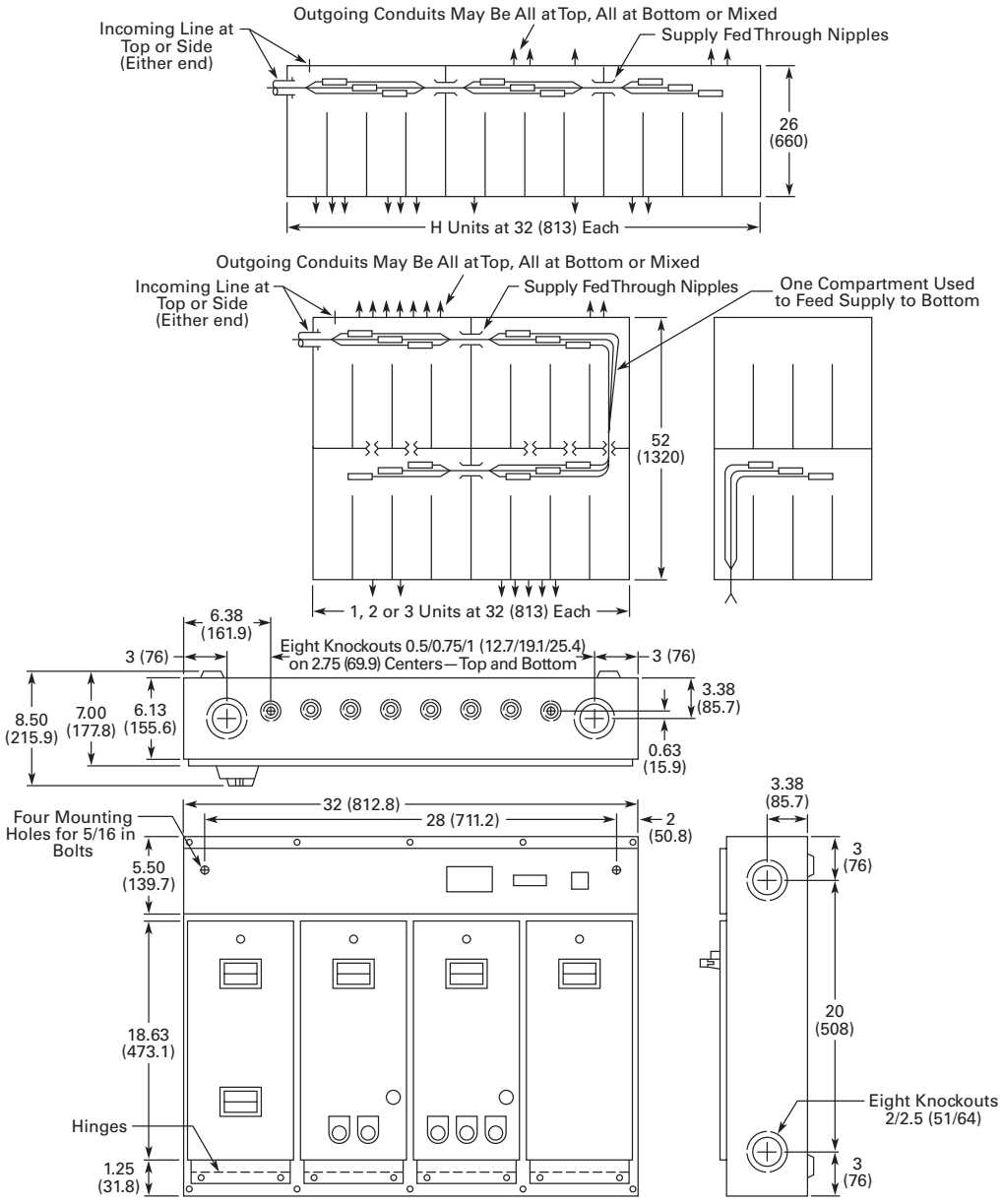
Dimension and Wiring Arrangements

Type 1 enclosures are 32 or 48 in (813 or 1219 mm) wide, 26 in (660 mm) high and 7 in (178 mm) deep, with provisions for four-bolt wall mounting. Enclosures may be grouped together by nippling through the knockouts provided.

Load and control conduits may enter at the top or bottom. Instructions for overload heater installation are attached to each starter door.

Dust and weather resistant enclosures for four- or six-module units are available. These enclosures are 34 or 50 in (864 or 1270 mm) wide, 31 in (787 mm) high and 11.75 in (298 mm) deep.

Approximate Dimensions and Wiring Arrangements, Four Module Unit



Note

Six-module units are 48 in wide.

Approximate Dimensions in Inches (mm)

Enclosures and Blank Doors

Description	Width	Height	Depth	Shipping Weight Lbs (kg)
Type 1 enclosure ①				
With four compartments	32 (813)	26 (660)	7 (178)	50 (23)
With six compartments	48 (1219)	26 (660)	7 (178)	70 (32)
Dust and weather resistant enclosure to house Type 1 enclosure				
With four compartments	34 (864)	31 (787)	11.75 (298)	35 (16)
With six compartments	50 (1270)	31 (787)	11.75 (298)	50 (23)
Blank door for one compartment	—	—	—	3 (1.4)
Blank door for two compartments and blank back pan for two compartments	—	—	—	8 (3.6)

Shipping Weights

Module Weights

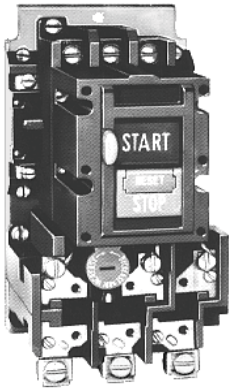
Description	Weight Lbs (kg)	Description	Weight Lbs (kg)
Fusible switches		Starters—A204, A206	
30–60 Amperes	10 (4.5)	Sizes 1, 2	15 (6.8)
100 Amperes	15 (6.8)	Sizes 3, 4	25 (11.4)
Circuit breakers		Starters—A214	
15–100 Amperes	10 (4.5)	Sizes 1, 2	15 (6.8)
125–225 Amperes	20 (9.1)	Starters—A216	
		Sizes 1, 2	20 (9.1)

Note

① Incoming line and extension terminals included are suitable for either copper or aluminum conductors from 6 to 350 kcmil.

Single-Phase Starters

Single- and Three-Phase Starters



11.1 Single-Phase Starters

MS Series

11.2 Single- and Three-Phase Starters

Type B100

Single-Phase Starters

Contents

MS Series

Product Description

- Eaton's MS motor starter is a compact, versatile unit featuring heavy sliding contacts as well as "quick-make" and "quick-break" mechanism
- Standard with large pressure type terminals, straight-through wiring and a trip-free handle mechanism
- The "plug-in" heater element is keyed to ensure proper positioning and an adjustable knob allows a setting of plus or minus ten percent of the nominal heater rating

Application Description

The MS manual motor starter provides manual control and overload protection to single-phase motors. By utilizing the interchangeable heater elements, the starter can protect motors ranging from 0.40A up to 16.0A. Ideal for HVAC applications.

Features

- Compact size
- Trip-free handle mechanism
- Keyed heater elements to ensure proper installation
- Starters available with red pilot light
- The operating handle of the enclosed units can be locked in the OFF position
- Enclosures are offered in Type 1, 3, 4 and 5
- Hazardous locations cast aluminum enclosures are available rated for Type 7, Class I, Group D (vapors) and Type 9, Class II, Groups E, F an G (dust)

Instructional Leaflet

IL12987G

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL File No. E1922, Category NLRV (for motor controller)
- CSA File No. LR39402-6, Class 3211-05
- ABS Type Approved
- OSHPD Certified (OSP-0015-10)

Product Selection

When Ordering Specify

- Catalog number of manual motor starter
- Heater pack selection
- Any required accessories
- Heater coil selection according to the motor full load current requirements

MS Series Starters—Open Type

Number of Poles	Horsepower	Voltage	Catalog Number ①
1	1	120/240V, 277 Vac	**MST01**
	1/4	120/240 Vdc	
	1/4	32 Vdc	
2	1	120/240V, 277 Vac	**MST02**
	1	120/240 Vdc	
	1/4	32 Vdc	

Switch and Pilot Light Mounted on Flush Plate

MS Series Starters—Flush Plate Type (No Enclosure Included)

Number of Poles	Flush Plate Type	Description	Catalog Number ①
1	General purpose	Switch only	**MST01FN**
		Switch with pilot light	**MST01FN1P**
2		Switch only	**MST02FN**
		Switch with pilot light	**MST02FN1P**
1	Stainless steel	Switch only	**MST01DN**
		Switch with pilot light	**MST01DN1P**
2		Switch only	**MST02DN**
		Switch with pilot light	**MST02DN1P**

Switch and Pilot Light Mounted in Type 1 Enclosure

Waterproof Type 3, 4 and 5

Hazardous Location Type 7D, 9E, 9F and 9G

MS Series Starters—Enclosed Type

Number of Poles	Enclosure Type	Description	Catalog Number ①
1	General purpose Type 1	Switch only	**MST01SN**
		Switch with pilot light	**MST01SN1P**
2		Switch only	**MST02SN**
		Switch with pilot light	**MST02SN1P**
1	Waterproof Type 3, 4 and 5	Through hub	**MST01AH**
2		Through hub	**MST02AH**
1	Hazardous location ② Types 7D, 9E, 9F and 9G	Through hub	**MST01EH**
2		Through hub	**MST02EH**

Notes

① Does not include heater. Select heater from table on **Page V10-T11-4**.

② Type 7D = Type 7, Class I, Group D; Type 9E, 9F and 9G = Type 9, Class II, Groups E, F and G.

Typical Heater

Heater Element Installation

Heater Selection for MS Starters

Motor Full Load Current	Catalog Number	Motor Full Load Current	Catalog Number
0.4 –0.43	**MSH-5A**	2.72–2.95	**MSH3-4A**
0.44–0.48	**MSH-55A**	2.96–3.27	**MSH3-7A**
0.49–0.53	**MSH-61A**	3.28–3.59	**MSH4-1A**
0.54–0.58	**MSH-67A**	3.60–3.99	**MSH4-5A**
0.59 –0.64	**MSH-74A**	4.00–4.39	**MSH5-0A**
0.65–0.71	**MSH-81A**	4.40–4.79	**MSH5-5A**
0.72–0.78	**MSH-89A**	4.80–5.26	**MSH6-0A**
0.79–0.87	**MSH-98A**	5.27–5.83	**MSH6-6A**
0.88–0.95	**MSH1-1A**	5.84–6.39	**MSH7-3A**
0.96–1.03	**MSH1-2A**	6.40–7.03	**MSH8-0A**
1.04–1.15	**MSH1-3A**	7.04–7.74	**MSH8-8A**
1.16–1.27	**MSH1-45A**	7.75–8.46	**MSH9-7A**
1.28–1.35	**MSH1-6A**	8.47–9.35	**MSH10-6A**
1.36–1.51	**MSH1-7A**	9.36–10.30	**MSH11-7A**
1.52–1.67	**MSH1-9A**	10.31–11.35	**MSH12-9A**
1.68–1.83	**MSH2-1A**	11.36–12.47	**MSH14-2A**
1.84–1.99	**MSH2-3A**	12.48–13.67	**MSH15-6A**
2.00–2.23	**MSH2-5A**	13.68–15.12	**MSH17-1A**
2.24–2.47	**MSH2-8A**	15.13–16.00	**MSH18-6A**
2.48–2.71	**MSH3-1A**		

Accessories

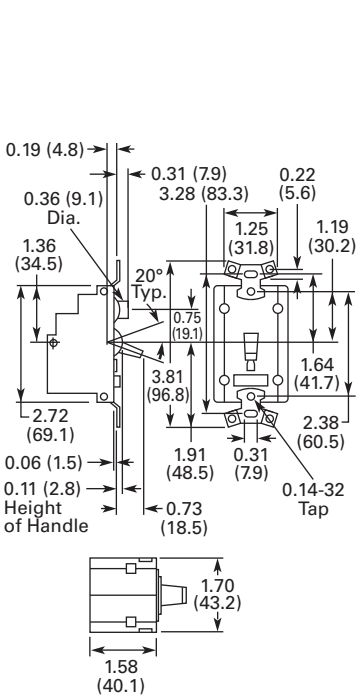
MS Series Accessories

Description	Catalog Number
Pilot light kit (NEMA 1 enclosure and flush plates)	**MSPT**
Box, 1 unit (NEMA 1 enclosure)	**MS1BN**
Cover, 1 unit (NEMA 1 enclosure)	**MS1CN**
Flush plate, 1 unit (steel)	**MS1FN**
Flush plate, 1 unit (stainless steel)	**MS1DN**
Handle guard (padlockable for NEMA 1 enclosure and flush plates)	**MSLG**

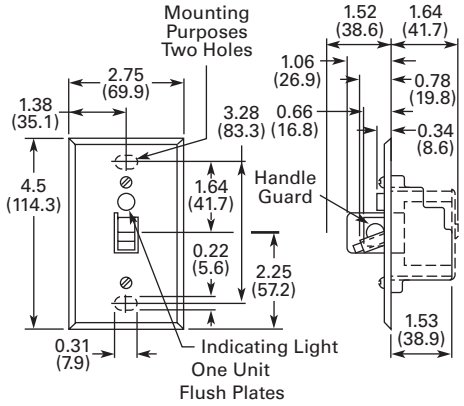
Dimensions

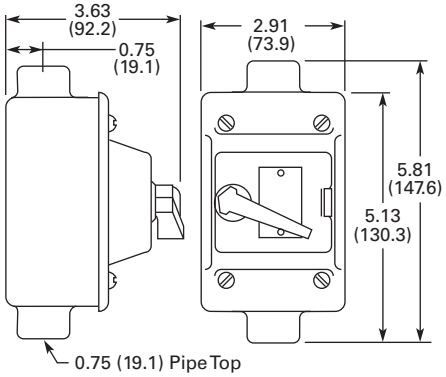
Approximate Dimensions in Inches (mm)

MS Series Single-Phase Starters

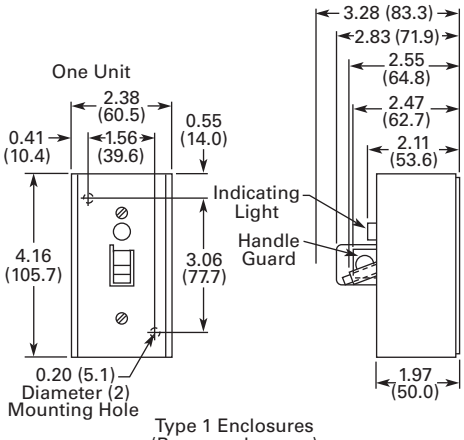


MS Motor Starter
Toggle Operated Open Units

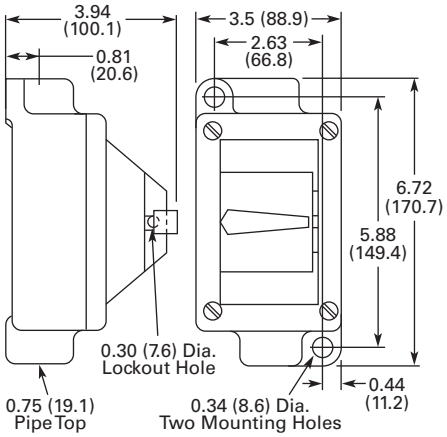




Watertight (Cast aluminum)

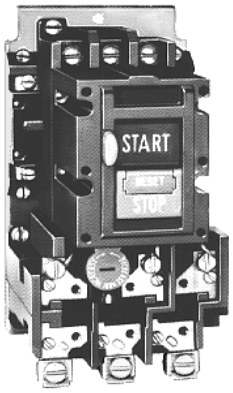


Type 1 Enclosures
(Boxes and covers)



Hazardous Location (Cast aluminum)

Single- and Three-Phase Starters



Contents

11

Type B100

Product Description

Eaton's B100 manual motor starters can be used in single-phase applications rated 3 hp at 240 Vac or 2 hp at 230 Vdc. The starter can also be rated for three-phase applications up to 10 hp at 600 Vac.

There are two methods of operation for the B100 manual starter. It can be ordered with a toggle switch operator or a START/STOP pushbutton operator.

Application Description

The B100 family of manual motor starters provides manual control, as well as overload protection, to both single-phase and three-phase motors. The starter protects motors up to 38.9A single-phase and 26.8A three-phase with the appropriate heater selection.

Features

- Includes three-pole bimetallic overload relay
- Straight-through wiring
- Field mounted auxiliary contacts
- Available in Type 1, 4, 7, 9 and 12 enclosures with toggle operation (Type 1 enclosure for pushbutton operator)
- Standard with a lockout device to lock motor in the OFF position

Instructional Leaflet

IL14890

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL File No. E19222, Category NLRV (for motor controller)
- CSA File No. LR39402-6, Class 3211-05 (open starters)
- CSA File No. LR54517-1, Class 3211-05 (closed starters)
- ABS Type Approved
- OSHPD Certified (OSP-0015-10)

Product Selection

When Ordering Specify

- Catalog number of starter with application modifications
- Heater pack selection—a three-phase starter requires three heaters, and a single-phase starter requires two heaters
- Any required accessories

Toggle Operated

Type 1 Enclosure

Toggle and Pushbutton Operated Starters

NEMA Size	Open Type Toggle Handle Catalog Number ①	Enclosed Type 1 General Purpose Catalog Number ①	Type 4 Watertight, Stainless Steel ② Catalog Number ①	Type 7D, 9E, 9F and 9G for Hazardous Locations ③④ Catalog Number ①	Type 12 Dust-Tight Catalog Number ①
Type B100 Non-Reversing Two-Pole (For Single-Phase Motors and DC)					
M-0	**B100M0B**	**B100S0B**	**B100W0B**	**B100U0B**	**B100J0B**
M-1	**B100M1B**	**B100S1B**	**B100W1B**	**B100U1B**	**B100J1B**
Type B100 Non-Reversing Three-Pole (For Polyphase Motors) ④					
M-0	**B100M0C**	**B100S0C**	**B100W0C**	**B100U0C**	**B100J0C**
M-1	**B100M1C**	**B100S1C**	**B100W1C**	**B100U1C**	**B100J1C**

Notes

① Does not include heaters. Select catalog numbers of heaters from table on **Page V10-T11-8**.
② One 1-inch chrome hub supplied on each end.
③ Type 7D = Type 7, Class I, Group D. Type 9E, 9F and 9G = Type 9, Class II, Groups E, F and G.
④ Tapped for 1-inch conduit on each end.

Heater Selection

Motor Full Load Current	Maximum Fuse Amps	Catalog Number	Motor Full Load Current	Maximum Fuse Amps	Catalog Number	Motor Full Load Current	Maximum Fuse Amps	Catalog Number
Single-Phase Enclosed Starters ①								
0.28–0.29	1	**FH03**	1.90–2.10	7	**FH22**	9.59–10.40	35	**FH40**
0.30–0.33	1	**FH04**	2.11–2.32	8	**FH23**	10.41–11.30	35	**FH41**
0.34–0.36	1	**FH05**	2.33–2.54	8	**FH24**	11.40–12.20	40	**FH42**
0.37–0.40	1	**FH06**	2.55–2.79	9	**FH25**	12.30–13.50	45	**FH43**
0.41–0.45	1	**FH07**	2.80–3.07	10	**FH26**	13.60–14.90	50	**FH44**
0.46–0.50	1	**FH08**	3.08–3.36	10	**FH27**	15.00–16.00	50	**FH45**
0.51–0.56	1	**FH09**	3.37–3.68	10	**FH28**	16.10–17.10	60	**FH46**
0.57–0.63	2	**FH10**	3.69–4.03	10	**FH29**	17.20–18.30	60	**FH47**
0.64–0.70	2	**FH11**	4.04–4.40	15	**FH30**	18.40–19.70	70	**FH48**
0.71–0.78	2	**FH12**	4.41–4.81	15	**FH31**	19.80–21.20	70	**FH49**
0.79–0.86	2	**FH13**	4.82–5.26	15	**FH32**	21.30–22.80	80	**FH50**
0.87–0.95	3	**FH14**	5.27–5.74	15	**FH33**	22.90–24.50	88	**FH51**
0.96–1.04	3	**FH15**	5.75–6.26	20	**FH34**	24.60–26.40	90	**FH52**
1.05–1.14	3	**FH16**	6.27–6.83	20	**FH35**	26.50–28.50	90	**FH53**
1.15–1.25	4	**FH17**	6.84–7.45	25	**FH36**	28.60–30.80	100	**FH54**
1.26–1.39	4	**FH18**	7.46–8.11	25	**FH37**	30.90–33.30	110	**FH55**
1.40–1.54	5	**FH19**	8.12–8.81	30	**FH38**	33.40–36.00	125	**FH56**
1.55–1.71	5	**FH20**	8.82–9.58	30	**FH39**	36.10–38.90	125	**FH57**
1.72–1.89	6	**FH21**						
Three-Phase Enclosed Starters ②								
0.25–0.26	1	**FH03**	1.51–1.66	5	**FH21**	7.12–7.73	25	**FH38**
0.27–0.29	1	**FH04**	1.67–1.84	5	**FH22**	7.74–8.40	25	**FH39**
0.30–0.32	1	**FH05**	1.85–2.03	7	**FH23**	8.41–9.12	30	**FH40**
0.33–0.35	1	**FH06**	2.04–2.23	7	**FH24**	9.13–9.89	35	**FH41**
0.36–0.39	1	**FH07**	2.24–2.45	8	**FH25**	9.90–10.70	35	**FH42**
0.40–0.44	1	**FH08**	2.46–2.69	9	**FH26**	10.80–11.80	40	**FH43**
0.45–0.49	1	**FH09**	2.70–2.95	10	**FH27**	11.90–13.00	45	**FH44**
0.50–0.55	1	**FH10**	2.96–3.23	10	**FH28**	13.10–14.00	50	**FH45**
0.56–0.61	2	**FH11**	3.24–3.53	10	**FH29**	14.10–15.00	50	**FH46**
0.62–0.68	2	**FH12**	3.54–3.85	10	**FH30**	15.10–16.10	50	**FH47**
0.69–0.75	2	**FH13**	3.86–4.22	10	**FH31**	16.20–17.30	60	**FH48**
0.78–0.83	2	**FH14**	4.23–4.61	15	**FH32**	17.40–18.60	60	**FH49**
0.84–0.91	3	**FH15**	4.62–5.03	15	**FH33**	18.70–20.00	70	**FH50**
0.92–1.00	3	**FH16**	5.04–5.49	15	**FH34**	20.10–21.50	70	**FH51**
1.01–1.10	3	**FH17**	5.50–5.99	20	**FH35**	21.60–23.20	80	**FH52**
1.11–1.22	4	**FH18**	6.00–6.53	20	**FH36**	23.30–25.00	80	**FH53**
1.23–1.35	4	**FH19**	6.54–7.11	25	**FH37**	25.10–26.80	90	**FH54**
1.36–1.50	5	**FH20**						

Notes

① Single-phase starters require two overload heaters.

② Three-phase starters require three overload heaters.

FH series heaters are for type B100 manual motor starters. Heater element selection is based on motor nameplate's listed full load amperes.
Trip rating of this series of elements is 125% of minimum motor full load amperes listed for the element.

When motor and overload relay are in the same ambient and the service factor of the motor is 1.15 to 1.25, select heaters from the heater selection table.
If the service factor is 1.0 or less (including zero), or a maximum of 115% protection is desired, select a heater one size smaller than indicated for the amperage range required.

Accessories

Accessories

Description	Catalog Number
Field Mounting Kits	
Auxiliary contact	
1NO	**B1A**
1NC	**B1B**
Red pilot light	
120/60 (Type 1 enclosed only)	**LK-21**
208-240/6 (Type 1 enclosed only)	**LK-22**
480-600/60 (Type 1 enclosed only)	**LK-26**
For Type 4 and 12 Enclosures Only	
Red pilot light	
120V	**LK-41**
240V	**LK-42**

Options

Factory Modifications

Description	Catalog Number ① Suffix
Pushbutton operator (open and Type 1 only)	**A**
Without lockoff (open only)	**X**

Technical Data

Specifications

NEMA Size	Maximum hp for AC Ratings ② 120 Vac	208–240 Vac	480–600 Vac	Maximum hp for DC Ratings 115 Vdc	230 Vdc
Two-Pole, Single-Phase					
M-0	1	2	—	1	1-1/2
M-1	2	3	—	1-1/2	2
Three-Pole, Three-Phase					
M-0	2	3	5	—	—
M-1	3	7-1/2	10	—	—

Notes

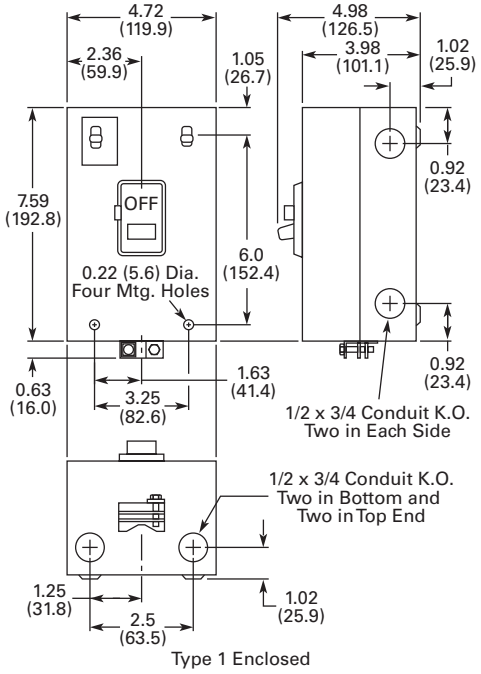
① Add suffix letter to starter catalog number. Example: B100MOC**A.**

② Ratings up to 3 hp, three-phase are suitable for group fusing.

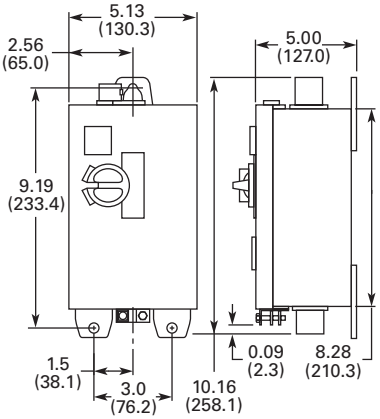
Dimensions

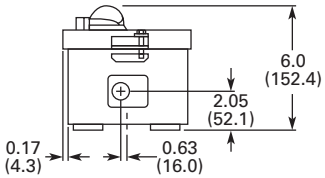
Approximate Dimensions in Inches (mm)

Type B100 Single-and Three-Phase Starters

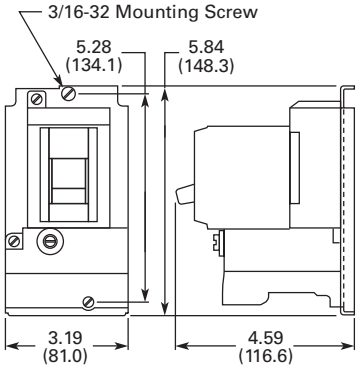


Type 1 Enclosed

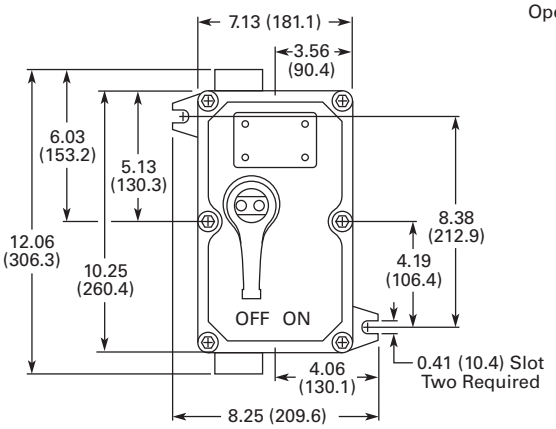


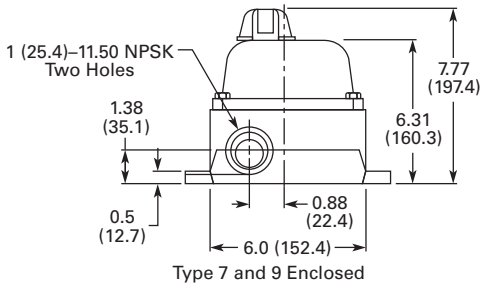


Type 4 Enclosed

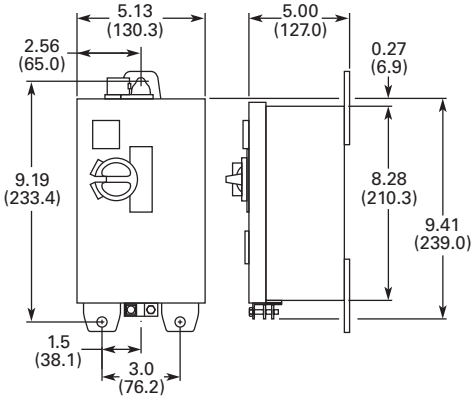


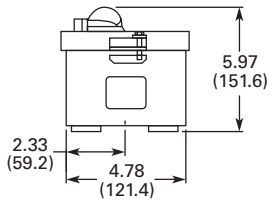
Open, Non-Reversing Starter





Type 7 and 9 Enclosed





Type 12 Enclosed

EMS Panels

12.1 EMS Panels

EMS Panels

Contents

Product Description

Safety is a top priority in many manufacturing plants. Existing equipment used in manufacturing applications may not have the necessary hardware that minimizes risks associated with operation and maintenance.

The EMS panel provides a simple solution to enhance the safety of existing equipment, minimizing risk to operators and increasing overall safety of the equipment.

Application Description

Most smaller equipment and older equipment are operated by a maintained ON/OFF control switch. A power loss when the control switch in the ON position could result in unprepared or unintended operation when the power is restored. This could put operators at risk.

Additionally, most older or smaller equipment do not include an emergency stop operator, which provides a means to more easily stop the machine operation in the event of an emergency.

Machinery should also be equipped with a disconnect means that can be padlocked in the OFF position during maintenance activities. This prevents operation of the panel while the equipment is being serviced.

The EMS panel is designed to be retrofitted to existing equipment.

Features and Benefits

The EMS panel consists of

- Small control panel
- Pushbutton control station with a whip
- Disconnect means with lock-out capability (provided on primary control panel)
- Motor overload protection (to protect the motor from damage due to overuse or excess heat)
- A pushbutton control station with a four foot whip for easy installation at a location appropriate for the operator's control
  - Pushbutton control station includes a momentary start button (requires equipment to be restarted should a power loss occur)
  - Stop button for normal stopping of the equipment during operation
  - Emergency stop with bold red and yellow colors that is larger than the start/stop operator (allows for increased visibility and access should an emergency occur)

Standards and Certifications

The panel is rated UL508A, and includes a self-protected, combination motor controller.

Additional short-circuit protection (such as fuses or a breaker) is not required.

- UL rated

Need a Similar but More Custom Solution?

Eaton's Control Panel Flex Center can help by designing a specific solution for your needs. For these requests, please contact the Control Panel Flex Center at 216-265-3291.

Product Selection

To select an EMS panel, chose the catalog number from the column of the appropriate circuit voltage and the row with the operational current of the equipment. The equipment voltage and current is typically found on the equipment electrical label or in the equipment manual.

Note: 480V and 600V EMS panels include a control power transformer that steps down the control voltage to 120 Vac.

EMS with Control Station

EMS Panels with Control Station and Whip

	Power Circuit Voltage				
	120 Vac	208 Vac	240 Vac	480 Vac	600 Vac
FLA Size	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
0.1 to 0.16	EMS03D5ABA	EMS03D5EBA	EMS03D5BBA	EMS03D5CBA	EMS03D5DBA
0.16 to 0.25	EMS03D5ABB	EMS03D5EBB	EMS03D5BBB	EMS03D5CBB	EMS03D5DBB
0.25 to 0.4	EMS03D5ABC	EMS03D5EBC	EMS03D5BBC	EMS03D5CBC	EMS03D5DBC
0.4 to 0.63	EMS03D5ABD	EMS03D5EBD	EMS03D5BBD	EMS03D5CBD	EMS03D5DBD
0.63 to 1	EMS03D5ABE	EMS03D5EBE	EMS03D5BBE	EMS03D5CBE	EMS03D5DBE
1 to 1.6	EMS03D5ABF	EMS03D5EBF	EMS03D5BBF	EMS03D5CBF	EMS03D5DBF
1.6 to 2.5	EMS03D5ABG	EMS03D5EBG	EMS03D5BBG	EMS03D5CBG	EMS03D5DBG
2.5 to 4	EMS03D5ABH	EMS03D5EBH	EMS03D5BBH	EMS03D5CBH	EMS03D5DBH
4 to 6.3	EMS03D5ABJ	EMS03D5EBJ	EMS03D5BBJ	EMS03D5CBJ	EMS03D5DBJ
6.3 to 10	EMS03D5ABK	EMS03D5EBK	EMS03D5BBK	EMS03D5CBK	EMS03D5DBK
8 to 12	EMS03D5ABL	EMS03D5EBL	EMS03D5BBL	EMS03D5CBL	EMS03D5DBL
10 to 16	EMS03H5ABM	EMS03H5EBM	EMS03H5BBM	EMS03H5CBM	EMS03H5DBM
16 to 20	EMS03H5ABN	EMS03H5EBN	EMS03H5BBN	EMS03H5CBN	EMS03H5DBN
20 to 25	EMS03H5ABQ	EMS03H5EBQ	EMS03H5BBQ	EMS03H5CBQ	EMS03H5DBQ
25 to 32	EMS03H5ABR	EMS03H5EBR	EMS03H5BBR	EMS03H5CBR	EMS03H5DBR

EMS "All-in-One"

EMS "All-in-One" Panels

	Power Circuit Voltage				
	120 Vac	208 Vac	240 Vac	480 Vac	600 Vac
FLA Size	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
0.1 to 0.16	EMS02D5ABA	EMS02D5EBA	EMS02D5BBA	EMS02D5CBA	EMS02D5DBA
0.16 to 0.25	EMS02D5ABB	EMS02D5EBB	EMS02D5BBB	EMS02D5CBB	EMS02D5DBB
0.25 to 0.4	EMS02D5ABC	EMS02D5EBC	EMS02D5BBC	EMS02D5CBC	EMS02D5DBC
0.4 to 0.63	EMS02D5ABD	EMS02D5EBD	EMS02D5BBD	EMS02D5CBD	EMS02D5DBD
0.63 to 1	EMS02D5ABE	EMS02D5EBE	EMS02D5BBE	EMS02D5CBE	EMS02D5DBE
1 to 1.6	EMS02D5ABF	EMS02D5EBF	EMS02D5BBF	EMS02D5CBF	EMS02D5DBF
1.6 to 2.5	EMS02D5ABG	EMS02D5EBG	EMS02D5BBG	EMS02D5CBG	EMS02D5DBG
2.5 to 4	EMS02D5ABH	EMS02D5EBH	EMS02D5BBH	EMS02D5CBH	EMS02D5DBH
4 to 6.3	EMS02D5ABJ	EMS02D5EBJ	EMS02D5BBJ	EMS02D5CBJ	EMS02D5DBJ
6.3 to 10	EMS02D5ABK	EMS02D5EBK	EMS02D5BBK	EMS02D5CBK	EMS02D5DBK
8 to 12	EMS02D5ABL	EMS02D5EBL	EMS02D5BBL	EMS02D5CBL	EMS02D5DBL
10 to 16	EMS02H5ABM	EMS02H5EBM	EMS02H5BBM	EMS02H5CBM	EMS02H5DBM
16 to 20	EMS02H5ABN	EMS02H5EBN	EMS02H5BBN	EMS02H5CBN	EMS02H5DBN
20 to 25	EMS02H5ABQ	EMS02H5EBQ	EMS02H5BBQ	EMS02H5CBQ	EMS02H5DBQ
25 to 32	EMS02H5ABR	EMS02H5EBR	EMS02H5BBR	EMS02H5CBR	EMS02H5DBR

Enclosure Options

13.1 Enclosure Options

13.1 Alternate Enclosures

Enclosure Options

Enclosure Options

Contents

Overview

Eaton's packaged control line offers a full line of enclosure options. Application and environmental requirements can change from location to location, therefore so do the enclosure sizes and types. This section of the catalog discusses some of the capabilities of the packaged control line. For other applications or enclosure options, refer to the product specific sections of this catalog or contact your local distributor.

Non-Metallic Enclosures

Eaton's packaged control product line offers a full line of nonmetallic enclosures for your application needs. This includes the NEMA, lighting, soft starter and custom product lines.

Features

- Designed to meet UL, CSA and CE standards for enclosures
- Type 4X enclosure rating
- Opaque and transparent covers available in most styles
- Available with gasketed tops
- Available with hinged cover options
- Suitable for use in indoor and outdoor applications

Options

- Types of covers: screw-on or hinged
- Transparent or opaque covers in most versions
- DIN rail mounting or panel mounting
- Additional holes/knockouts can be added for easy installation
- Cover control
- Oversized enclosures
- Type 1, 12 and 3R versions

For ordering this option, change the 7th digit in the catalog number to a **5** (that is, ECN222**1**AAF becomes ECN222**5**AAF).

316 Stainless Steel Enclosures

Many people believe that stainless steel is not susceptible to corrosion. While stainless steel greatly improves corrosion resistance, it is still potentially susceptible to corrosion. Certain chemicals, salts, chlorides and acid can corrode stainless steel. Corrosion resistance varies among the different grades of stainless steel due to the chemical composition of the individual grade and is the result of the formation of an oxide film on the surface of the metal. This film can be damaged when used in harsh environments containing chlorides, chemicals and salts, which attack the film and lead to some types of corrosion.

There are many forms of corrosion beyond that of well-known rust. Other common forms of corrosion that may come into play at customer installations include galvanic or two-metal corrosion and pitting corrosion. Galvanic corrosion occurs when two dissimilar metals are placed in contact or are electrically connected. A potential difference produces electron flow between the metals that results in increased corrosion of the less corrosion-resistant metal and a decrease in corrosion of the more resistant material than would occur if the metals were not in contact. Pitting is typically in the form of localized attack that creates holes in the metal. These holes may be very small and difficult to detect due to accompanying rust. 304-Grade stainless steel is susceptible to this form of corrosion in certain atmospheres.

Fortunately, there are options available for applications where 304-Grade stainless steel is susceptible to corrosion. Enclosures manufactured with 316-Grade stainless steel offer even better corrosion resistance to most chemicals, salts and acids and are better suited for installation in marine atmospheres. In marine atmospheres, 304-Grade stainless steel may develop staining with patches of yellowish-brown film. 316-Grade stainless steel yields improved pitting corrosion resistance versus other grades of stainless (for example, 304-Grade) where brines, highway de-icing salts or chlorides are present.

For ordering this option, change the 7th digit in the catalog number to a **9** (that is, ECN222**1**AAF becomes ECN222**9**AAF).

Type 3R Stainless Steel Enclosures

Often, customers are looking for enclosures to install outdoors where they will be exposed to harsh environmental conditions including salt, acid rain, chemical run offs and mist. In these applications, the unit will not be exposed to high-pressure wash downs. Therefore, the customer does not need a fully rated Type 4 enclosure, but rather a product with a higher resistance to corrosion than standard carbon steel. This product design meets the customers' needs.

Pump panel applications will be the primary use for the Type 3R stainless steel option. It offers customers the opportunity to replace their carbon steel Type 3R enclosures with a stainless steel unit that will help resist rusting. For pump panels (ECN54/55, ECT54/55 and ECP54/55), this option is especially attractive.

For ordering this option, change the 7th digit in the catalog number to an **A** (that is, ECN222**1**AAF becomes ECN222**A**AAF).

Type 7/9 Explosion Proof Enclosures

Some applications are exposed to areas in which hazardous materials are handled or stored. These environments require explosion proof enclosures.

Class I locations require the type of explosion-proof electrical equipment where, in case of explosion, the hazardous flames would be contained. In Class II or III locations, dust, fibers and flyings are the combustible materials and it is only necessary to keep these materials out of the electrical equipment (where an arc may take place) and to maintain safe external temperatures.

Further refinement created for the purpose of testing and approving electrical equipment divides Class I into four separate designations: A, B, C, D and Class II into three separate designations; E, F and G. Underwriters Laboratories test and approve electrical equipment for the specific groups.

For more descriptions on code and class definitions, see **Tab 9**.

For ordering this option, change the 7th digit in the catalog number to a **6** for bolted design, and **7** for threaded design. (that is, ECN222**1**AAF becomes ECN222**7**AAF).

Paint Options

With a full line paint shop, we can offer custom solutions for our customers. In many cases this includes custom colors for your panels. This helps in establishing brand identity for our OEM customers and differentiates them from their competition.

OEM Panel Solutions

With one of the largest steel fabrication shops available, we are able to quickly design a custom enclosure for your company's particular needs. Also, with our own custom paint facilities, we can customize the look and feel of your control panels to meet your corporate image.

With our large staff of professional engineers, we are able to quickly and efficiently design your panels for you, using the latest technologies.

Our abilities include:

- AutoCAD
- Mechanical Desktop/ Inventor
- Mechanical Engineering
- Electrical Engineering
- UL Test Certification
- Short-Circuit/Thermal Testing
- Prototyping

Due to our focus on control panels, we have become highly efficient and strive to exceed our customer expectations on performance, quality and delivery.

Eaton can offer the OEM a wide range of solutions for your control and production needs, including:

- Agency testing and certifications
- Flexible ordering schedules and volumes
- Wide range of options for value selling by the OEM
- Fast prototyping
- Just-in-time delivery
- Drop-in technology for their systems
- On-site inspections

13

Catalog Number Selection

Enclosures

ECN 16 3 4 A A F - ____

- **ECN** — Design Type
- **16** — Starter Type
- **3** — NEMA Size
- **4** — Enclosure Type
  - **1** = Type 1—General purpose (painted steel)
  - **2** = Type 3R—Rainproof (painted steel)
  - **3** = Type 4—Watertight (painted steel)
  - **4** = Type 4X—Watertight (304 stainless)
  - **5** = Type 4X—Watertight (non-metallic)
  - **6** = Type 7/9—Explosion proof (bolted)
  - **7** = Type 7/9—Explosion proof (threaded)
  - **8** = Type 12—Dust-tight (painted steel)
  - **9** = Type 4X—Watertight (316 stainless)
  - **A** = Type 3R—Rainproof (304 stainless)
- **A** — Coil/Transformer Voltage
- **A** — Cover Control
- **F** — Disconnect/Breaker Ratings
- **-** — Modification Codes

14.1 Box References

14.2 Box Dimensions

Locating dimensions for an enclosed control device is simple:

1. Find the device's NEMA Size/IEC Frame Size/Lighting Poles within the Box References pages and read across to its Box No.
2. Find that Box No. (numeral or letter) in the Box Dimension pages.

NEMA Full Voltage Control—Freedom

Contactors

Type 1 Freedom Contactors

Non-Reversing Contactors—without Control Power Transformers

NEMA Size (Poles)	Box No.	Shipping Weight Lbs (kg)
00 (2P, 3P, 4P)	1	5.25 (2.4)
0 (2P, 3P)	1	5.25 (2.4)
1 (2P, 3P, 4P, 5P)	1	7.93 (3.6)
2 (2P, 3P, 4P, 5P)	1	8.5 (3.9)
3 (2P, 3P)	4	35 (16)
4 (2P, 3P)	4	47 (21)
5	10	113 (51)
6	F1E	325 (148)
7	F1E	①
8	F1E	①
9	F1E	①

Non-Reversing Contactors—with Control Power Transformers

NEMA Size (Poles)	Box No.	Shipping Weight Lbs (kg)
00 (2P, 3P, 4P)	2	12 (5.4)
0 (2P, 3P)	2	12 (5.4)
1 (2P, 3P, 4P, 5P)	2	12.2 (5.5)
2 (2P, 3P, 4P, 5P)	2	12.8 (5.8)
3 (2P, 3P)	4	40 (18)
4 (2P, 3P)	4	52 (24)
5	10	120 (54)
6	F1E	335 (152)
7	F1E	①
8	F1E	①
9	F1E	①

Three-Pole Reversing Contactors—without Control Power Transformers

NEMA Size (Poles)	Box No.	Shipping Weight Lbs (kg)
00	1	7.8 (3.5)
0	1	8 (3.6)
1	3	11 (5.0)
2	3	12 (5.4)
3	4	67 (30)
4	4	154 (70)
5	10	170 (77)
6	F1E	425 (193)
7	F1E	①
8	F1E	①
9	F2E	①

Type 3R, 4/4X, 12 Freedom Contactors

Non-Reversing Contactors—without Control Power Transformers

NEMA Size (Poles)	Box No.	Shipping Weight Lbs (kg)
00	5	14 (6.4)
0 (2P, 3P, 4P)	5	14 (6.4)
1 (2P, 3P, 4P, 5P)	5	15 (6.8)
2 (2P, 3P, 4P, 5P)	5	15.5 (7.0)
3 (2P, 3P)	8	45 (20)
4 (2P, 3P)	8	56 (25)
5	10	140 (64)
6	F1E	385 (175)
7	F1E	①
8	F1E	①
9	F1E	①

Non-Reversing Contactors—with Control Power Transformers

NEMA Size (Poles)	Box No.	Shipping Weight Lbs (kg)
00	5	18 (8.2)
0 (2P, 3P, 4P)	5	18 (8.2)
1 (2P, 3P, 4P, 5P)	6	19 (8.6)
2 (2P, 3P, 4P, 5P)	6	19.5 (8.9)
3 (2P, 3P)	8	52 (24)
4 (2P, 3P)	8	63 (29)
5	10	147 (67)
6	F1E	405 (184)
7	F1E	①
8	F1E	①
9	F1E	①

Three-Pole Reversing Contactors—with or without Control Power Transformers

NEMA Size (Poles)	Box No.	Shipping Weight Lbs (kg)
00	6	18 (8.2)
0	6	18 (8.2)
1	6	19 (8.6)
2	6	19 (8.6)
3	8	47 (21)
4	9	69 (31)
5	10	170 (77)
6	F1E	495 (225)
7	F1E	①
8	F1E	①
9	F2E	①

Notes

All Type 7 and 9, see **Tab 9**.

① Consult factory.

Non-Combination Starters

Type 1 Freedom Non-Combination Starters

Non-Reversing Starters—without Control Power Transformers

NEMA Size	Box No.	Shipping Weight Lbs (kg)
00	1	7 (3.2)
0	1	7.1 (3.2)
1	1	7.9 (3.6)
2 (AN19)	1	11.5 (5.2)
2 (AN16)	2	8.5 (3.9)
3	4	35 (16)
4	4	47 (21)
5	10	139 (63)
6	F1E	360 (163)
7	F1E	①
8	F1E	①
9	F1E	①

Non-Reversing Starters—with Control Power Transformers

NEMA Size	Box No.	Shipping Weight Lbs (kg)
00	3	15 (6.8)
0	3	15 (6.8)
1	3	16 (7.3)
2	3	16.2 (7.4)
3	4	42 (19)
4	4	54 (25)
5	10	146 (66)
6	F1E	385 (175)
7	F1E	①
8	F1E	①
9	F1E	①

Reversing Starters—without Control Power Transformers

NEMA Size	Box No.	Shipping Weight Lbs (kg)
00	2	8 (3.6)
0	2	8 (3.6)
1	3	13 (5.9)
1 with top adders	3	13.4 (6.1)
2	3	15 (6.8)
3	4	43 (20)
4	9	65 (30)
5	10	165 (75)
6	F1E	450 (204)
7	F1E	①
8	F2E	①
9	F2E	①

Reversing Starters—with Control Power Transformers

NEMA Size	Box No.	Shipping Weight Lbs (kg)
00 with top adders	3	15 (6.8)
0	3	15 (6.8)
1 with top adders	3	17 (7.7)
2	3	19 (8.6)
3	4	50 (23)
4	9	72 (33)
5	10	172 (78)
6	F1E	495 (225)
7	F1E	①
8	F2E	①
9	F2E	①

Type 3R, 4/4X, 12 Freedom Non-Combination Starters

Non-Reversing Starters—without Control Power Transformers

NEMA Size	Box No.	Shipping Weight Lbs (kg)
0	5	14.3 (6.5)
1	5	15.3 (6.9)
2	6	16 (7.3)
3	8	46 (21)
4	8	60 (27)
5	10	150 (68)
6	F1E	415 (188)
7	F1E	①
8	F1E	①
9	F1E	①

Non-Reversing Starters—with Control Power Transformers

NEMA Size	Box No.	Shipping Weight Lbs (kg)
0	6	18 (8.2)
1	6	19 (8.6)
2	6	20 (9)
3	8	53 (24)
4	8	67 (30)
5	10	157 (71)
6	F1E	①
7	F1E	①
8	F1E	①
9	F1E	①

Reversing Starters—with or without Control Power Transformers

NEMA Size	Box No.	Shipping Weight Lbs (kg)
0	7	18.5 (8.4)
1	7	19.5 (8.9)
2	7	21 (10)
3	8	48 (22)
4	9	72 (33)
5	10	175 (79)
6	F1E	525 (238)
7	F1E	①
8	F2E	①
9	F2E	①

Notes

All Type 7 and 9, see **Tab 9**.

① Consult factory.

Combination Starters—NEMA Size

Type 1 Freedom and A200 Combination Starters

Non-Reversing—with and without Control Power Transformers

NEMA Size (Device)	Box No.	Shipping Weight Lbs (kg)
0	A	37 (17)
1	A	38 (17)
2	A	39 (18)
3	C	72 (33)
4 (HMCP)	C	90 (41)
4 (disconnect switch)	D	150 (68)
5	E	180 (82)
6	F1E	435 (197)
7	F2E	①
8	F2E	①
9	F2E	①

Reversing—with and without Control Power Transformers

NEMA Size (Device)	Box No.	Shipping Weight Lbs (kg)
0	B	42 (19)
1	B	43 (20)
2	B	44 (20)
3	C	84 (38)
4	D	173 (79)
5	F1E	①
6	F1E	550 (250)
7	F2E	①
8	F2E	①
9	①	①

Non-Reversing—Oversized

NEMA Size (Device)	Box No.	Shipping Weight Lbs (kg)
0–1–2	B	44 (20)

Type 1 Freedom Non-Reversing Combination Starters—Narrow Enclosure

NEMA 1 Enclosed

NEMA Size	Box No.	Shipping Weight Lbs (kg)
0–1–2	I	35 (16)

NEMA 12 Enclosed

NEMA Size	Box No.	Shipping Weight Lbs (kg)
0–1–2	I	36 (16)

NEMA 12 Enclosed with Safety Door Interlock

NEMA Size	Box No.	Shipping Weight Lbs (kg)
0–1–2	I	37 (17)

Type 3R, 4/4X, 12 Freedom Combination Starters

Non-Reversing—with and without Control Power Transformers

NEMA Size (Device)	Box No.	Shipping Weight Lbs (kg)
0	A	37 (17)
1	A	38 (17)
2	A	39 (18)
3	C	72 (33)
4 (HMCP)	C	90 (41)
4 (disconnect switch)	D	150 (68)
5	E	180 (82)
6	F1E	435 (197)
7	F2E	①
8	F2E	①
9	F2E	①

Reversing—with and without Control Power Transformers

NEMA Size (Device)	Box No.	Shipping Weight Lbs (kg)
0	B	42 (19)
1	B	43 (20)
2	B	44 (20)
3	C	84 (38)
4	D	173 (79)
5	E	550 (250)
6	F1E	①
7	F2E	①
8	F2E	①
9	②	①

Non-Reversing—Oversized

NEMA Size (Device)	Box No.	Shipping Weight Lbs (kg)
0–1–2	B	44 (20)

Notes

All Type 7 and 9, see **Tab 9**.

① Consult factory.

Multispeed Starters—Freedom

Non-Combination Multispeed Starters

Class 33: Two-Speed Two-Winding

Size	Box No.	Shipping Weight Lbs (kg)
Type 1		
0	2	8 (3.6)
1–2	3	11 (5.0)
3	4	67 (30)
4	9	154 (70)
5	E	170 (77)
6	F1E	335 (152)
Type 3R, 4X, 12		
0	6	18 (8.2)
1–2	7	18 (8.2)
3	8	75 (34)
4	9	170 (77)
5	E	190 (86)
6	F1E	375 (170)

Class 34: Two-Speed One-Winding, Constant or Variable Torque

Size	Box No.	Shipping Weight Lbs (kg)
Type 1		
0–2	3	19 (8.6)
3	9	50 (23)
4	E	270 (123)
5	F1E	360 (163)
6	F1E	①
Type 3R, 4X, 12		
0–2	7	28 (13)
3	9	58 (26)
4	E	278 (126)
5	F1E	370 (168)
6	F1E	①

Class 35: Two-Speed One-Winding, Constant Horsepower

Size	Box No.	Shipping Weight Lbs (kg)
Type 1		
0–2	3	19 (8.6)
3	9	50 (23)
4	E	270 (123)
5	F1E	360 (163)
6	F1E	①
Type 3R, 4X, 12		
0–2	7	28 (13)
3	9	58 (26)
4	E	278 (126)
5	F1E	370 (168)
6	F1E	①

Combination Multispeed Starters

Class 36: Two-Speed Two-Winding—with Disconnect Switch

Size	Box No.	Shipping Weight Lbs (kg)
Type 1		
0–2	B	15 (6.8)
3	C	82 (37)
4	D	174 (79)
5	F1E	190 (86)
6	F1E	355 (161)
Type 3R, 4X, 12		
0–2	B	22 (10)
3	C	90 (41)
4	D	190 (86)
5	F1E	210 (95)
6	F1E	375 (170)

Class 37: Two-Speed One-Winding, Constant or Variable Torque—with Disconnect

Size	Box No.	Shipping Weight Lbs (kg)
Type 1		
0–2	B	27 (12)
3	C	102 (46)
4	E	320 (145)
5	F1E	428 (194)
6	F1E	①
Type 3R, 4X, 12		
0–2	B	35 (16)
3	C	110 (50)
4	E	327 (148)
5	F1E	438 (199)
6	F1E	①

Class 38: Two-Speed One-Winding, Constant Horsepower—with Disconnect

Same as Class 37 table.

Class 39: Two-Speed Two-Winding—with HMCP

Same as Class 36 table.

Class 40: Two-Speed One-Winding, Constant or Variable Torque—with Disconnect

Same as Class 37 table.

Class 41: Two-Speed One-Winding, Constant Horsepower—with HMCP

Same as Class 37 table.

Notes

All Type 7 and 9, see **Tab 9**.

① Consult factory.

IEC Control—*XT*

Note: Contact Eaton for Box Dimensions not shown on **Pages V10-T14-13** to **V10-T14-31**.

Type 1, 3R, 4, 4X, 12 *XT* Non-Combination Starters

CClass 09: FVNR Starters (Non-Combination)

IEC Size (Frame/Amps)	Box No.	Shipping Weight kg [Lbs]
B–H/7–32 A	1	3.2 (7)
B–H/7–32 A	5A	6.4 (14)
B–H/7–32 A	5P	4.5 (10)
J–L/40–65 A	5A	18.6 (41)
J–L/40–65 A	5P	17.7 (39)
M–Q/80–150 A	8	15.9 (35)

Class 10: FVR Starters (Non-Combination)

IEC Size (Frame/Amps)	Box No.	Shipping Weight kg (Lbs)
B–H/7–32 A	1	5.9 (13)
B–H/7–32 A	5A	6.8 (15)
B–H/7–32 A	5P	5.0 (11)
J–L/40–65 A	2	18.2 (40)
J–L/40–65 A	6A	24.5 (45)
J–L/40–65 A	6P	19.1 (42)
M–Q/80–125 A	4	22.7 (50)
M–Q/80–150 A	8	18.6 (41)

Class 11: FVNR Starters (Non-Combination with CPT)

IEC Size (Frame/Amps)	Box No.	Shipping Weight kg (Lbs)
B–H/7–32 A	2	6.4 (14)
B–H/7–32 A	5A	8.4 (19)
B–H/7–32 A	5P	6.6 (15)
J–L/40–65 A	2	19.5 (43)
J–L/40–65 A	6A	23.2 (51)
J–L/40–65 A	6P	21.8 (48)
M–Q/80–125 A	4	23.6 (52)
M–Q/80–150 A	8	24.1 (53)

Type 1, 3R, 4, 4X, 12 *XT* Fusible/Non-Fusible Starters

Class 19: FVNR Combination with Disconnect Switch

IEC Size (Frame/Amps)	Box No.	Shipping Weight kg (Lbs)
B–J/7–40 A	7A	8.6 (19)
B–J/7–40 A	7P	6.8 (15)
K–N/50–105 A	8	24.1 (53)
K–N/50–105 A	8P	22.2 (49)

Class 19: FVNR Combination with Disconnect Switch and Fuseblock

IEC Size (Frame/Amps)	Box No.	Shipping Weight kg (Lbs)
B–J/7–40 A	7A	13.6 (30)
B–J/7–40 A	7P	11.8 (26)
K–M/65–85 A	8	25 (55)
K–M/65–85 A	8P	23.2 (51)

Class 20: FVR Combination with Disconnect Switch

IEC Size (Frame/Amps)	Box No.	Shipping Weight kg (Lbs)
B–J/7–40 A	7A	9.1 (20)
B–J/7–40 A	7P	7.3 (16)
K–N/50–105 A	8	26.3 (58)
K–N/50–105 A	8P	25 (55)

Class 20: FVR Combination with Disconnect Switch and Fuseblock

IEC Size (Frame/Amps)	Box No.	Shipping Weight kg (Lbs)
B–J/7–40 A	7A	14.1 (31)
B–J/7–40 A	7P	12.3 (27)
K–M/65–85 A	8	25.4 (56)
K–M/65–85 A	8P	23.6 (52)

Type 1, 3R, 4, 4X, 12 *XT* HMCP Combination Starters

Class 25: FVNR Combination with HMCP

IEC Size (Frame/Amps)	Box No.	Shipping Weight kg (Lbs)
B–H/7–32 A	7A	10 (23)
B–H/7–32 A	7P	8.2 (18)
J–L/40–6 5A	7A	11 (24)
J–L/40–65 A	7P	8.9 (20)
M–Q/80–125 A	8	31.8 (70)

Class 26: FVR Combination with HMCP

IEC Size (Frame/Amps)	Box No.	Shipping Weight kg (Lbs)
B–H/7–32 A	7A	12 (26)
B–H/7–32 A	7P	10 (22)
J–L/40–65 A	7A	13 (29)
J–L/40–65 A	7P	11 (25)
M–Q/80–125 A	8	31.8 (70)

Type 1, 3R, 4, 4X, 12 *XT* Combination Motor Controllers (CMCs)

Class 76: Self Protected Starter (CMC)

IEC Size (Frame/Amps)	Box No.	Shipping Weight kg (Lbs)
B–H/up to 32 A	K	6.8 (15)
B–H/up to 32 A	5P	5.4 (12)

Class 77: Self Protected Starter (CMC) with CPT

IEC Size (Frame/Amps)	Box No.	Shipping Weight kg (Lbs)
B–H/up to 32 A	K	9.5 (21)
B–H/up to 32 A	6P	7.0 (17)

Class 78: Reversing Self Protected Starter (CMC)

IEC Size (Frame/Amps)	Box No.	Shipping Weight kg (Lbs)
B–H/7–32 A	K	7.0 (16)
B–H/7–32 A	5P	5.2 (12)

Lighting Contactors

Non-Combination

Type 1 Non-Combination Lighting Contactors—Electrically Held—CN35

Non-Reversing Contactors—without Control Power Transformers

Ampere	Size (Poles)	Box No.	Shipping Weight Lbs (kg)
10 A	(2P, 3P, 4P)	1	5 (2.3)
20 A	(2P, 3P, 4P)	1	5.2 (2.4)
20 A	(6P, 9P, 10P, 12P, 20P)	3	9 (4.1)
30 A	(2P, 3P)	1	5.3 (2.4)
30 A	(4P, 5P, 6P, 9P, 10P, 12P, 20P)	3	9.5 (4.3)
30 A	(9P, 12P) with top adders	3	9.7 (4.4)
60 A	(2P, 3P, 4P)	1	7 (3.2)
60 A	(5P, 6P, 9P, 10P, 12P)	3	9.5 (4.3)
60 A	(4P, 5P) with top adders	3	10 (4.5)
100 A	(2P, 3P)	4	35 (16)
100 A	(4P, 5P, 6P, 9P)	4	60 (27)
200 A	(2P, 3P)	4	70 (32)
200 A	(4P, 5P, 6P)	10	133 (60)
300 A	(2P, 3P)	10	113 (51)
300 A	(4P, 5P, 6P)	10	136 (62)
400 A	(2P, 3P)	10	125 (57)

Non-Reversing Contactors—with Control Power Transformers

Ampere	Size (Poles)	Box No.	Shipping Weight Lbs (kg)
10 A	(2P, 3P, 4P) with top adders	2	11 (5.0)
20 A	(2P, 3P, 4P, 5P, 6P) with top adders	2	13.1 (5.9)
20 A	(9P, 10P, 12P, 20P)	3	13.5 (6.1)
20 A	(9P, 12P) with top adders	3	13.5 (6.1)
30 A	(2P, 3P, 4P, 5P, 6P) with top adders	2	13.1 (5.9)
30 A	(9P, 10P, 12P, 20P)	3	13.9 (6.3)
30 A	(9P, 12P) with top adders	3	14.1 (6.4)
60 A	(2P, 3P) with top adders	3	14 (6.4)
60 A	(6P, 9P, 10P, 12P)	3	14 (6.4)
100 A	(2P, 3P)	4	39 (18)
100 A	(4P, 5P, 6P, 9P)	4	67 (30)
200 A	(2P, 3P)	10	117 (53)
200 A	(4P, 5P, 6P)	10	140 (64)
300 A	(2P, 3P)	10	120 (54)
300 A	(4P, 5P, 6P)	10	143 (65)
400 A	(2P, 3P)	10	132 (60)

Type 1 Non-Combination Lighting Contactors—Magnetically Latched—A202

Non-Reversing Contactors—without Control Power Transformers

Ampere	Size (Poles)	Box No.	Shipping Weight Lbs (kg)
30 A	(2P, 3P, 4P, 5P)	2	8.5 (3.9)
30 A	(6P, 8P, 10P, 12P)	3	13 (5.9)
30 A	(20P)	4	35 (16)
60 A	(2P, 3P, 4P, 5P)	2	8.7 (3.9)
60 A	(6P, 8P, 10P, 12P)	3	13.5 (6.1)
60 A	(20P)	4	40 (18)
100 A	(2P, 3P, 4P, 5P)	4	40 (18)
100 A	(6P, 8P, 10P, 12P)	9	85 (39)
100 A	(20P)	9	100 (45)
200 A	(2P, 3P, 4P, 5P)	4	46 (21)
200 A	(6P, 8P, 10P, 12P)	9	95 (43)
200 A	(20P)	9	110 (50)
300 A	(2P, 3P)	10	115 (52)
400 A	(2P, 3P)	10	125 (57)

Non-Reversing Contactors—with Control Power Transformers

Ampere	Size (Poles)	Box No.	Shipping Weight Lbs (kg)
30 A	(2P, 3P, 4P, 5P) with top adders	2	12.5 (5.7)
30 A	(6P, 8P, 10P, 12P)	3	17 (7.7)
30 A	(20P)	4	39 (18)
60 A	(2P, 3P, 4P, 5P) with top adders	2	12.7 (5.8)
60 A	(6P, 8P, 10P)	3	17.5 (7.9)
60 A	(12P)	9	87 (39)
60 A	(20P)	4	44 (20)
100 A	(2P, 3P, 4P, 5P)	4	47 (21)
100 A	(6P, 8P, 10P, 12P)	9	92 (42)
100 A	(20P)	9	107 (49)
200 A	(2P, 3P, 4P, 5P)	4	53 (24)
200 A	(6P, 8P, 10P, 12P)	9	102 (46)
200 A	(20P)	9	117 (53)
300 A	(2P, 3P)	10	122 (55)
400 A	(2P, 3P)	10	132 (60)

Type 1 Non-Combination Lighting Contactors—C30CN ①

Lighting Contactors—without Control Power Transformers

Ampere Size (Poles)	Box No.	Shipping Weight Lbs (kg)
30 A (2–12P)	2	9 (4.1)

Lighting Contactors—with Control Power Transformers

Ampere Size (Poles)	Box No.	Shipping Weight Lbs (kg)
30 A (2–12P)	2	13.5 (5.9)

Type 3R, 4X and 12 Non-Combination Lighting Contactors—C30CN ①

Lighting Contactors—without Control Power Transformers

Ampere Size (Poles)	Box No.	Shipping Weight Lbs (kg)
30 A (2–12)	6	14 (6.4)

Lighting Contactors—with Control Power Transformers

Ampere Size (Poles)	Box No.	Shipping Weight Lbs (kg)
30 A (2–12)	7	20 (9.1)

Type 3R, 4/4X, 12 Non-Combination Lighting Contactors—Electrically Held—CN35

Non-Reversing Contactors—without Control Power Transformers

Ampere Size (Poles)		Box No.	Shipping Weight Lbs (kg)
10 A	(2P, 3P, 4P, 5P, 6P)	5	12 (5.4)
10 A	(9P, 10P, 12P, 20P)	7	20 (9.1)
20 A	(2P, 3P, 4P, 5P)	5	12 (5.4)
20 A	(6P)	5	14 (6.4)
20 A	(9P, 10P, 12P, 20P)	7	20 (9.1)
30 A	(2P, 3P, 4P)	5	13 (5.9)
30 A	(5P, 6P)	6	14 (6.4)
30 A	(9P, 10P, 12P, 20P)	7	20 (9.1)
60 A	(2P, 3P, 4P)	5	13 (5.9)
60 A	(5P, 6P)	6	16 (7.3)
60 A	(9P, 10P, 12P)	7	22 (10)
100 A	(2P, 3P)	8	49 (22)
100 A	(4P, 5P, 6P, 9P)	8	57 (26)
200 A	(2P, 3P)	8	110 (50)
300 A	(2P, 3P)	10	113 (51)
400 A	(2P, 3P)	10	125 57)

Non-Reversing Contactors—with Control Power Transformers

Ampere Size (Poles)		Box No.	Shipping Weight Lbs (kg)
10 A	(2P, 3P, 4P, 5P, 6P)	5	16 (7.3)
10 A	(9P, 10P, 12P, 20P)	7	20 (9)
20 A	(2P, 3P, 4P, 5P)	5	16 (7.3)
20 A	(6P, 9P, 10P, 12P, 20P)	7	24 (11)
30 A	(2P, 3P, 4P)	6	18 (8.2)
30 A	(5P, 6P)	6	18 (8.2)
30 A	(9P, 10P, 12P, 20P)	7	24 (11)
60 A	(2P, 3P)	6	21 (10)
60 A	(4P, 5P, 6P)	6	23 (10)
60 A	(9P, 10P, 12P)	7	22 (10)
100 A	(2P, 3P)	8	56 (25)
100 A	(4P, 5P, 6P, 9P)	8	64 (29)
200 A	(2P, 3P)	8	117 (53)
300 A	(2P, 3P)	10	120 (54)
400 A	(2P, 3P)	10	132 (60)

Type 3R, 4/4X, 12 Non-Combination Lighting Contactors—Magnetically Latched—A202

Non-Reversing Contactors—without Control Power Transformers

Ampere Size (Poles)		Box No.	Shipping Weight Lbs (kg)
30 A	(2P, 3P, 4P, 5P)	5	13 (5.9)
30 A	(6P, 8P, 10P, 12P)	7	21 (10)
30 A	(20P)	8	46 (21)
60 A	(2P, 3P, 4P, 5P)	5	14 (6.4)
60 A	(6P, 8P, 10P, 12P)	7	22 (10)
60 A	(20P)	8	48 (22)
100 A	(2P, 3P, 4P, 5P)	8	50 (23)
100 A	(6P, 8P, 10P,12P)	9	58 (26)
100 A	(20P)	10	100 (45)
200 A	(2P, 3P, 4P, 5P)	8	52 (24)
200 A	(20P)	10	105 (48)
300 A	(2P, 3P)	10	113 (51)
400 A	(2P, 3P)	10	125 (57)

Non-Reversing Contactors—with Control Power Transformers

Ampere Size (Poles)		Box No.	Shipping Weight Lbs (kg)
30 A	(2P, 3P, 4P, 5P) w/top adder	6	12.5 (5.7)
30 A	(6P, 8P, 10P, 12P)	7	17 (7.7)
30 A	(20P)	8	39 (18)
60 A	(2P, 3P, 4P, 5P) w/top adder	6	12.7 (5.8)
60 A	(6P, 8P, 10P)	7	17.5 (7.9)
60 A	(12P)	9	87 (39)
60 A	(20P)	8	44 (20)
100 A	(2P, 3P, 4P, 5P)	8	47 (21)
100 A	(6P, 8P, 10P, 12P)	9	92 (42)
100 A	(20P)	9	107 (49)
200 A	(2P, 3P, 4P, 5P)	8	53 (24)
200 A	(6P, 8P, 10P, 12P)	9	102 (46)
200 A	(20P)	9	117 (53)
300 A	(2P, 3P)	10	122 (55)
400 A	(2P, 3P)	10	132 (60)

Notes

All Type 7 and 9, see **Tab 9**.

① Consult factory for combination enclosures.

Combination

Type 1 Combination Lighting Contactors

Electrically Held—Non-Reversing (3P Only)—with or without Control Power Transformers

Ampere Size		Box No.	Shipping Weight Lbs (kg)
30 A		A	35 (16)
60 A		A	36 (16)
100 A		C	65 (30)
200 A	with disconnect switch	D	110 (50)
200 A	with thermal magnetic breaker	E	150 (68)
300 A		E	160 (73)
400 A		E	170 (77)

Magnetically Latched—Non-Reversing (3P Only)—with or without Control Power Transformers

Ampere Size		Box No.	Shipping Weight Lbs (kg)
30 A		A	35 (16)
60 A		A	36 (16)
100 A		C	65 (30)
200 A	with disconnect switch	D	110 (50)
200 A	with thermal magnetic breaker	E	150 (68)
300 A		E	140 (64)
400 A		E	190 (86)

Type 3R, 4/4X, 12 Combination Lighting Contactors

Electrically Held—Non-Reversing (3P only)—with or without Control Power Transformers

Ampere Size (Device)		Box No.	Shipping Weight Lbs (kg)
30 A		A	35 (16)
60 A		A	36 (16)
100 A		C	65 (30)
200 A	with disconnect switch	D	110 (50)
200 A	with thermal magnetic breaker	E	150 (68)
300 A		E	160 (73)
400 A		E	170 (77)

Magnetically Latched—Non-Reversing (3P Only)—with or without Control Power Transformers

Ampere Size (Device)		Box No.	Shipping Weight Lbs (kg)
30 A		A	35 (16)
60 A		A	36 (16)
100 A		C	65 (30)
200 A	with disconnect switch	D	110 (50)
200 A	with thermal magnetic breaker	E	150 (68)
300 A	with disconnect switch	72 in	375 (170)
300 A	with thermal magnetic breaker	E	160 (73)
400 A	with disconnect switch	72 in	425 (193)
400 A	with thermal magnetic breaker	E	210 (95)

Solid-State Reduced Voltage Starters

Non-Combination Solid-State Reduced Voltage

Rating	SSRV	Non-Combination Box No. ①
37 A	S801+/S811+	7A
66 A	S801+/S811+	7A
105 A	S801+/S811+	7A
135 A	S801+/S811+	B1
180 A	S801+/S811+	C
240 A	S801+/S811+	②
304 A	S801+/S811+	②
360 A	S801+/S811+	②
420 A	S801+/S811+	E
500 A	S801+/S811+	E
650 A	S801+/S811+	E
720 A	S801+/S811+	E
850 A	S801+/S811+	E
1000 A	S801+/S811+	F2E

Combination Solid-State Reduced Voltage

Rating	SSRV	Combination with Fuses Box No. ①	Combination with HMCP Box No. ①
37 A	S801+/S811+	B1	A1 ③
66 A	S801+/S811+	C	A1
105 A	S801+/S811+	D	B1
135 A	S801+/S811+	D	C
180 A	S801+/S811+	E	E
240 A	S801+/S811+	F1E	E
304 A	S801+/S811+	F1E	E
360 A	S801+/S811+	F1E	E
420 A	S801+/S811+	F1E	E
500 A	S801+/S811+	F1E	E
650 A	S801+/S811+	F1E	F1E
720 A	S801+/S811+	F1E	F1E
850 A	S801+/S811+	F1E	F1E
1000 A	S801+/S811+	F2E	F2E

Notes

All Type 7 and 9, see **Tab 9**.

① Enclosure space will also accommodate for an ***IT.*** Power Supply, 2 four-pole relays, CPT, and terminal blocks. Also includes space for a DNA module or MOV.

② Contact Eaton for box dimensions not shown on **Pages V10-T14-13** to **V10-T14-31**.

③ Same as footnote ①, but CPT is not included. Upsize to B1 enclosure to include space for a CPT and a full voltage bypass contactor.

Reduced Voltage Starters—Freedom

Type 1, 3R, 4/4X, 12 Freedom Reduced Voltage Enclosures

Class 42: Autotransformer—Non-Combination

Size	Box No.	Shipping Weight Lbs (kg)
Type 1		
2–4	E2	124 (56)
5	F1E	885 (402)
6 ①	F1E	1220 (554)
6 ②	F2E	1400 (636)
7	F2E	③
8	F2E	③
9	③	③
Type 3R, 4X, 12		
2–4	E2	149 (68)
5	F1E	1010 (459)
6 ①	F1E	1345 (611)
6 ②	F2E	1525 (692)
7	F2E	③
8	F2E	③
9	③	③

Class 43: Autotransformer with Disconnect

Same as Class 42 table.

Class 44: Autotransformer with HMCP

Same as Class 42 table.

Class 45: Part Winding—Non-Combination

Size	Box No.	Shipping Weight Lbs (kg)
Type 1		
2PW	3	25 (11)
3PW–4PW	9	47 (21)
5PW	E	125 (47)
6PW	F1E	780 (354)
7PW	F2E	③
8PW	F2E	③
Type 3R, 4X, 12		
2PW	7	75 (34)
3PW–4PW	9	95 (43)
5PW	E	180 (82)
6PW	F1E	880 (400)
7PW	F2E	③
8PW	F2E	③

Class 46: Part Winding—with Disconnect

Size	Box No.	Shipping Weight Lbs (kg)
Type 1		
2PW	C	68 (31)
3PW	D	162 (74)
4PW	E	230 (104)
5PW ①	F1E	440 (200)
6PW ②	F1E	440 (200)
6PW	F2E	515 (234)
7PW	F2E	③
8PW	F2E	③
Type 3R, 4X, 12		
2PW	C	88 (40)
3PW	D	190 (86)
4PW	E	270 (123)
5PW ①	F1E	530 (241)
6PW ②	F1E	620 (281)
6PW	F2E	③
7PW	F2E	③
8PW	F2E	③

Class 47: Part Winding—with Thermal Magnetic Trip Circuit Breaker

Same as Class 46 table.

Classes 48 and 51: Wye Delta—Non-Combination

Size	Box No.	Shipping Weight Lbs (kg)
Type 1		
2YD–4YD	E	185 (84)
5YD ①	F1E	605 (275)
6YD ②	F1E	635 (288)
6YD	F2E	715 (325)
7YD	F2E	③
8YD	F2E	③
Type 3R, 4X, 12		
2YD–4YD	E	225 (102)
5YD ①	F1E	705 (320)
6YD ②	F1E	735 (334)
6YD	F2E	830 (377)
7YD	F2E	③
8YD	F2E	③

Classes 49 and 52: Wye Delta—with Disconnect

Same as Classes 48 and 51 table.

Classes 50 and 53: Wye Delta—with Thermal Magnetic Trip Circuit Breaker

Same as Classes 48 and 51 table.

Notes

① Non-combination and breaker.
② Fusible.
③ Consult factory.

Pump Panels

Freedom Type 3R—Pump Panels

NEMA Size	Box No.	Shipping Weight Lbs (kg)
1 Narrow	P1	35 (16)
2 Narrow	P1	35 (16)
1	P3	75 (34)
2	P3	75 (34)
3	P3	75 (34)
4	P5	120 (54)
5	P7	150 (68)
6	F1E	350 (159)
7	F2E	425 (193)

Irrigation Pump Panels—Top Entry

Size	HMCPE/ BKR Box No.	C362 Box No.	Fused C362 Box No.
1	8	8	8
2	8	8	8
2-1/2	8	8	8
3	8	8	9
3-1/2	8	8	9
4	9	—	—
SSOL Option			
1	8	8	8
2	8	8	8
2-1/2	8	8	8
3	8 ①	8 ①	9
3-1/2	8 ①	8 ①	9
4	9	—	—

Irrigation Pump Panels—Bottom Entry

Size	HMCPE/ BKR Box No.	C362 Box No.	Fused C362 Box No.
1	8	8	8
2	8	8	8
2-1/2	8	8	8
3	8	8	9
3-1/2	8	8	9
4	9	—	—
SSOL Option			
1	8	8	8
2	8	8	8
2-1/2	8	8	8
3	8 ①	8 ①	9
3-1/2	8 ①	8 ①	9
4	9	—	—

Duplex Pump Panels

Type 1, 3R, 4X, 12 Duplex Pump Panels Non-Combination

NEMA Size	Box No.	Shipping Weight Lbs (kg)
0–2	G	44 (20)
3–4	G1	120 (54)
5–6	F1E	405 (184)

Type 1, 3R, 4X, 12 Duplex Pump Panels Combination

NEMA Size	Box No.	Shipping Weight Lbs (kg)
0–2	H	75 (34)
3–4	H1 ②	180 (82)
5–6	F1E	425 (193)

HVAC Control

Type 1 HVAC Starters

NEMA Size	Box No.	Shipping Weight Lbs (kg)
Type 1		
0–2	7	18 (8.2)
Type 3R, 12		
0–2	7	18.5 (8.4)
Type 1		
3	8	46 (21)
Type 3R, 12		
3	8	48 (22)

Notes

All Type 7 and 9, see **Tab 9**.

① Irrigation pump panels with a Generation 2 solid-state overload are sized in a Box 8. Those with the Generation 1 overload are sized in a Box 9.

② Contact Eaton for box dimensions not shown on **Pages V10-T14-13** to **V10-T14-31**.

Vacuum Break

Non-Combination

Type 1 Enclosed—Non-Combination Vacuum Contactors and Starters

Non-Reversing Contactors and Starters—with or without Control Power Transformers

NEMA Size	Box No.	Shipping Weight Lbs (kg)
4	4	47 (21)
5	10	135 (61)
6	E	235 (107)

Reversing Contactors—with or without Control Power Transformers

NEMA Size	Box No.	Shipping Weight Lbs (kg)
4	9	54 (25)
5	10	145 (66)
6	E	245 (111)

Type 3R, 4/4X, 12 Enclosed—Non-Combination Vacuum Contactors and Starters

Non-Reversing Contactors and Starters—with or without Control Power Transformers

NEMA Size	Box No.	Shipping Weight Lbs (kg)
4	8	67 (30)
5	10	150 (68)
6	E	250 (114)

Reversing Contactors—with or without Control Power Transformers

NEMA Size	Box No.	Shipping Weight Lbs (kg)
4	9	72 (33)
5	10	175 (79)
6	E	275 (125)

Combination

Type 1 Enclosed—Combination Vacuum Starters

Non-Reversing Starters: Fusible or Non-Fusible Disconnect—with or without Control Power Transformers

NEMA Size	Box No.	Shipping Weight Lbs (kg)
4	D	150 (68)
5	E	180 (82)
6	F1E	280 (127)

Non-Reversing Starters: HMCP or Circuit Breaker—with or without Control Power Transformers

NEMA Size	Box No.	Shipping Weight Lbs (kg)
4	C	90 (41)
5	E	180 (82)
6	F1E	280 (127)

Type 3R, 4/4X, 12 Enclosed—Combination Vacuum Starters

Non-Reversing Starters: Fusible or Non-Fusible Disconnect—with or without Control Power Transformers

NEMA Size	Box No.	Shipping Weight Lbs (kg)
4	D	150 (68)
5	E	180 (82)
6	F1E	280 (127)

Non-Reversing Starters: HMCP or Circuit Breaker—with or without Control Power Transformers

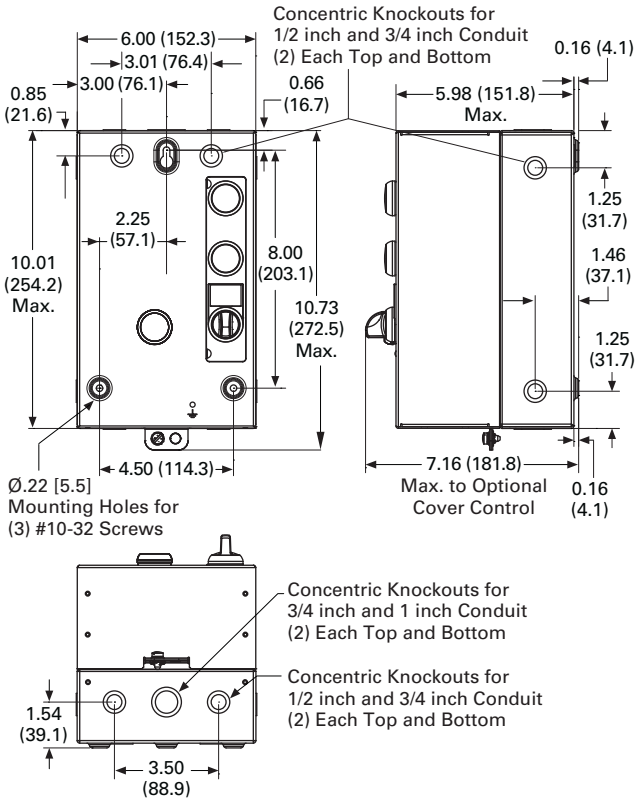
NEMA Size	Box No.	Shipping Weight Lbs (kg)
4	C	90 (41)
5	E	180 (82)
6	F1E	280 (127)

Note

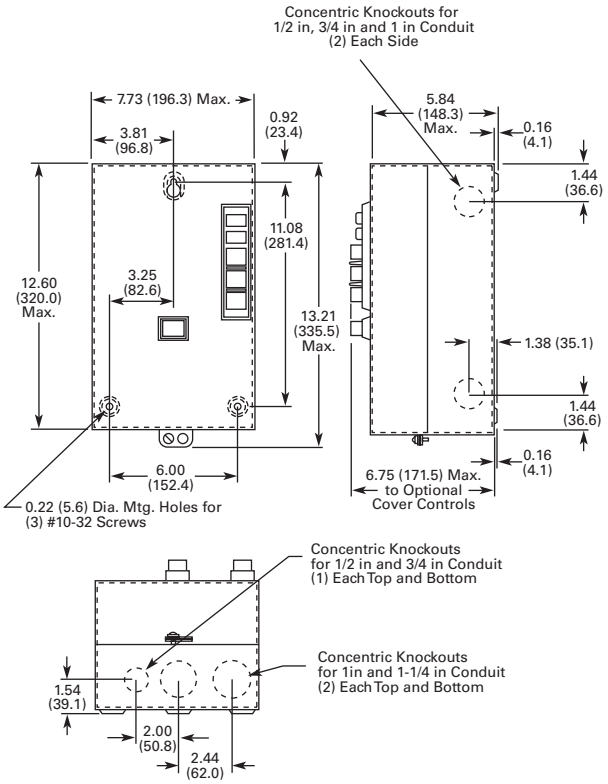
All Type 7 and 9, see **Tab 9**.

Approximate Dimensions are in Inches (mm)

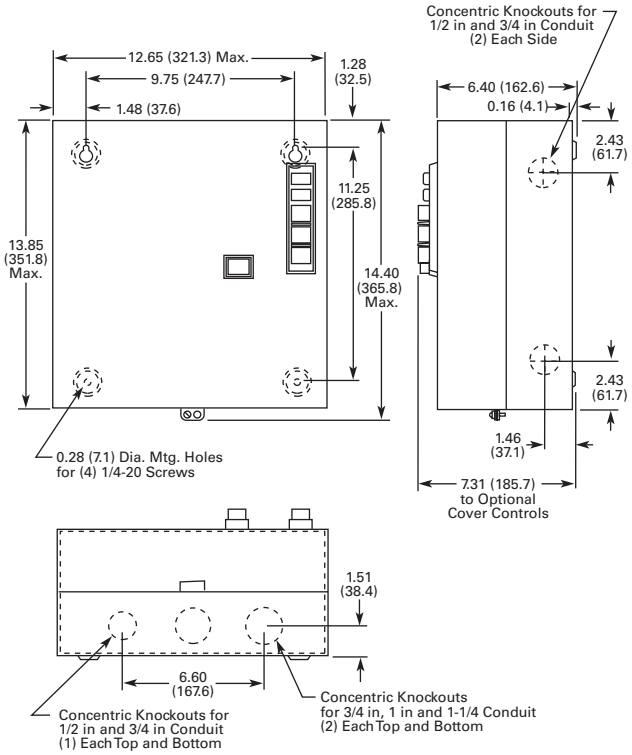
Box 1, Type 1—6.00W x 10.01H x 5.98D



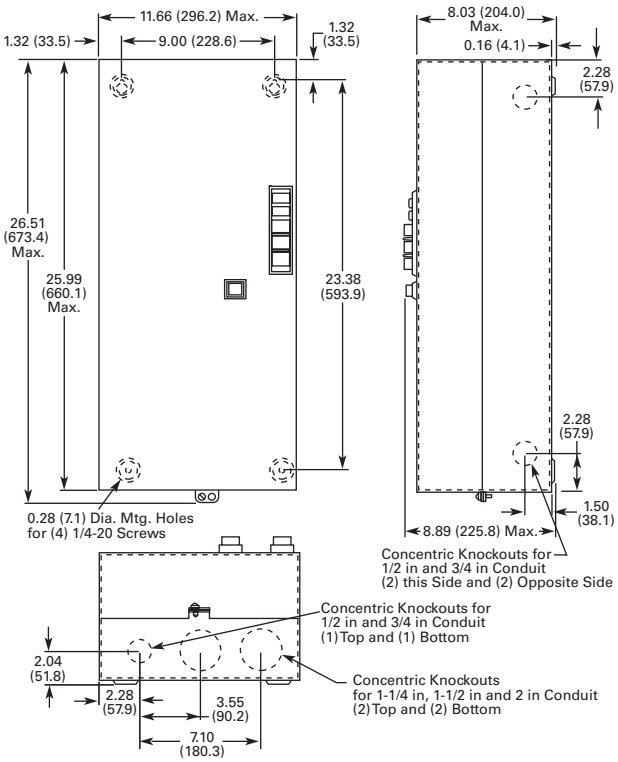
Box 2, Type 1—7.73W x 12.60H x 5.84D



Box 3, Type 1—12.65W x 13.85H x 6.40D



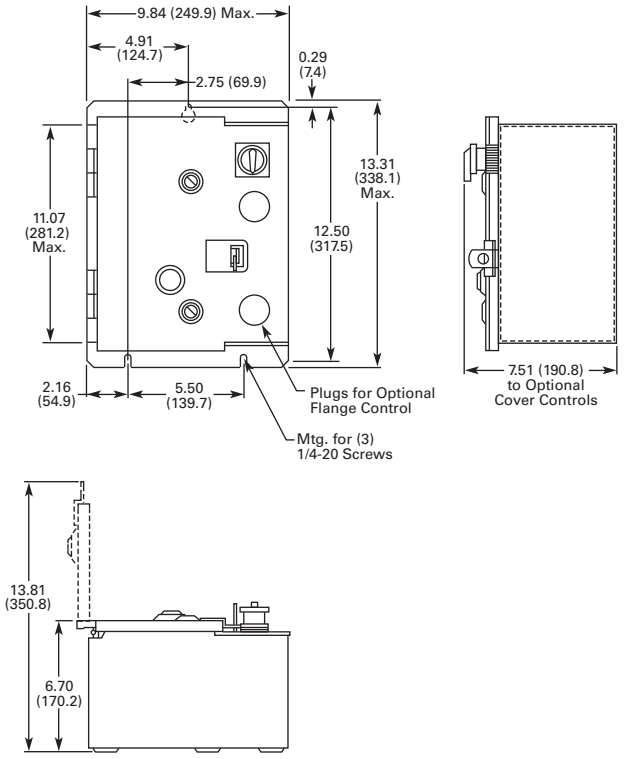
Box 4, Type 1—11.66W x 25.99H x 8.03D



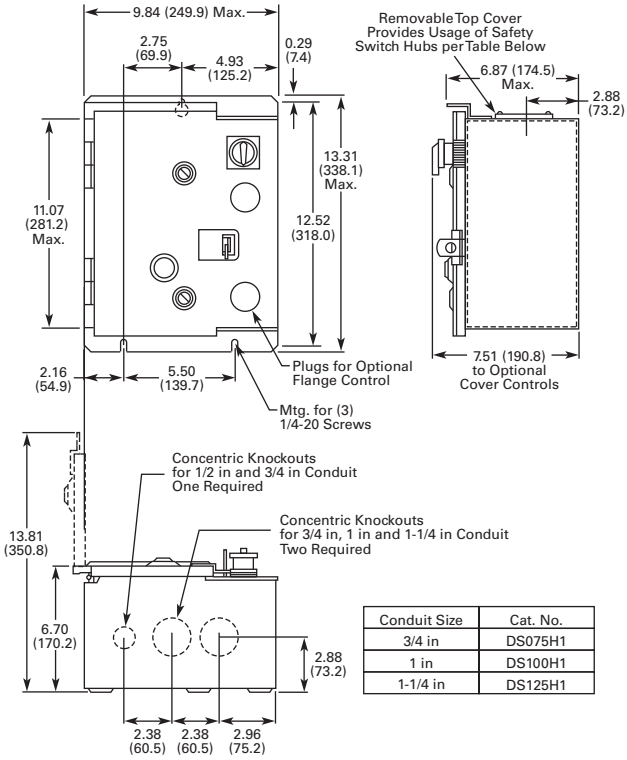
14

Approximate Dimensions are in Inches (mm)

Box 5, Type 12—9.84W x 13.31H x 6.70D

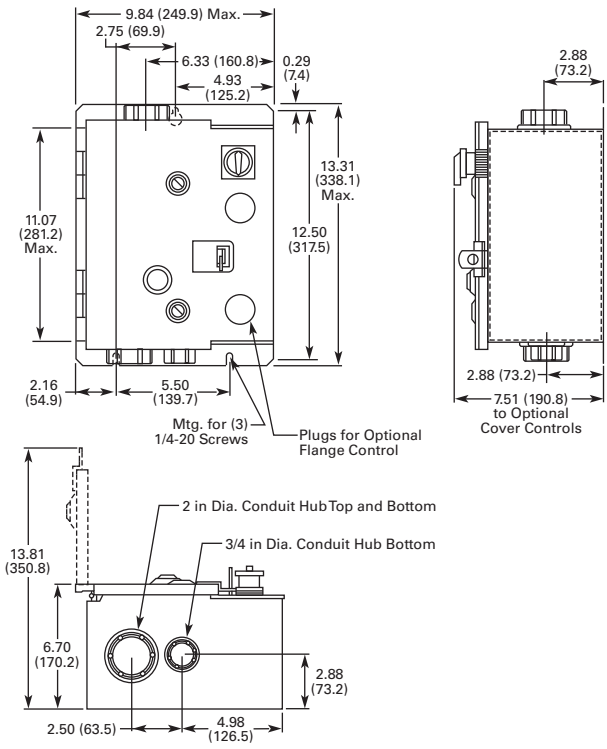


Box 5, Type 3R—9.84W x 13.31H x 6.70D



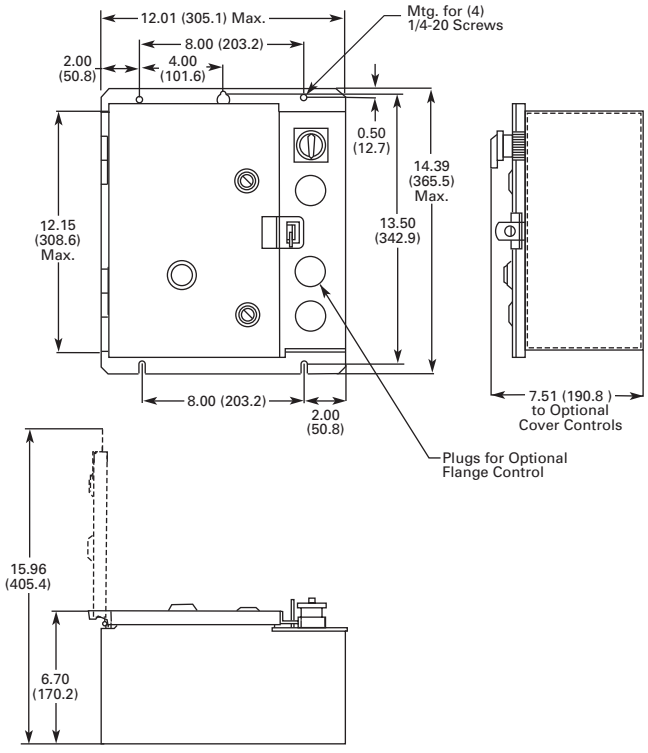
Conduit Size	Cat. No.
3/4 in	DS075H1
1 in	DS100H1
1-1/4 in	DS125H1

Box 5, Type 4X—9.84W x 13.31H x 6.70D

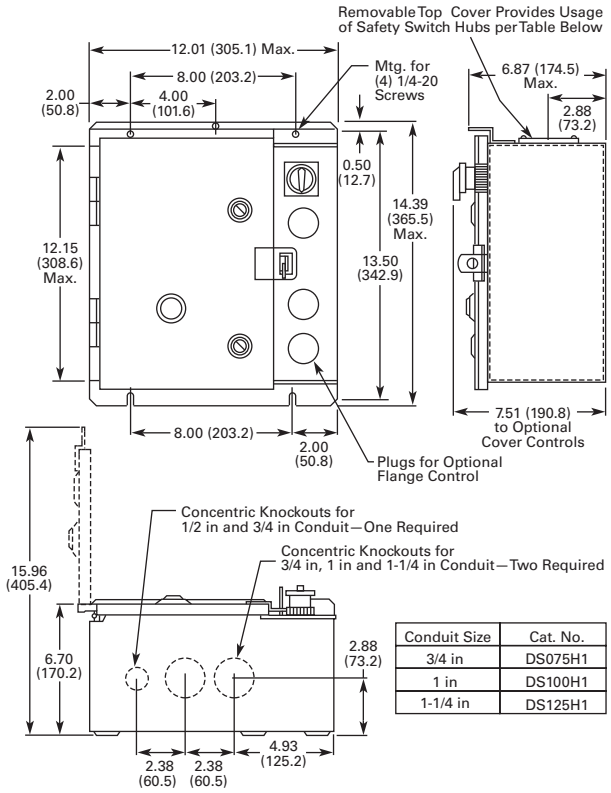


Approximate Dimensions are in Inches (mm)

Box 6, Type 12—12.01W x 14.39H x 6.70D

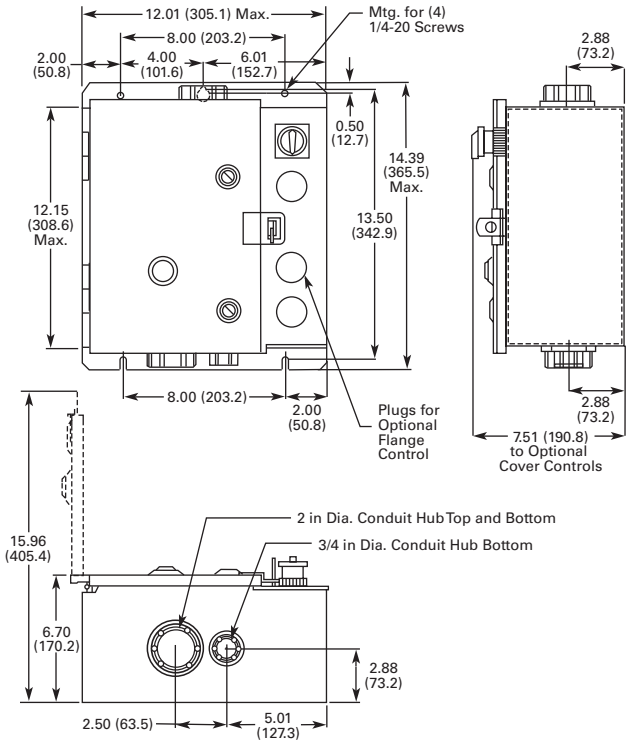


Box 6, Type 3R—12.01W x 14.39H x 6.70D



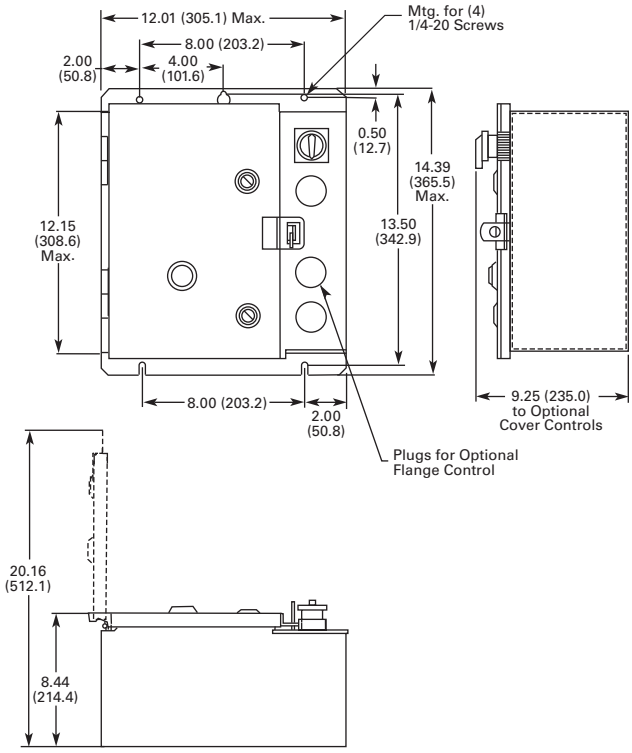
Conduit Size	Cat. No.
3/4 in	DS075H1
1 in	DS100H1
1-1/4 in	DS125H1

Box 6, Type 4X—12.01W x 14.39H x 6.70D

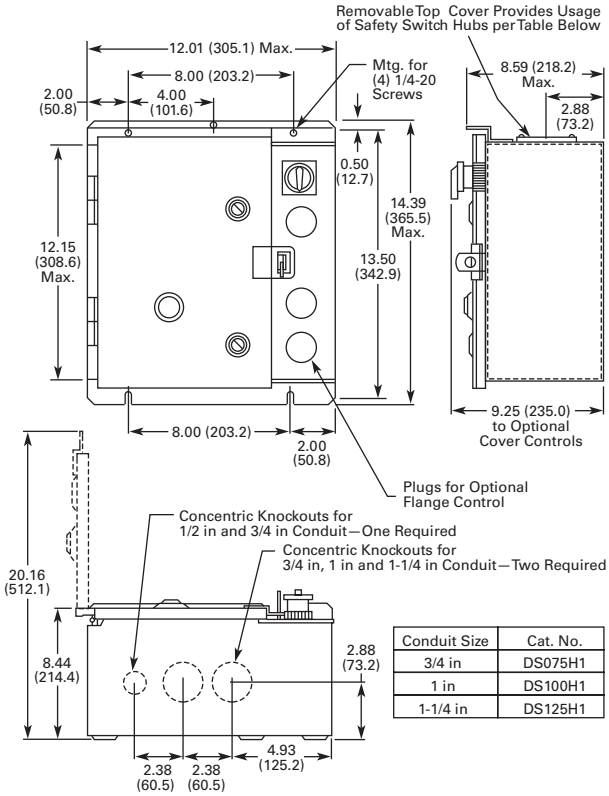


Approximate Dimensions are in Inches (mm)

Box 6A, Type 12—12.01W x 14.39H x 8.44D

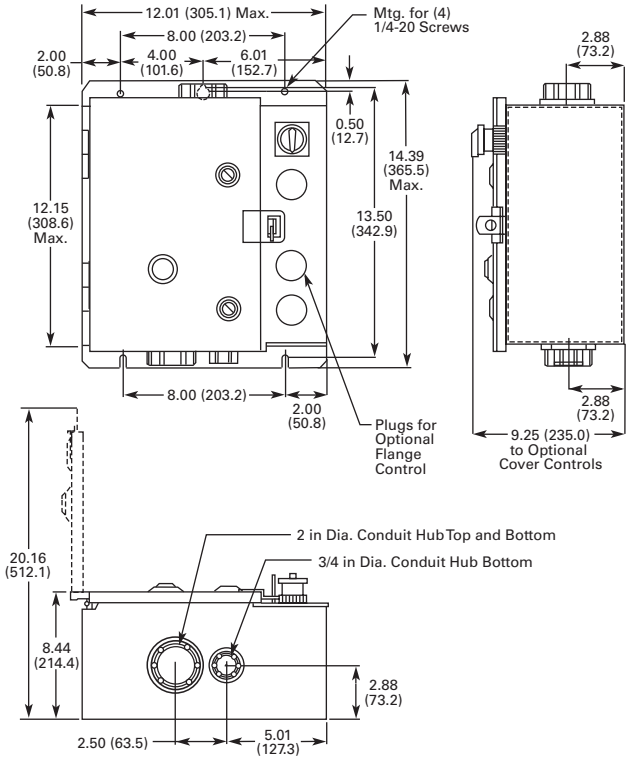


Box 6A, Type 3R—12.01W x 14.39H x 8.44D



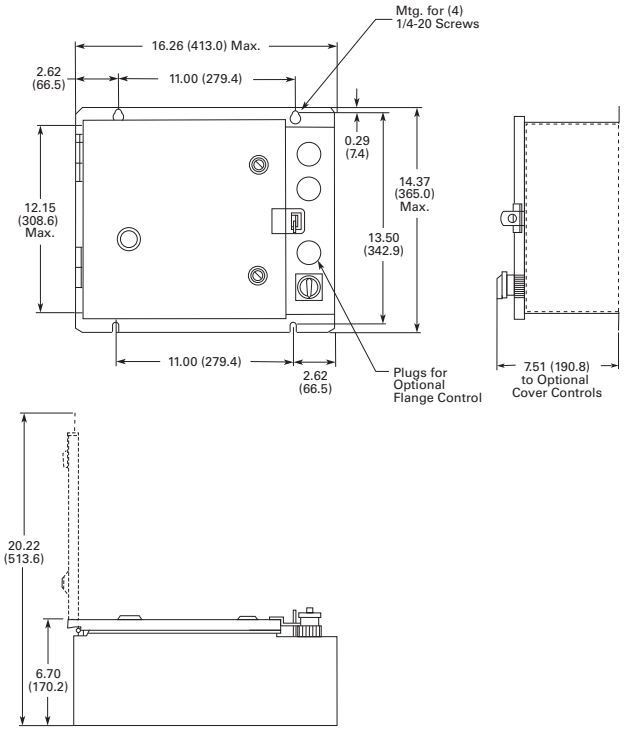
Conduit Size	Cat. No.
3/4 in	DS075H1
1 in	DS100H1
1-1/4 in	DS125H1

Box 6A, Type 4X—12.01W x 14.39H x 8.44D

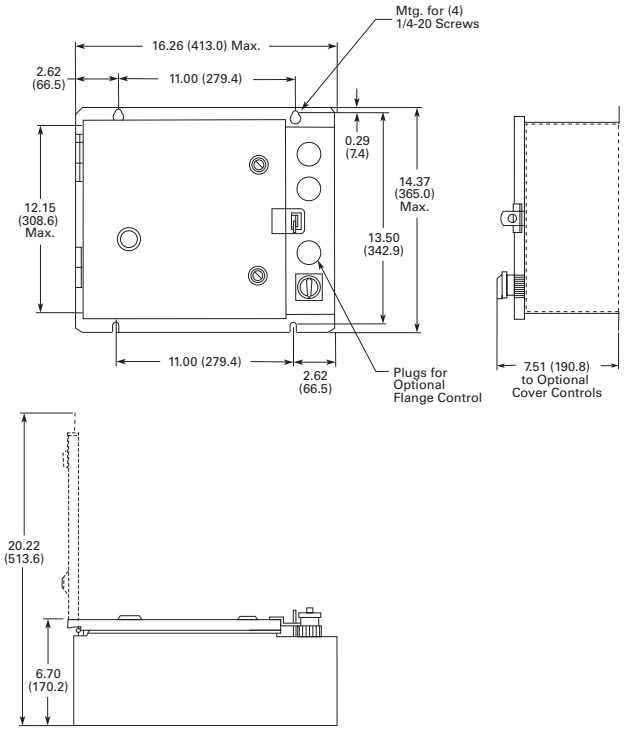


Approximate Dimensions are in Inches (mm)

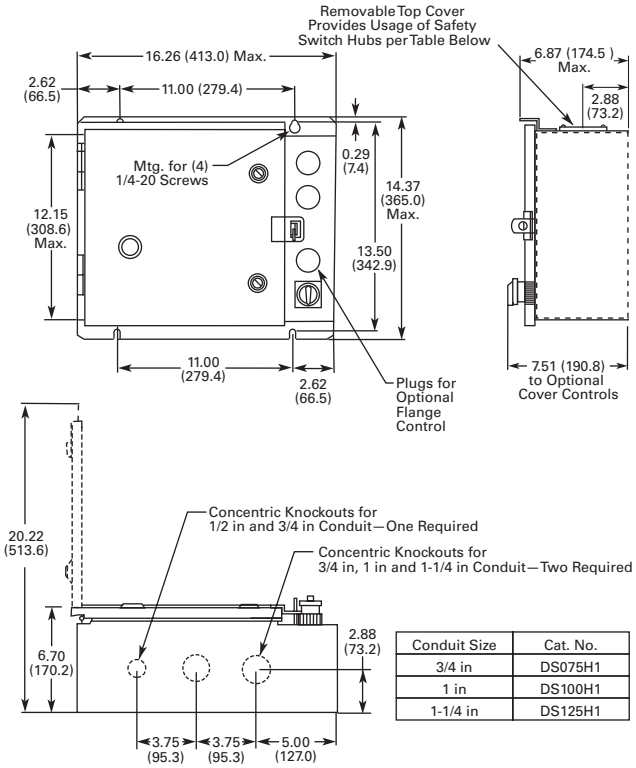
Box 7, Type 1—16.26W x 14.37H x 6.70D



Box 7, Type 12—16.26W x 14.37H x 6.70D

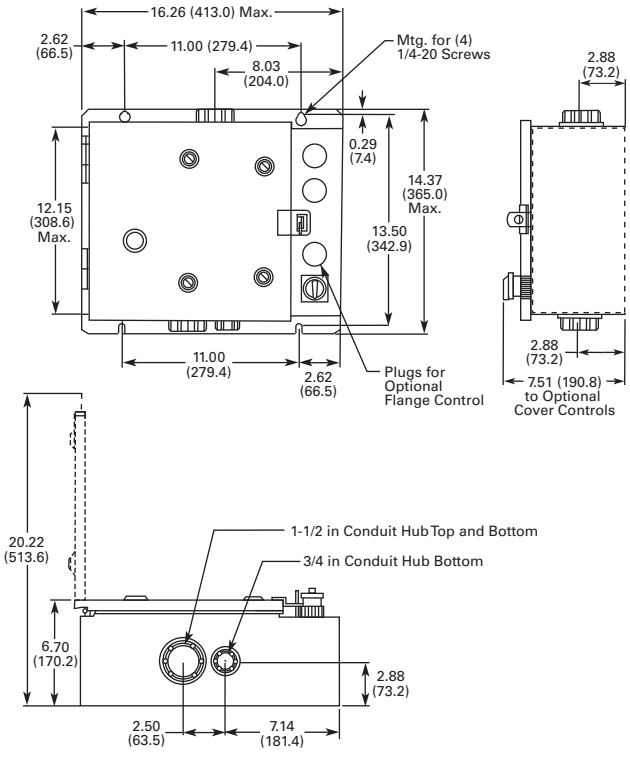


Box 7, Type 3R—16.26W x 14.37H x 6.70D



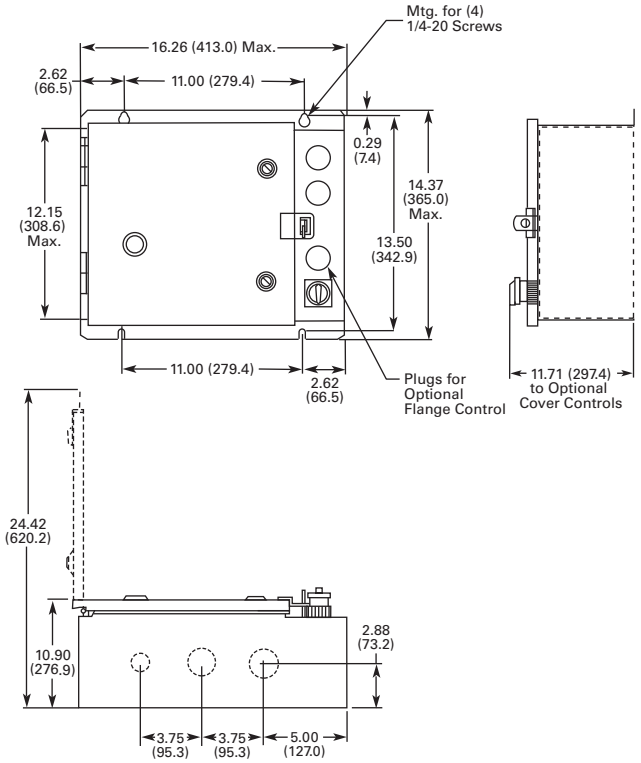
Conduit Size	Cat. No.
3/4 in	DS075H1
1 in	DS100H1
1-1/4 in	DS125H1

Box 7, Type 4X—16.26W x 14.37H x 6.70D

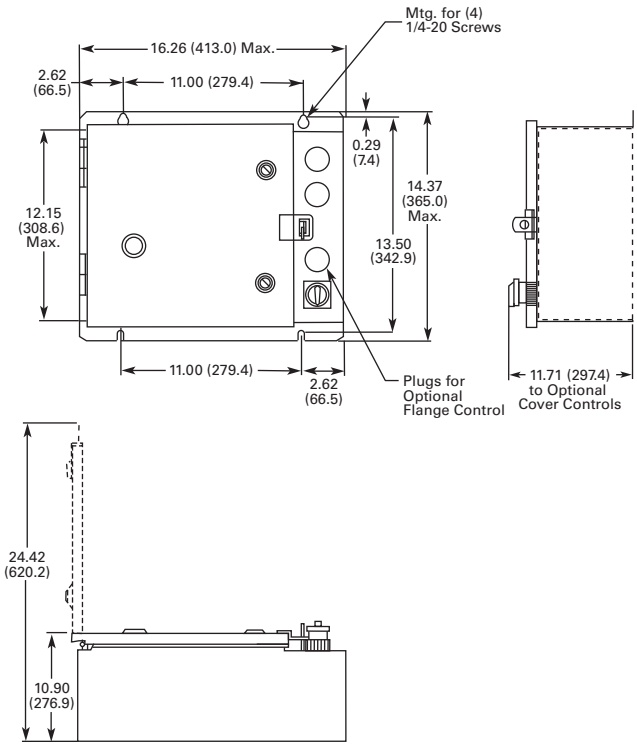


Approximate Dimensions are in Inches (mm)

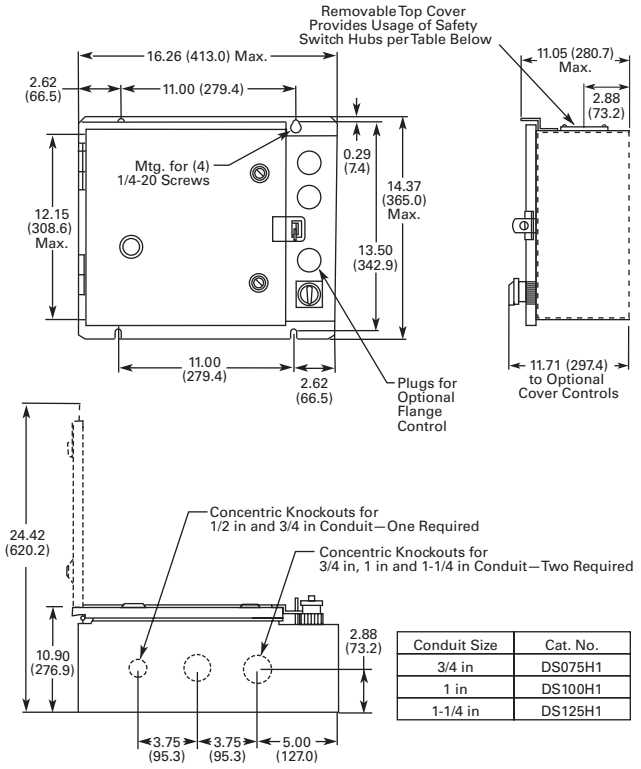
Box 7A, Type 1—16.26W x 14.37H x 10.90D



Box 7A, Type 12—16.26W x 14.37H x 10.90D

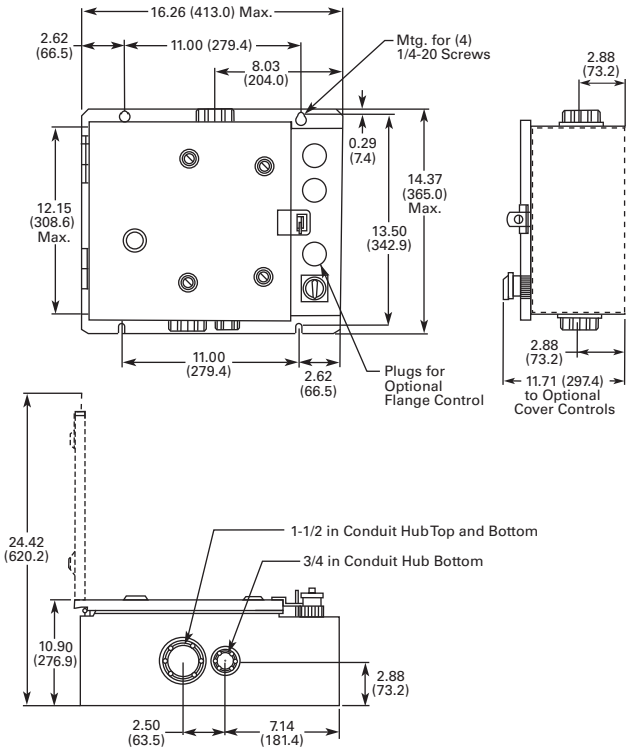


Box 7A, Type 3R—16.26W x 14.37H x 10.90D



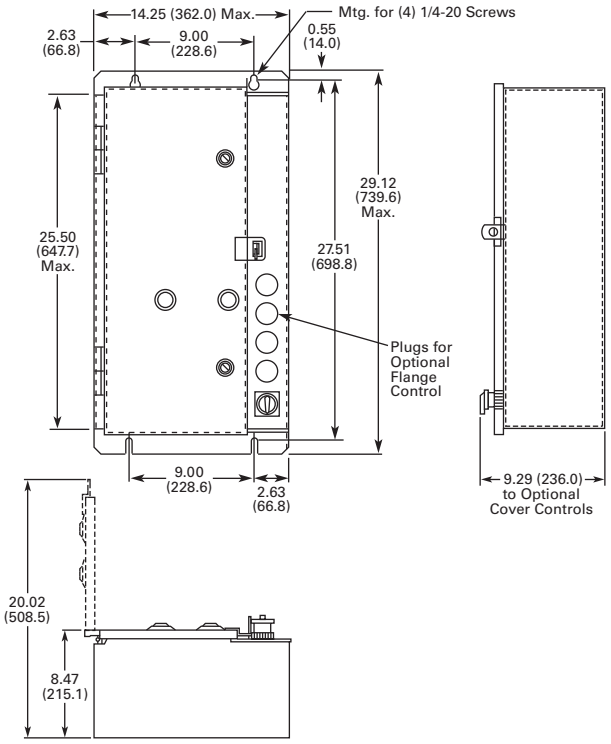
Conduit Size	Cat. No.
3/4 in	DS075H1
1 in	DS100H1
1-1/4 in	DS125H1

Box 7A, Type 4X—16.26W x 14.37H x 10.90D

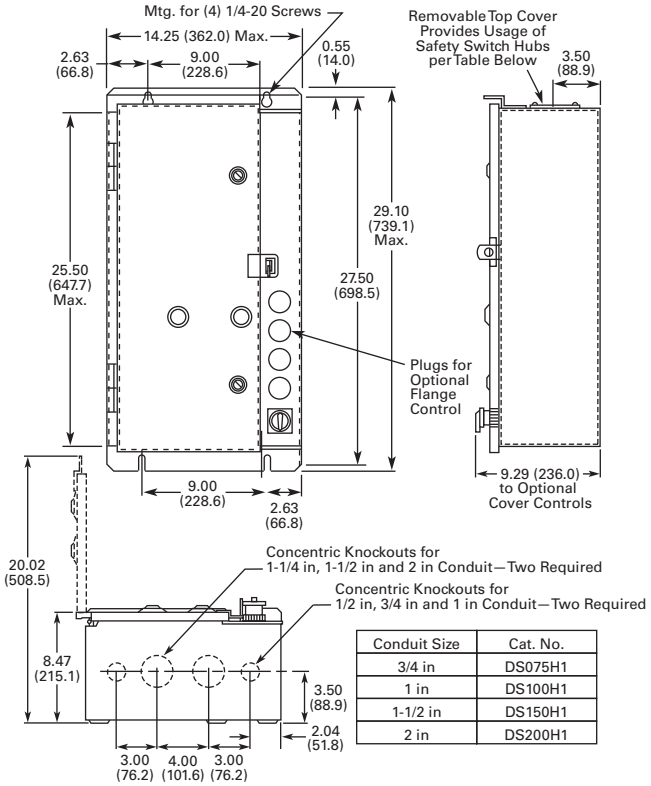


Approximate Dimensions are in Inches (mm)

Box 8, Type 12—14.25W x 29.12H x 8.47D

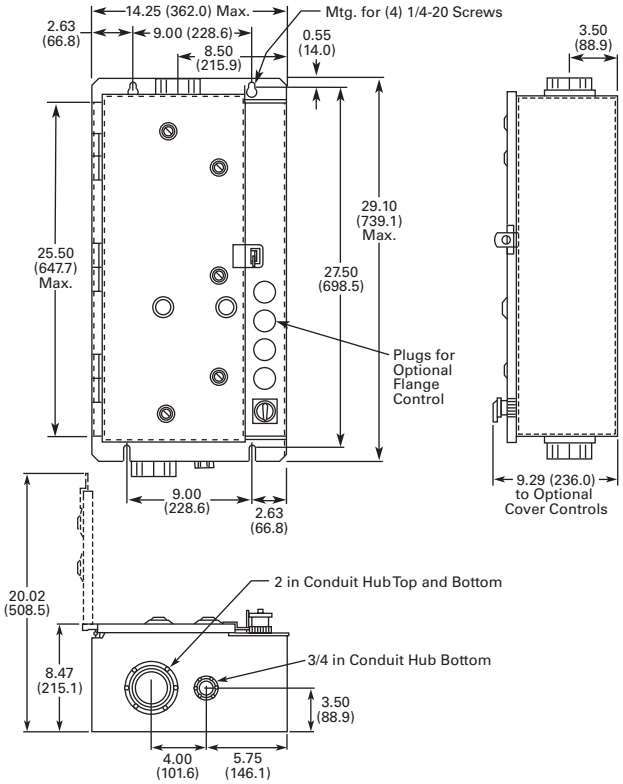


Box 8, Type 3R—14.25W x 29.10H x 8.47D



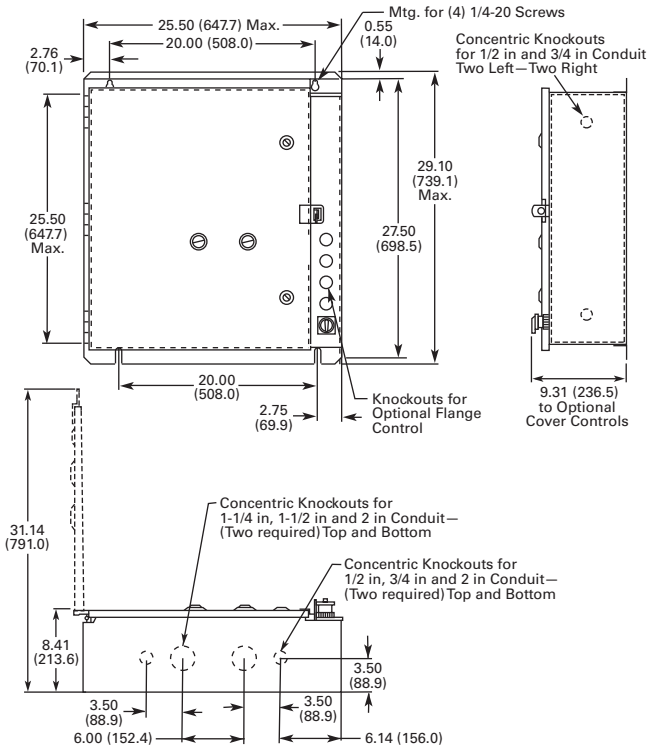
Conduit Size	Cat. No.
3/4 in	DS075H1
1 in	DS100H1
1-1/2 in	DS150H1
2 in	DS200H1

Box 8, Type 4X—14.25W x 29.10H x 8.47D

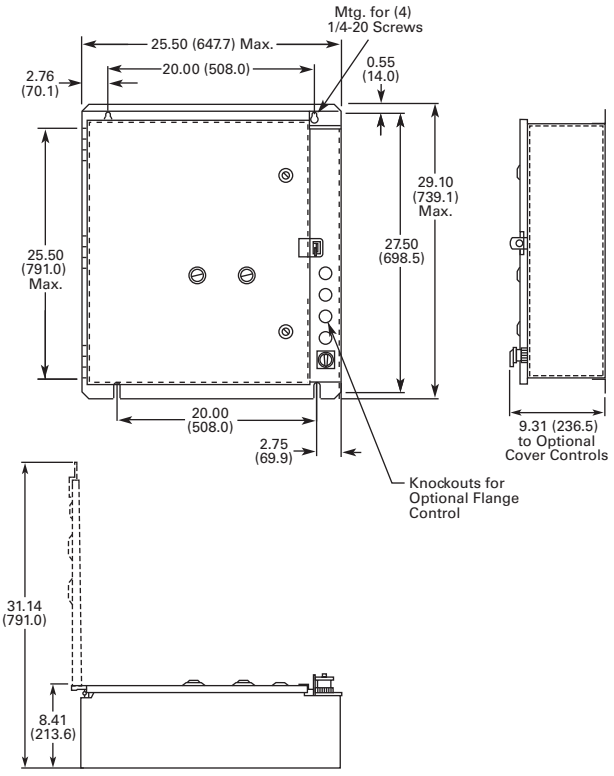


Approximate Dimensions are in Inches (mm)

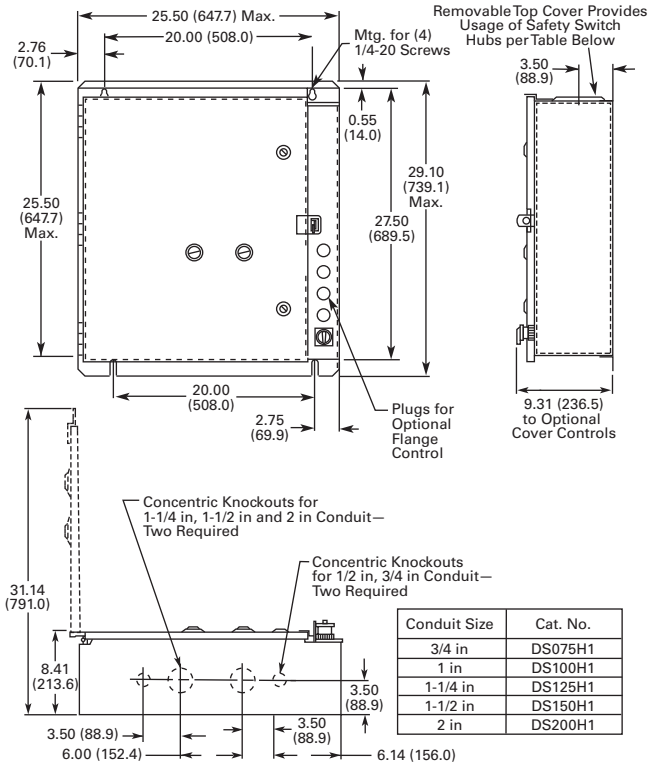
Box 9, Type 1—25.50W x 29.10H x 8.41D



Box 9, Type 12—25.50W x 29.10H x 8.41D

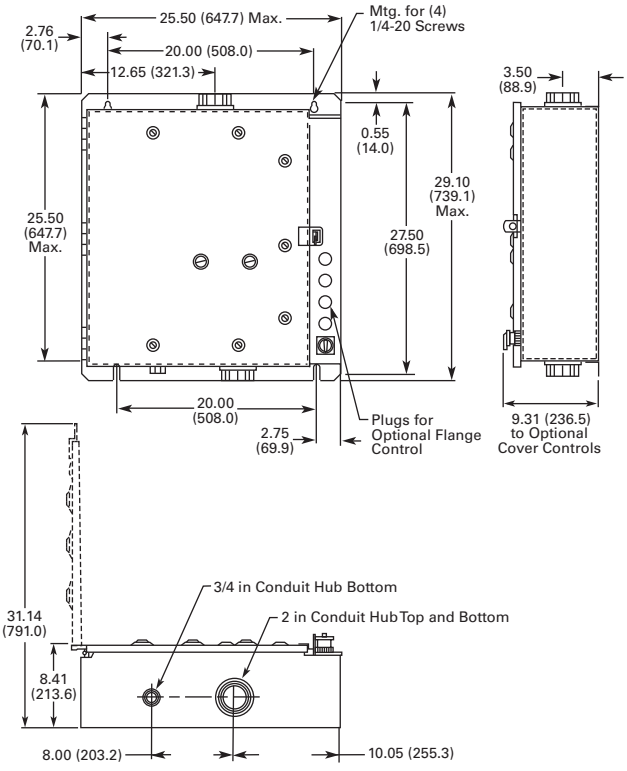


Box 9, Type 3R—25.50W x 29.10H x 8.41D



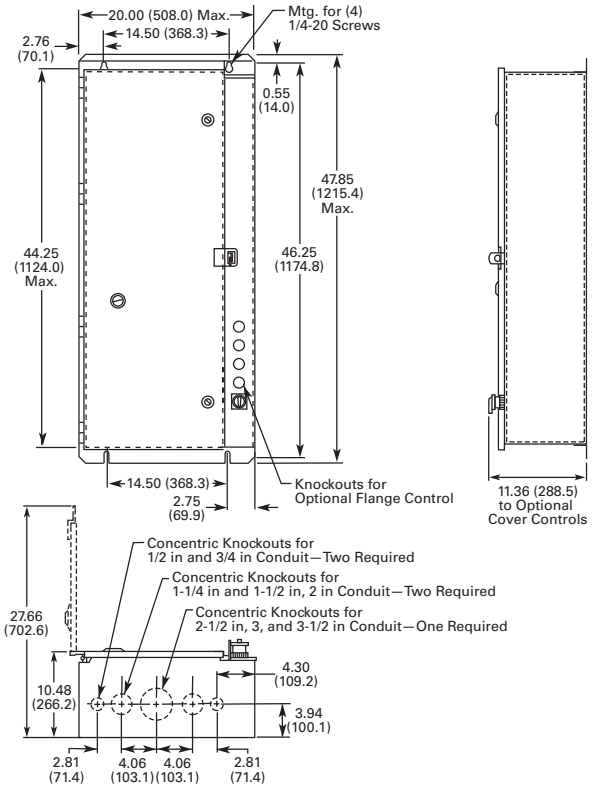
Conduit Size	Cat. No.
3/4 in	DS075H1
1 in	DS100H1
1-1/4 in	DS125H1
1-1/2 in	DS150H1
2 in	DS200H1

Box 9, Type 4X—25.50W x 29.10H x 8.41D

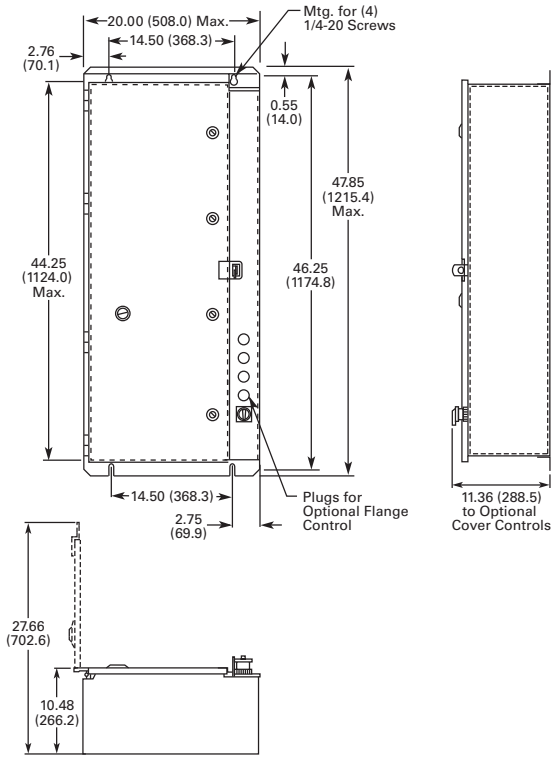


Approximate Dimensions are in Inches (mm)

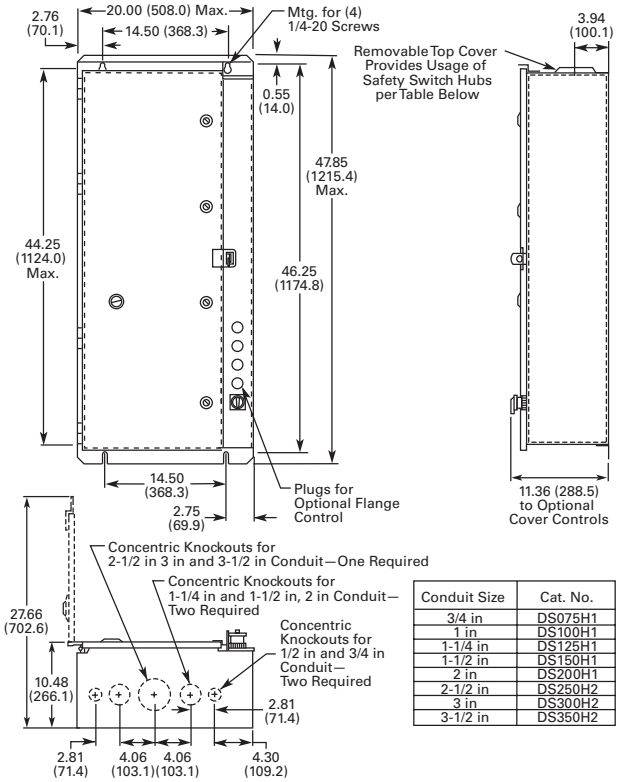
Box 10, Type 1—20.00W x 47.85H x 10.48D



Box 10, Type 12—20.00W x 47.85H x 10.48D

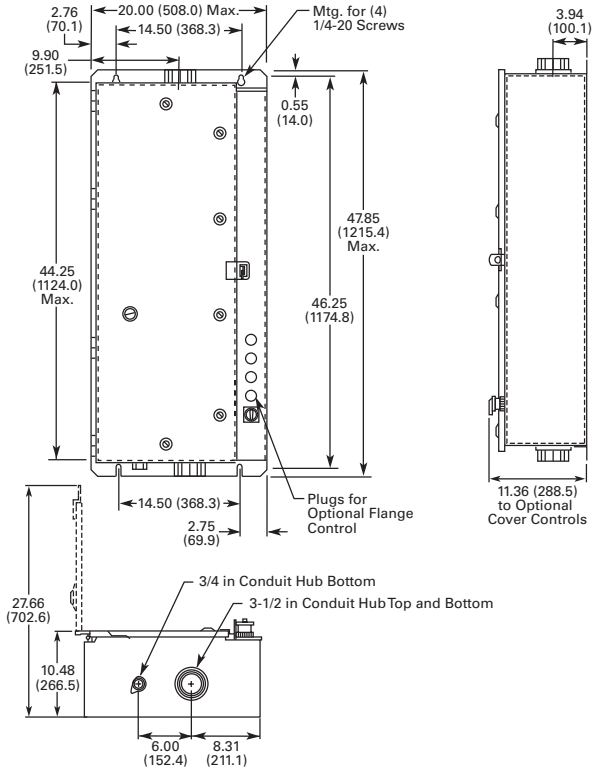


Box 10, Type 3R—20.00W x 47.85H x 10.48D



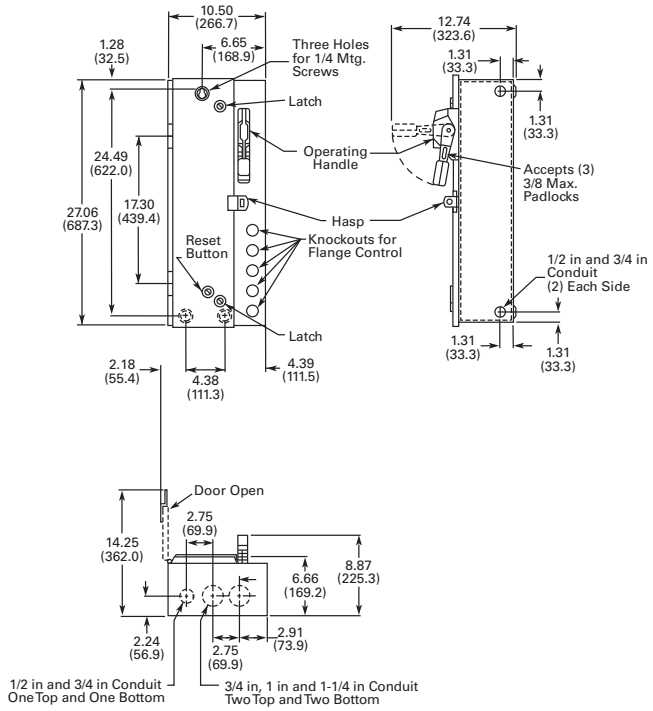
Conduit Size	Cat. No.
3/4 in	DS075H1
1 in	DS100H1
1-1/4 in	DS125H1
1-1/2 in	DS150H1
2 in	DS200H1
2-1/2 in	DS250H2
3 in	DS300H2
3-1/2 in	DS350H2

Box 10, Type 4X—20.00W x 47.85H x 10.48D

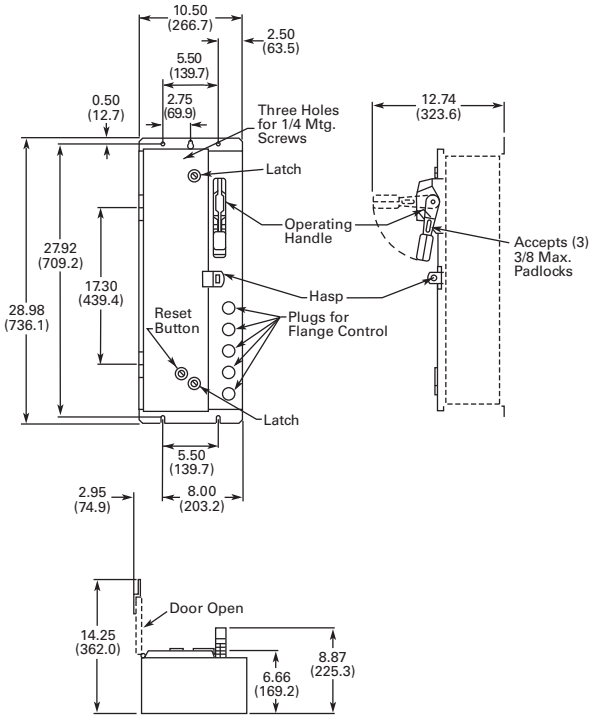


Approximate Dimensions are in Inches (mm)

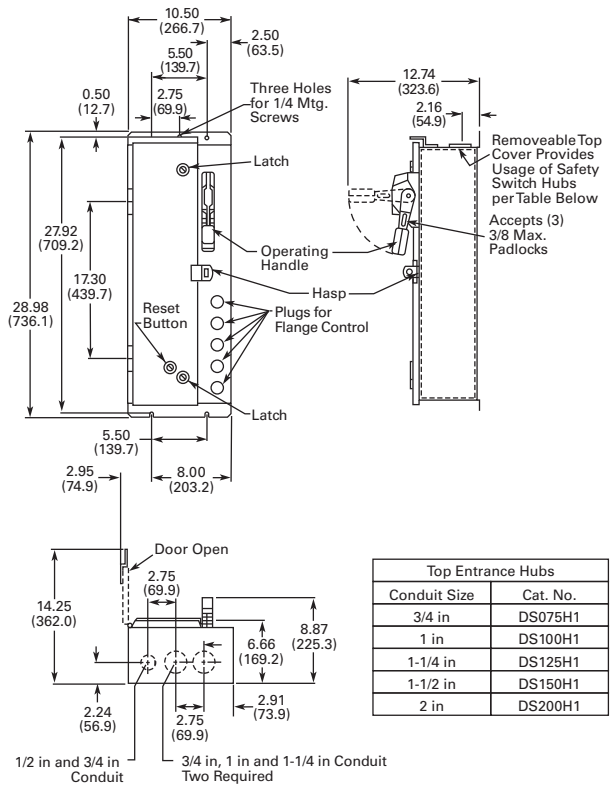
Box A, Type 1—10.50W x 27.06H x 6.66D



Box A, Type 12—10.50W x 28.98H x 6.66D

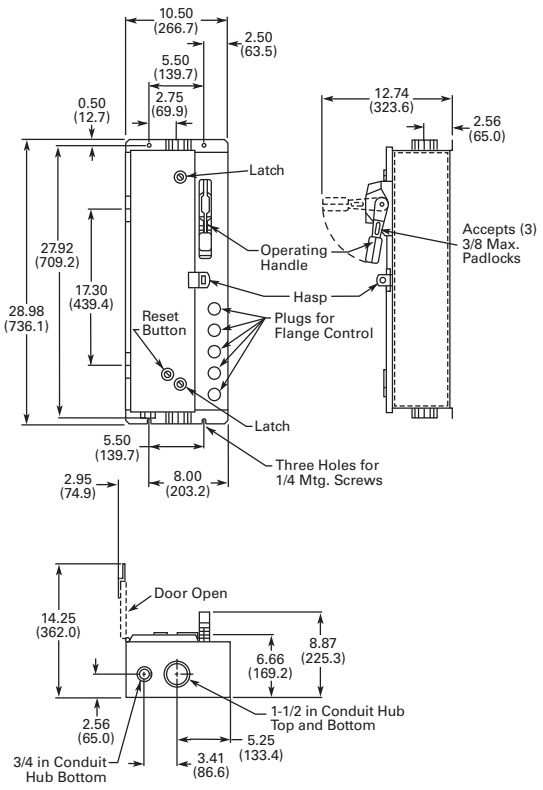


Box A, Type 3R—10.50W x 28.98H x 6.66D



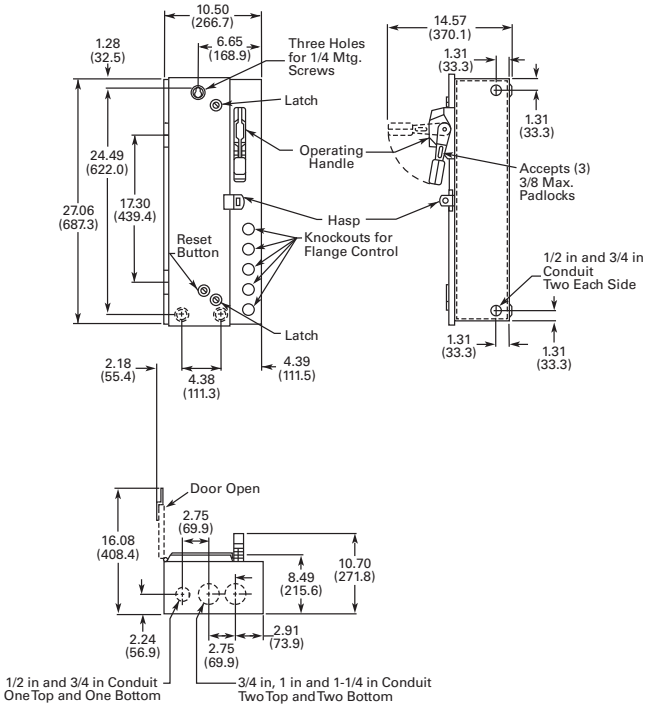
Top Entrance Hubs	
Conduit Size	Cat. No.
3/4 in	DS075H1
1 in	DS100H1
1-1/4 in	DS125H1
1-1/2 in	DS150H1
2 in	DS200H1

Box A, Type 4X—10.50W x 28.98H x 6.66D

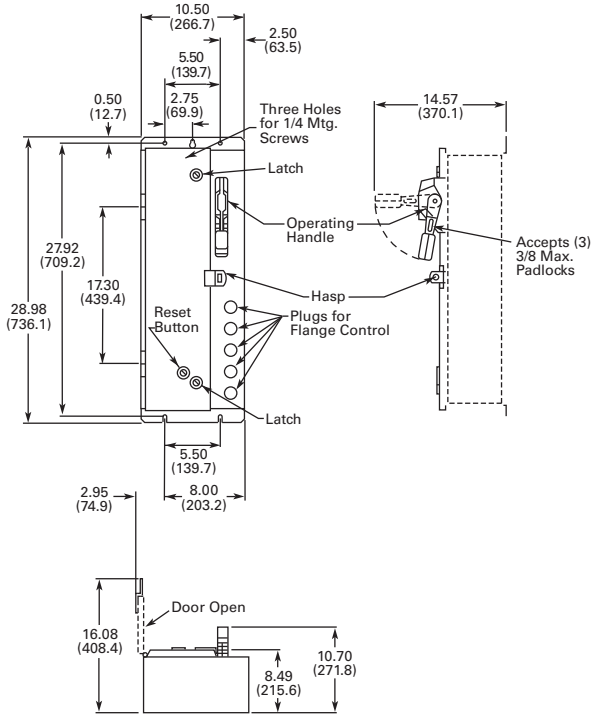


Approximate Dimensions are in Inches (mm)

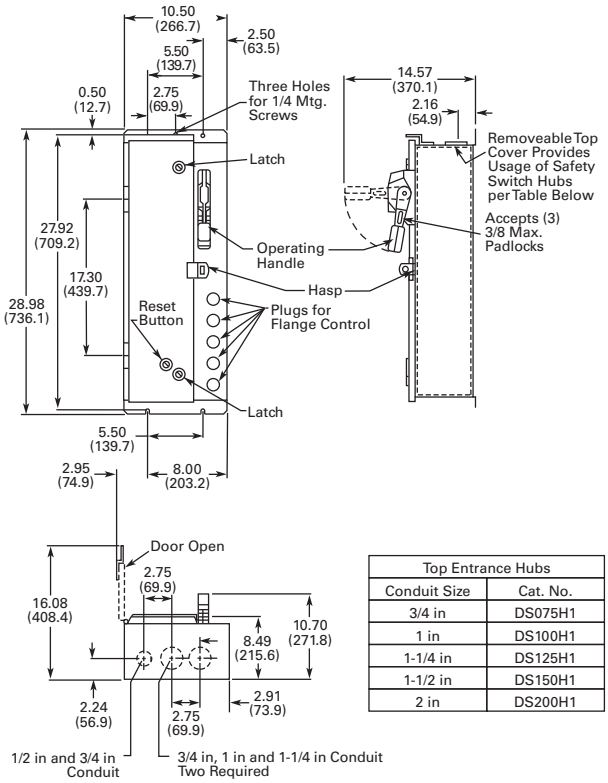
Box A1, Type 1—10.50W x 27.06H x 8.49D



Box A1, Type 12—10.50W x 28.98H x 8.49D

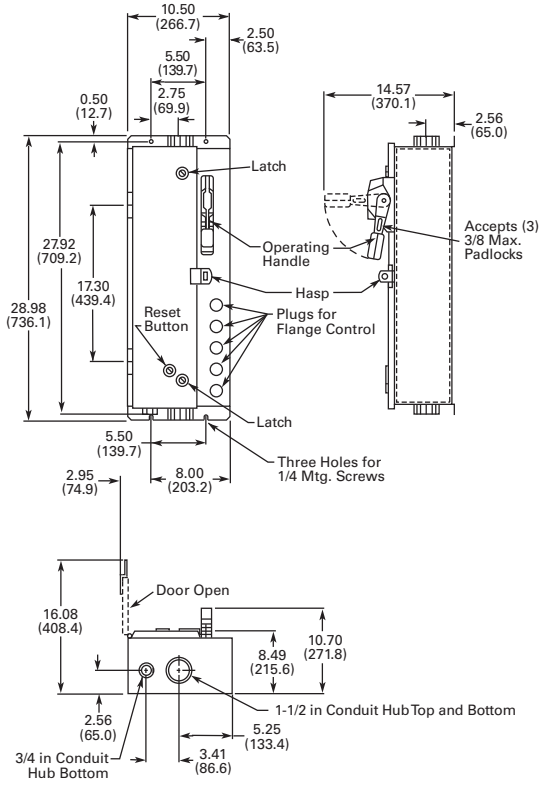


Box A1, Type 3R—10.50W x 28.98H x 8.49D



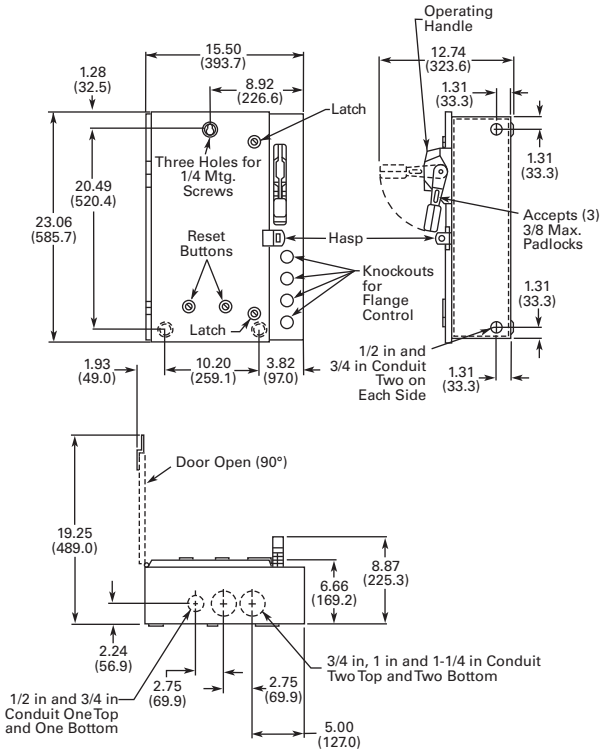
Top Entrance Hubs	
Conduit Size	Cat. No.
3/4 in	DS075H1
1 in	DS100H1
1-1/4 in	DS125H1
1-1/2 in	DS150H1
2 in	DS200H1

Box A1, Type 4X—10.50W x 28.98H x 8.49D

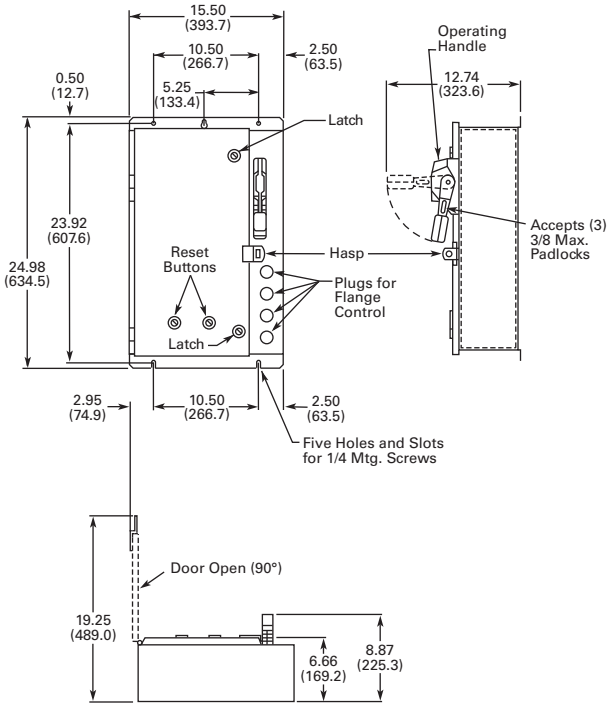


Approximate Dimensions are in Inches (mm)

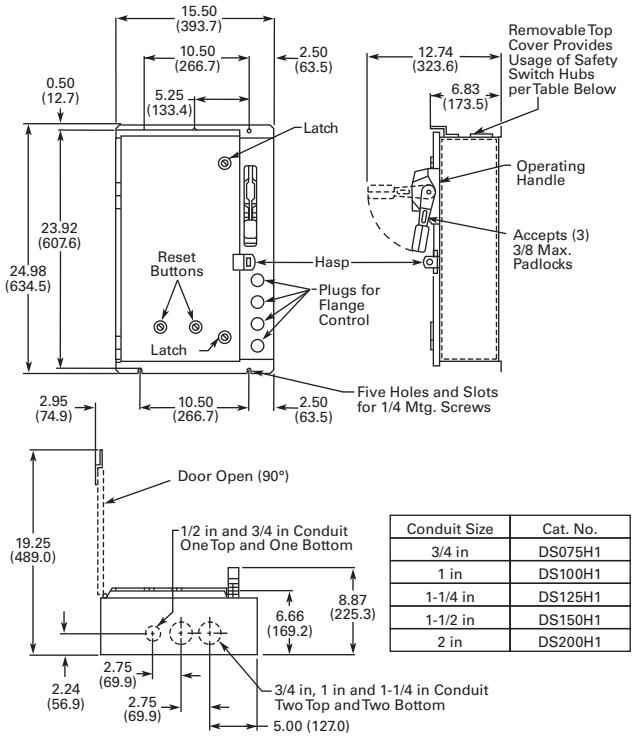
Box B, Type 1—15.50W x 23.06H x 6.66D



Box B, Type 12—15.50W x 24.98H x 6.66D

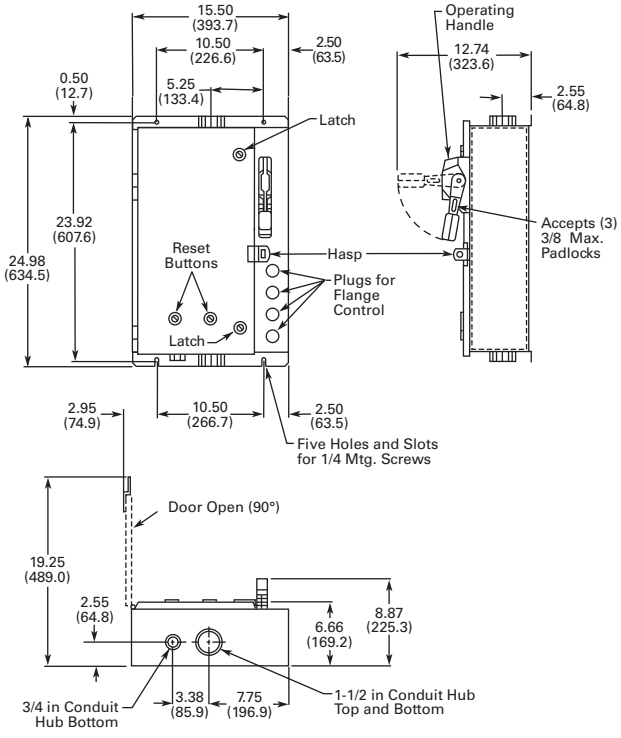


Box B, Type 3R—15.50W x 24.98H x 6.66D



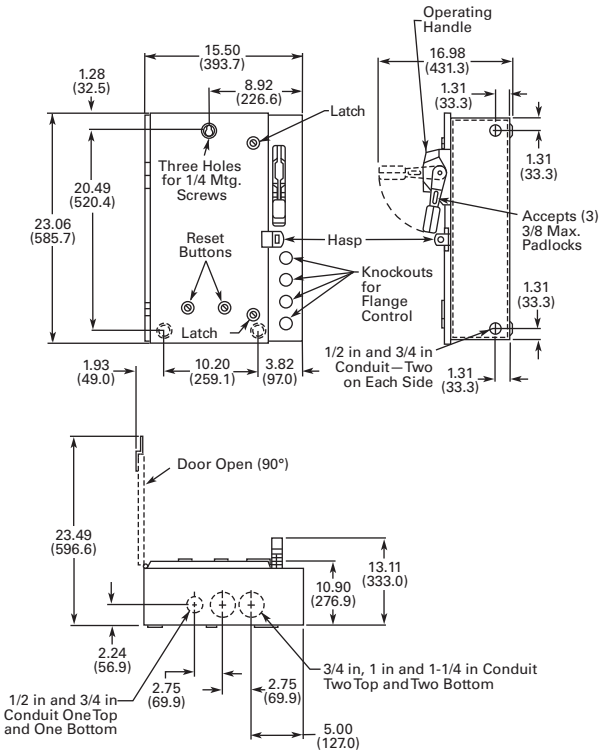
Conduit Size	Cat. No.
3/4 in	DS075H1
1 in	DS100H1
1-1/4 in	DS125H1
1-1/2 in	DS150H1
2 in	DS200H1

Box B, Type 4X—15.50W x 24.98H x 6.66D

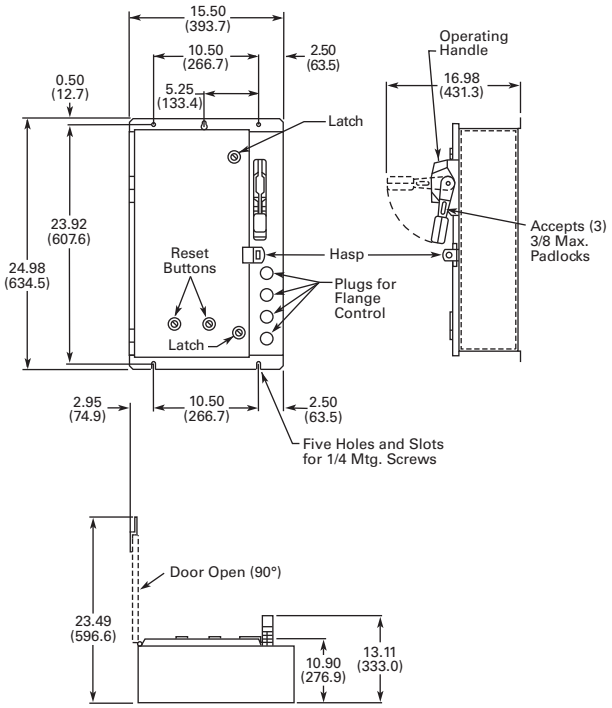


Approximate Dimensions are in Inches (mm)

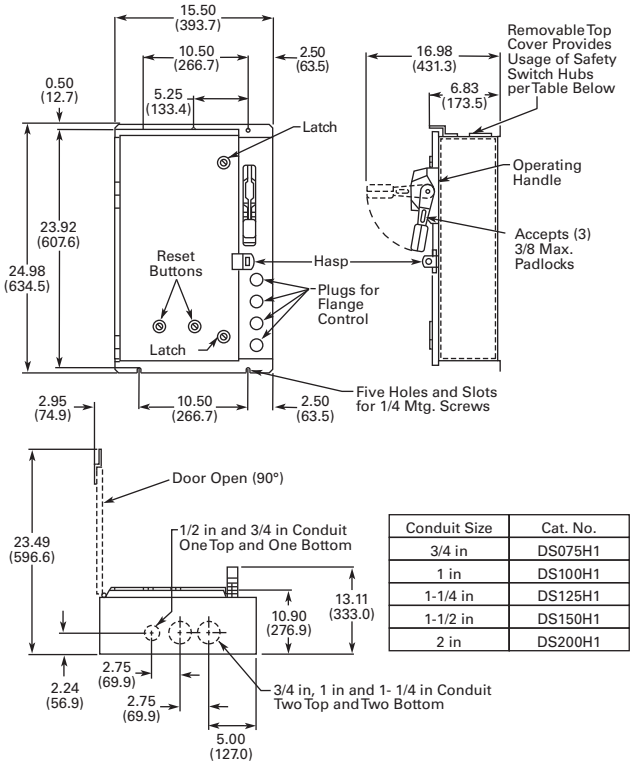
Box B1, Type 1—15.50W x 23.06H x 10.90D



Box B1, Type 12—15.50W x 24.98H x 10.90D

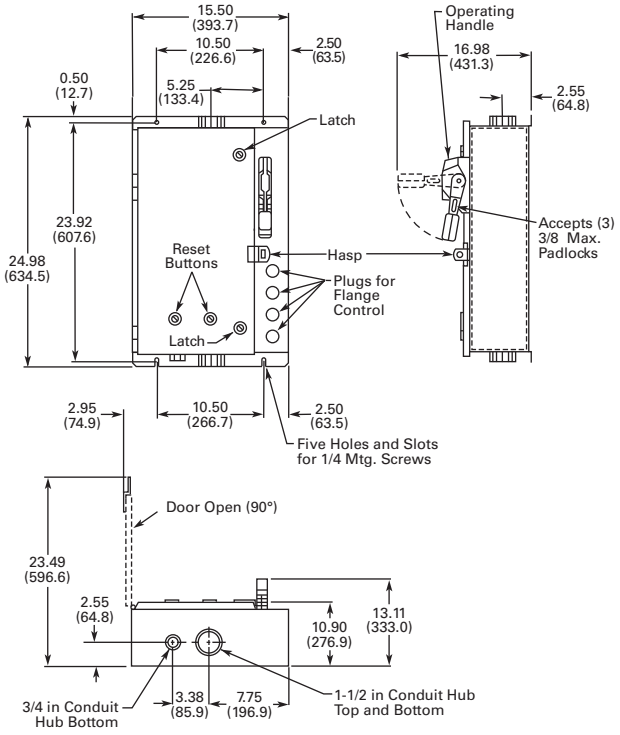


Box B1, Type 3R—15.50W x 24.98H x 10.90D



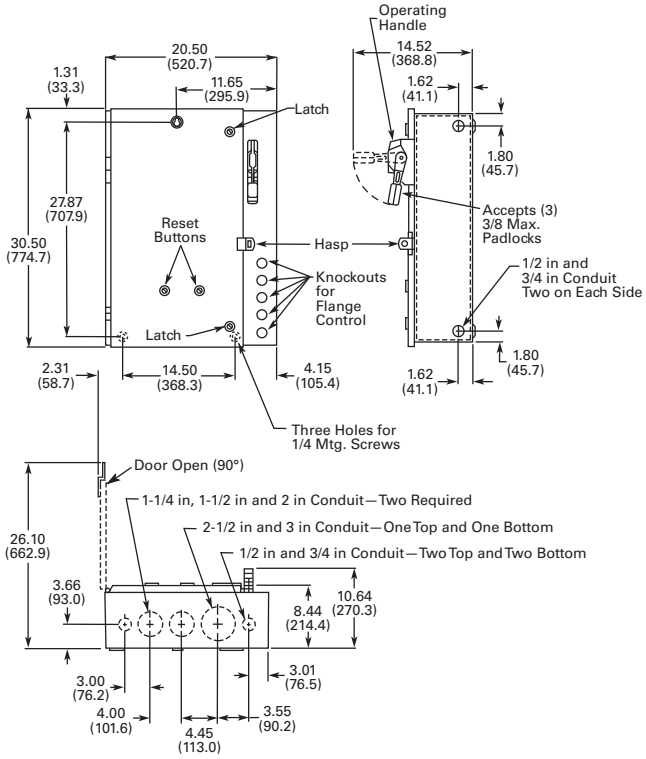
Conduit Size	Cat. No.
3/4 in	DS075H1
1 in	DS100H1
1-1/4 in	DS125H1
1-1/2 in	DS150H1
2 in	DS200H1

Box B1, Type 4X—15.50W x 24.98H x 10.90D

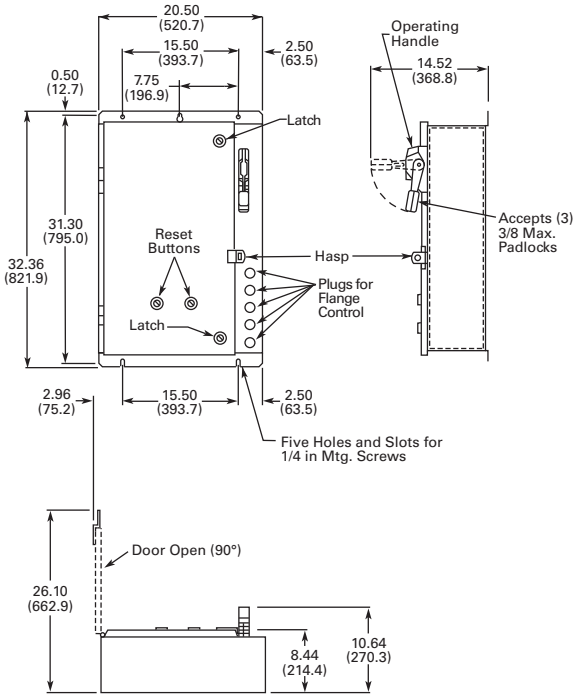


Approximate Dimensions are in Inches (mm)

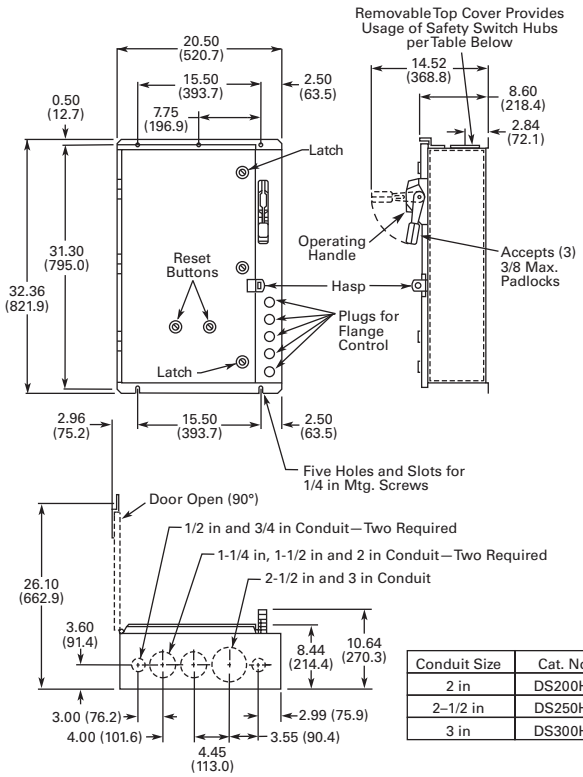
Box C, Type 1—20.50W x 30.50H x 8.44D



Box C, Type 12—20.50W x 32.36H x 8.44D

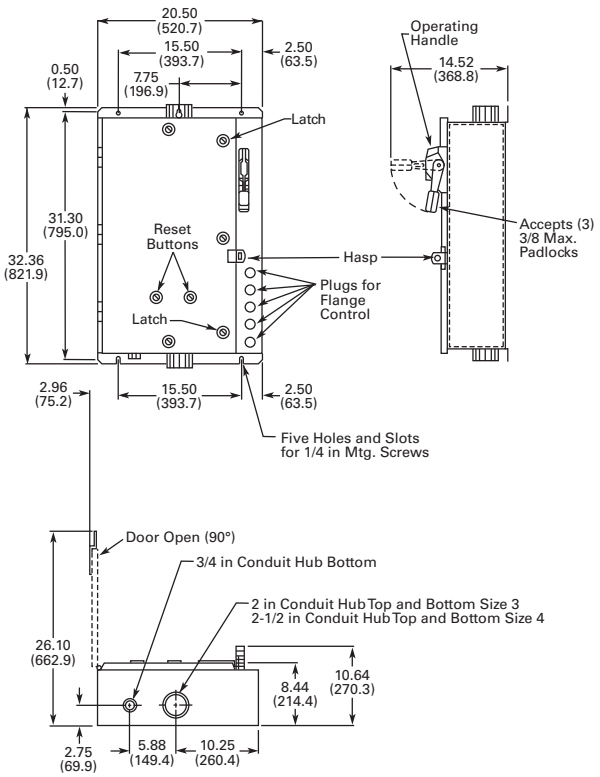


Box C, Type 3R—20.50W x 32.36H x 8.44D



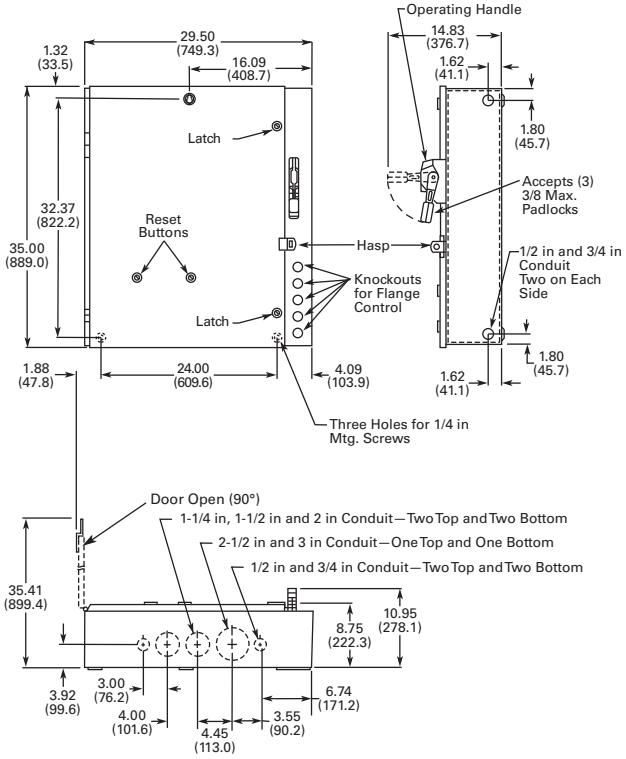
Conduit Size	Cat. No.
2 in	DS200H2
2–1/2 in	DS250H2
3 in	DS300H2

Box C, Type 4X—20.50W x 32.36H x 8.44D

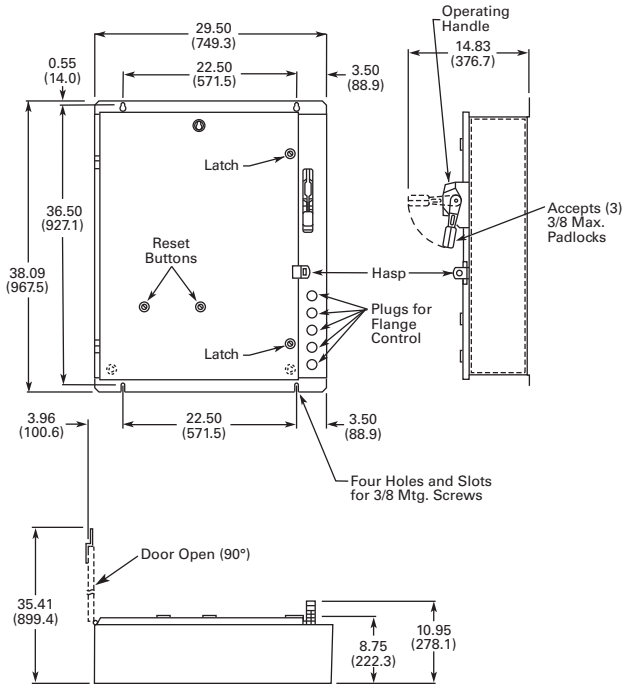


Approximate Dimensions are in Inches (mm)

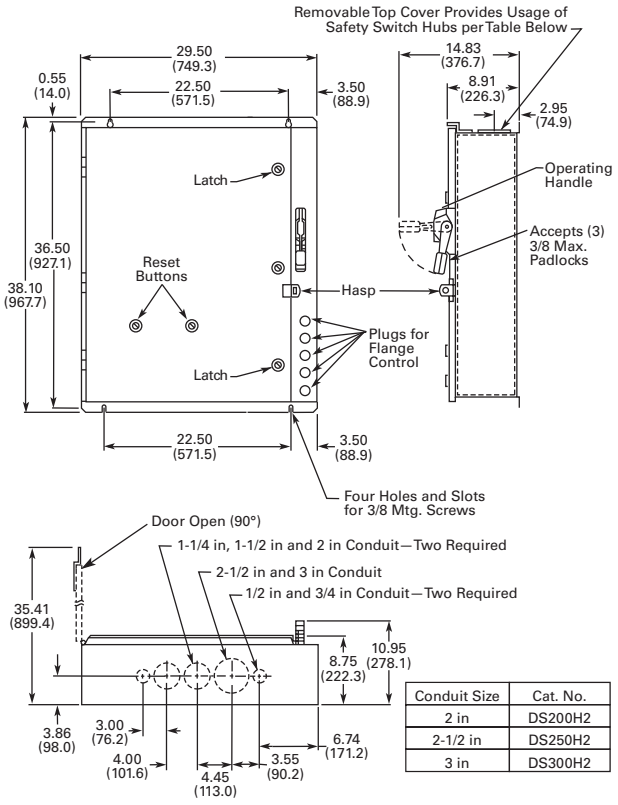
Box D, Type 1—29.50W x 35.00H x 8.75D



Box D, Type 12—29.50W x 38.09H x 8.75D

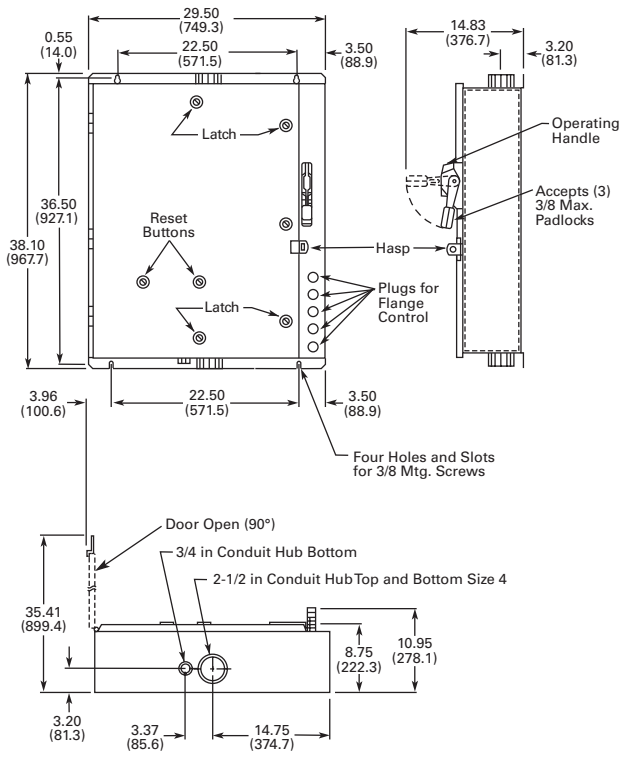


Box D, Type 3R—29.50W x 38.10H x 8.75D



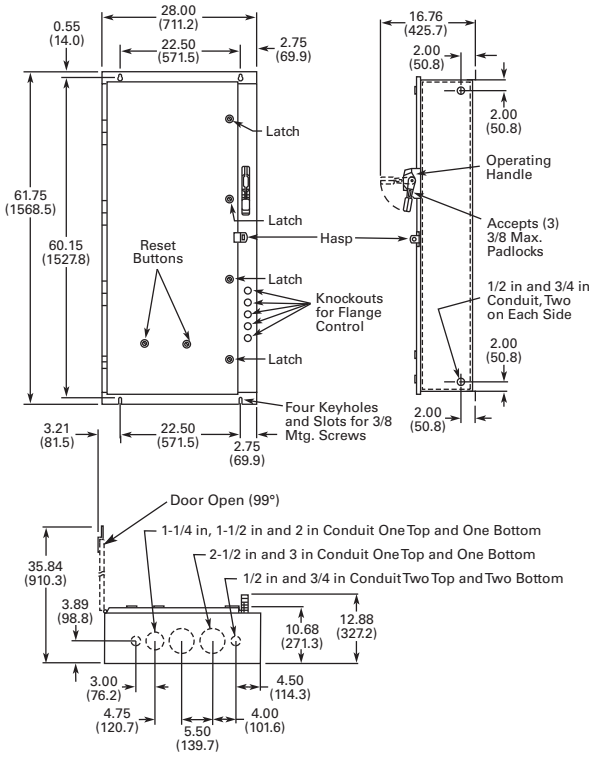
Conduit Size	Cat. No.
2 in	DS200H2
2-1/2 in	DS250H2
3 in	DS300H2

Box D, Type 4X—29.50W x 38.10H x 8.75D

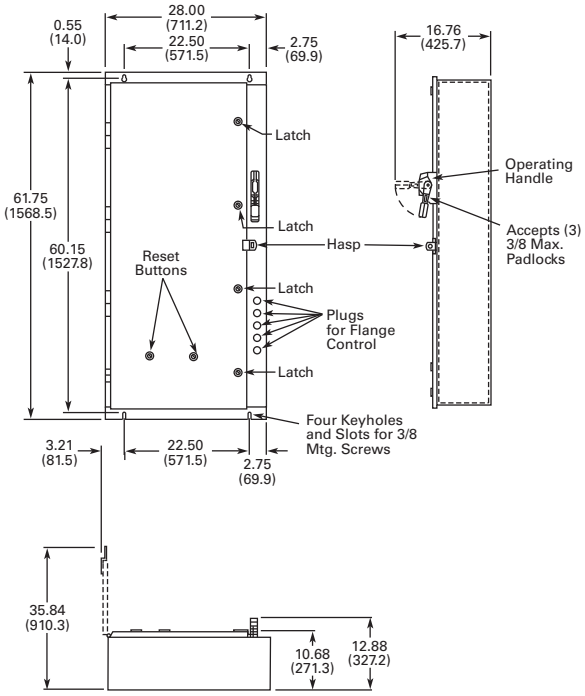


Approximate Dimensions are in Inches (mm)

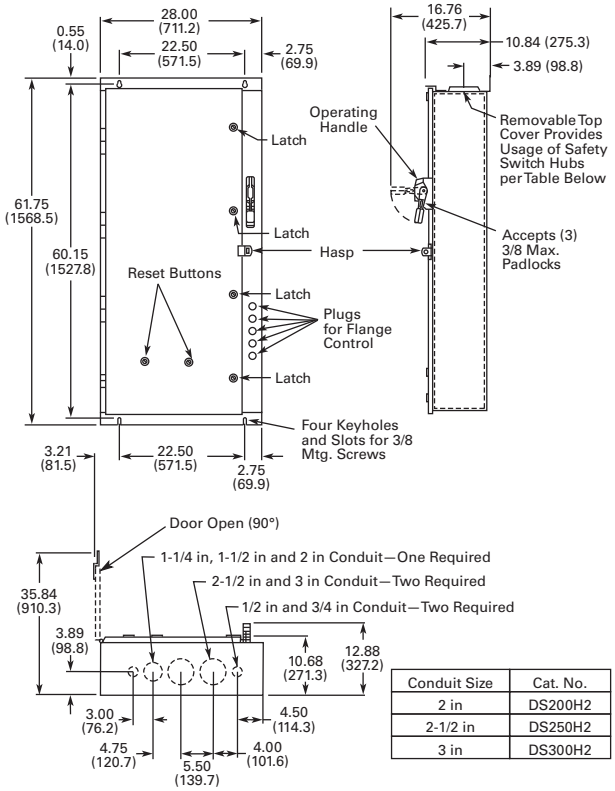
Box E, Type 1—28.00W x 61.75H x 10.68D



Box E, Type 12—28.00W x 61.75H x 10.68D

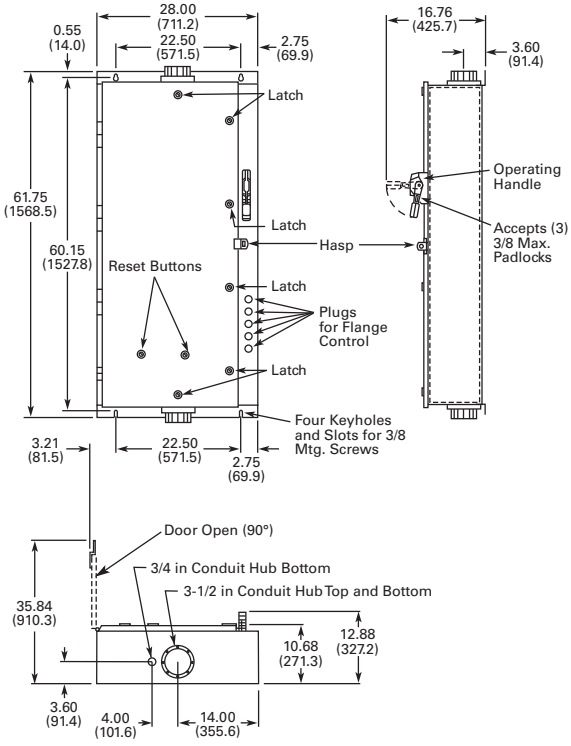


Box E, Type 3R—28.00W x 61.75H x 10.68D



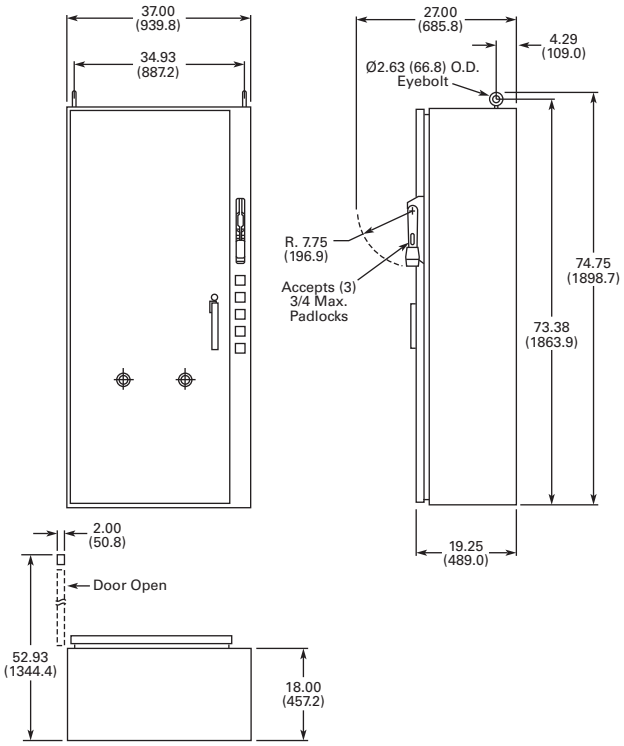
Conduit Size	Cat. No.
2 in	DS200H2
2-1/2 in	DS250H2
3 in	DS300H2

Box E, Type 4X—28.00W x 61.75H x 10.68D

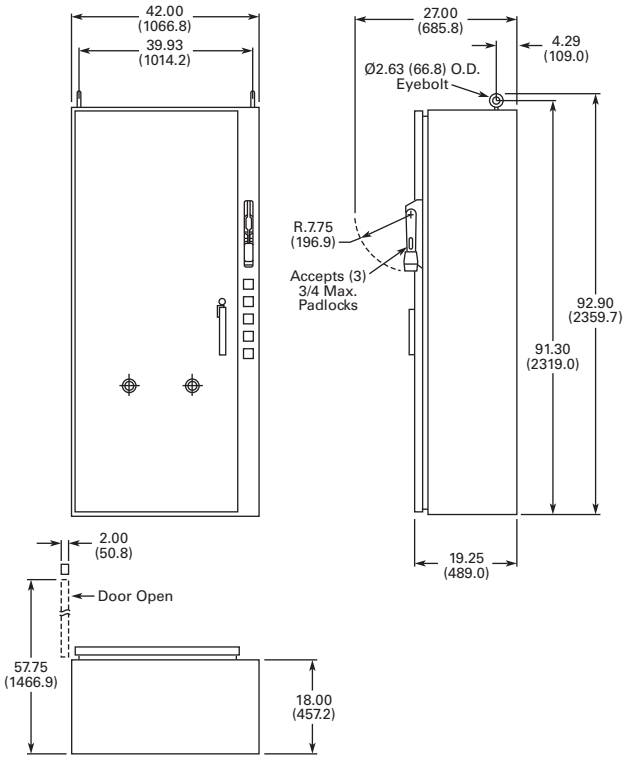


Approximate Dimensions are in Inches (mm)

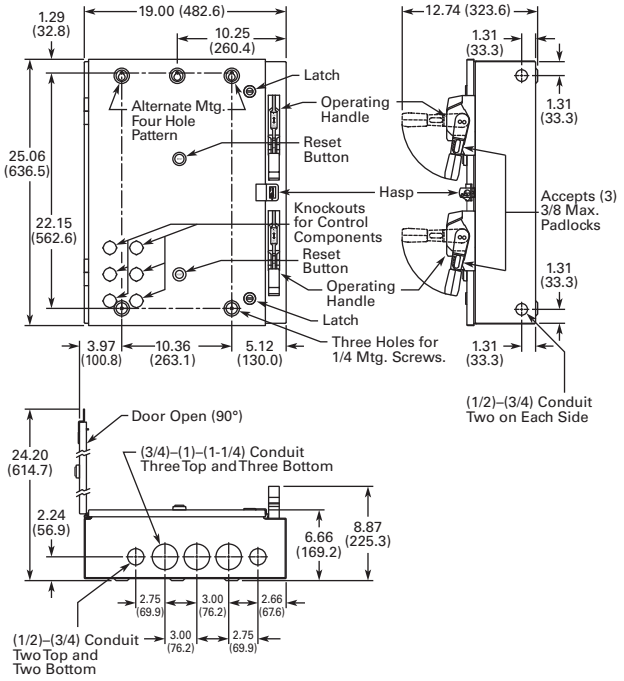
Box F1E, Type 1/3R/4/12—37.00W x 74.75H x 19.25D



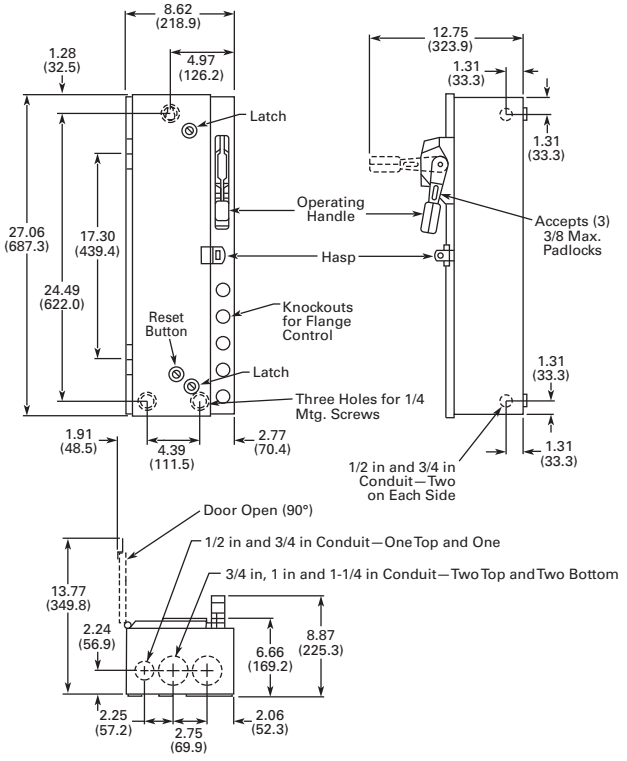
Box F2E, Type 1/3R/4/12—42.00W x 92.90H x 19.25D



Box H, Type 1—19.00W x 25.06H x 6.66D



Box I, Type 1—8.62W x 27.06H x 6.66D ①

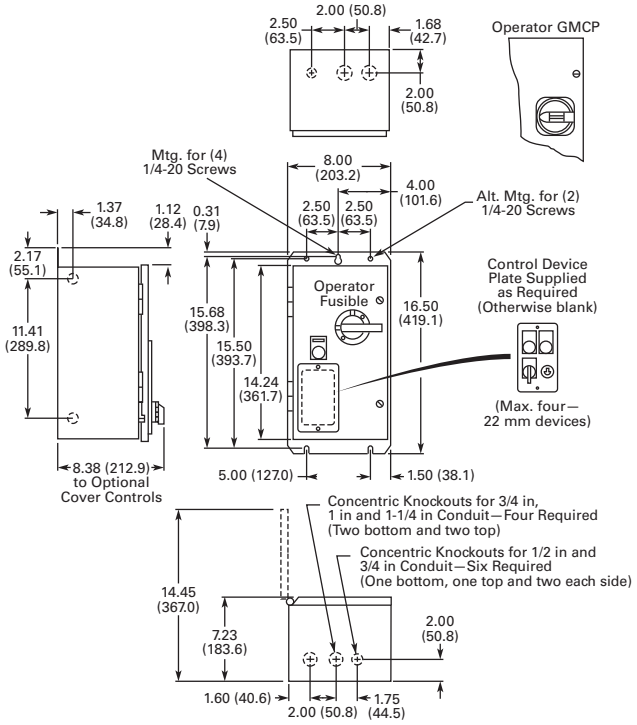


Note

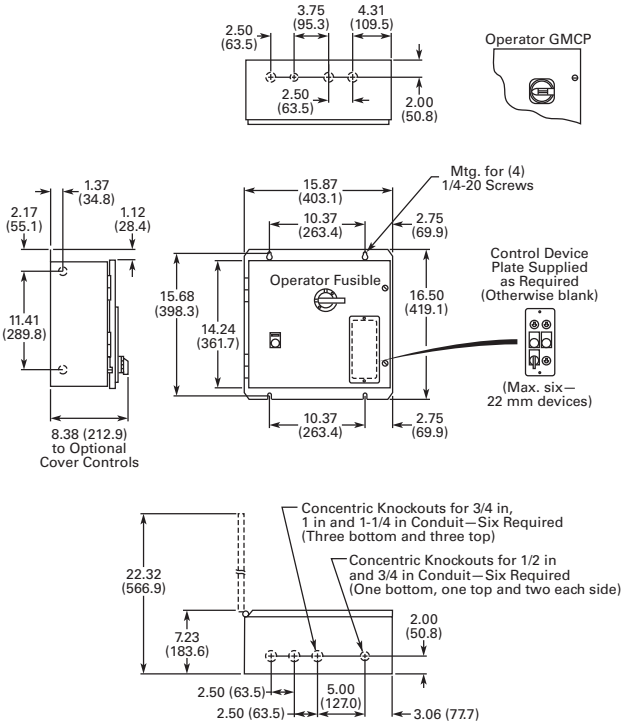
① Knockouts are not supplied for Type 12; all other dimensions apply.

Approximate Dimensions are in Inches (mm)

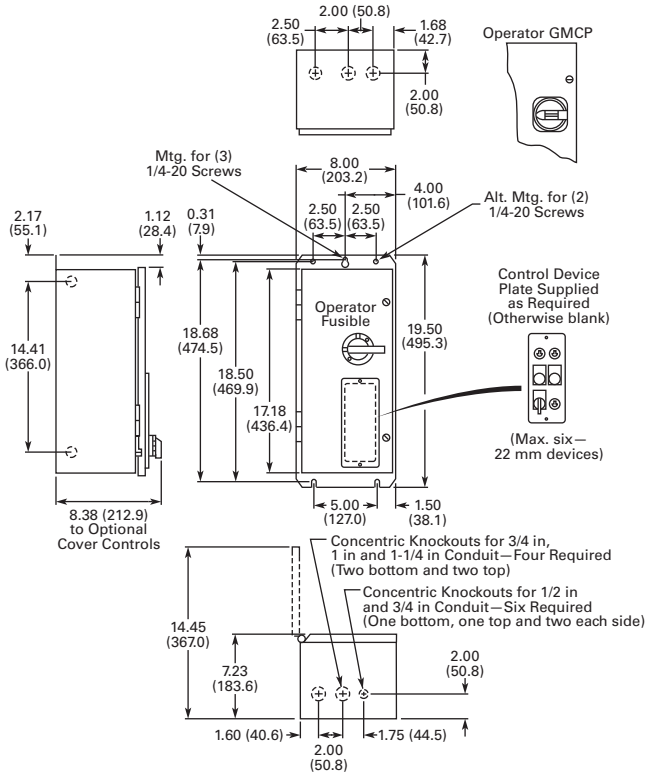
Box J—8.00W x 16.50H x 7.23D ①



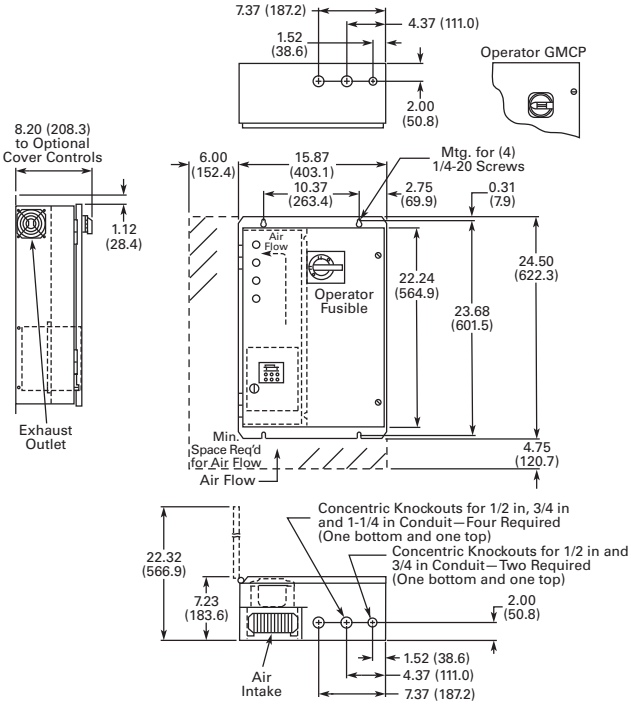
Box L—15.87W x 16.50H x 7.23D ①



Box K ①—8.00W x 19.50H x 7.23D



Box M, Type 1/12—15.87W x 24.50H x 7.23D ②③



Notes

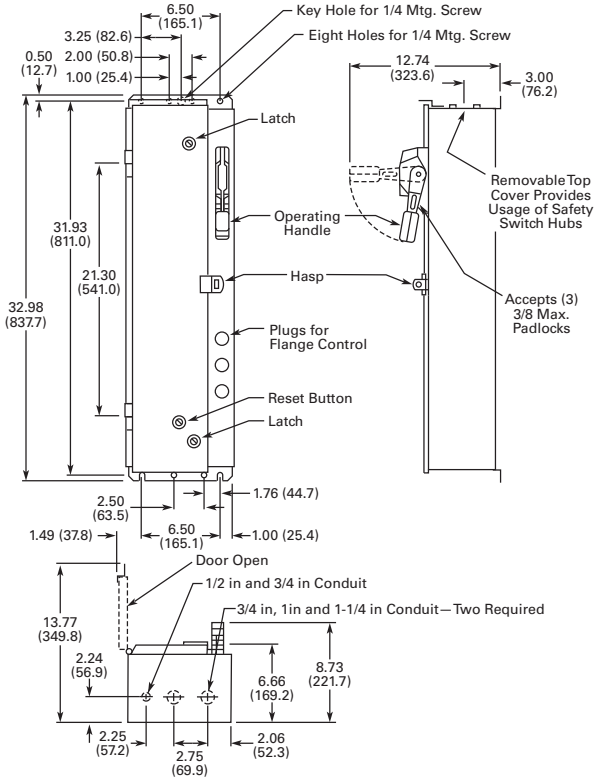
① Knockouts are not supplied for Type 12 or 3R types; all other dimensions apply. Consult factory for Type 4X.

② Knockouts are not supplied for Type 12; all other dimensions apply.

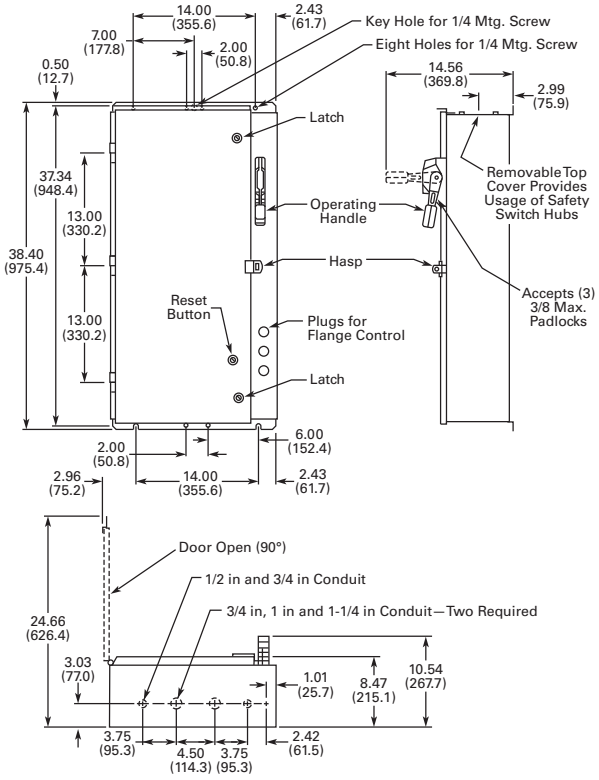
③ For Type 12, clear lens provided.

Approximate Dimensions are in Inches (mm)

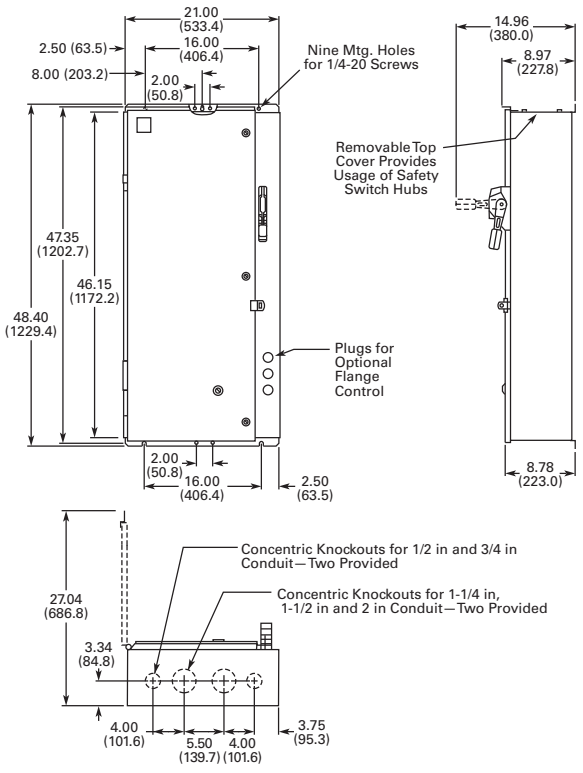
Box P1—8.50W x 32.98H x 6.66D



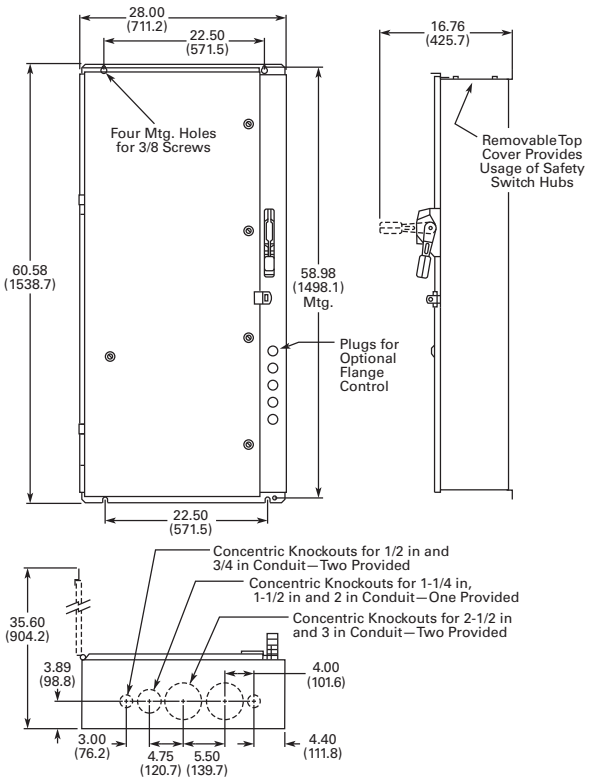
Box P3—18.86W x 38.40H x 8.47D



Box P5—21.00W x 48.40H x 8.97D



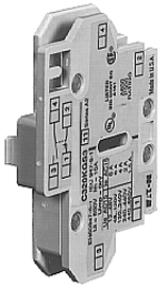
Box P7—28.00W x 60.58H x 10.68D



14

Accessories and Modification Codes

Side-Mounted Auxiliary Contact



Auxiliary Contact

Type 1 Enclosure

Electrically Held Base Contactor

Surge Suppressor

Freedom NEMA

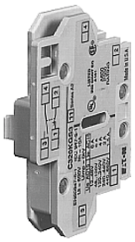
Auxiliary Contacts

NEMA Sizes 00–2

The auxiliary contacts listed below are designed for installation on Freedom Series starters and contactors. Snap-on design facilitates quick, easy installation.

These bifurcated design contact blocks, featuring silver cadmium alloy contacts, are well suited for use in very low energy (logic level) circuits.

Side-Mounted



Top-Mounted

Product Selection

Description	Contact Configuration Code ①	Catalog Number
Side-Mounted		
1NO	10	**C320KGS1**
1NC	01	**C320KGS2**
1NO-1NC	11	**C320KGS3**
2NO	20	**C320KGS4**
2NC	02	**C320KGS5**
1NO-1NCI	N/A	**C320KGS6**
1NO (EC)-1NC (LO)	N/A	**C320KGS7**
1NCI	N/A	**C320KGS8**
Top-Mounted		
1NO	10	**C320KGT1**
1NC	01	**C320KGT2**
1NO-1NC	11	**C320KGT3**
2NO	20	**C320KGT4**
2NC	02	**C320KGT5**
1NO-1NCI	N/A	**C320KGT6**
1NO (EC)-1NC (LO)	N/A	**C320KGT7**
1NCI	N/A	**C320KGT8**
3NO	30	**C320KGT9**
2NO-1NC	21	**C320KGT10**
1NO-2NC	12	**C320KGT11**
3NC	03	**C320KGT12**
4NO	40	**C320KGT13**
3NO-1NC	31	**C320KGT14**
2NO-2NC	22	**C320KGT15**
1NO-3NC	13	**C320KGT16**
4NC	04	**C320KGT17**
3NO-1NCI	N/A	**C320KGT18**
2NO-1NCI-1NC	N/A	**C320KGT19**
2NO-1NO (EC)-1NC (LO)	N/A	**C320KGT20**
1NO-1NC-1NO (EC)-1NC (LO)	N/A	**C320KGT21**

Notes

NCI = Normally Closed early opening designed for use in reversing applications. EC = Early Closing. LO = Late Opening.

① For reference only—not part of catalog number. See **Page V10-T15-3**.

Contact Configuration Code

This two-digit code is found on the auxiliary contact to assist in identifying the specific contact configuration. The first digit indicates the quantity of NO contacts and the second indicates the quantity of NC contacts.

NEMA Sizes 3–8

Product Selection

Base Auxiliary Contact

Auxiliary Contact

Circuit	Contact Configuration Code ①	NEMA Size	Catalog Number
Base Auxiliary Contacts—NEMA Sizes 3–5			
NO	10	3	**C320KGS31**
NO-NC	11	3	**C320KGS32**
NO	10	4–5	**C320KGS42**
NO-NC	11	4–5	**C320KGS42**
Auxiliary Contacts—NEMA Sizes 3–5			
NO	10	3–5	**C320KGS20**
NC	01	3–5	**C320KGS21**
NO-NC ②	11	3–5	**C320KGS22**
Auxiliary Contacts—NEMA Sizes 6–8			
NO-NC	11	8	**C320KA5**
2NO-2NC	22	6–7	**C320KA6**

Auxiliary Contact Ratings (Amperes)

Ratings—NEMA A600

Current	AC Volts 120V	240V	480V	600V
Make and interrupting	60	30	15	12
Break	6	3	1.5	1
Continuous	10	10	10	10

Ratings—NEMA P300

DC Volts	Make/Break Amperes
Continuous Thermal Rating: 5A	
125	1.10
250	0.55

Ratings—Logic Level

Current	Rating
Minimum Ratings for Logic Level and Hostile Atmosphere Application	
Minimum amperes	20 mA
Minimum volts	24 Vac/Vdc

Ratings—C320KGS20L, C320KGS21L, C320KGS22L

DC-12		AC-12	
U_e	I_e	U_e	I_e
80	0.1	250	0.1

Notes

① For reference only—not part of catalog number. See above.

② NO-NC occupies two positions—L2 and L3, or R2 and R3. See **Page V10-T15-5**.

Auxiliary Contact Location

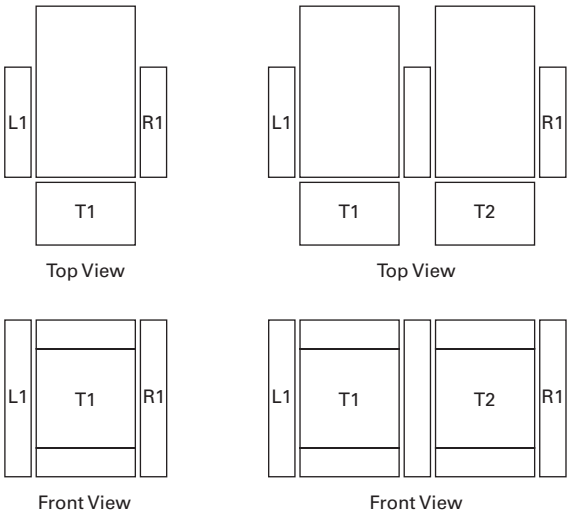
NEMA Sizes 00–2

The sketches below illustrate the maximum number of auxiliary contacts that can be assembled to a contactor or starter and their locations.

Auxiliary Contacts

Size	Poles	Available Mounting Positions ①② Open Type	Enclosed	Catalog Number
00	3	T1, L1, R1	L1	**AN16**
0–2	3	T1, L1	L1	
00–2	3	T1, T2	—	**AN56**
00	2–4	T1, L1, R1	L1	**CN15**
0–2	2–3	T1, L1	L1	
1, 2	4	T1, L1	—	
1, 2	5	T1, L1	—	
10A	2–4	T1, L1, R1	L1	**CN35**
20–60A	2–3	T1, L1	L1	
60A	4	T1, L1	—	
60A	5	T1, L1	—	
00–2	3	T1, T2	—	**CN55**

Auxiliary Contact Location



Notes

① Available positions on contactors or starters other than what is factory installed.

② When a pneumatic timer is mounted on contactor, only side-mounted auxiliary contact positions are available. The solid-state timer, when added, takes up side-mounted auxiliary contact position.

NEMA Sizes 3–8

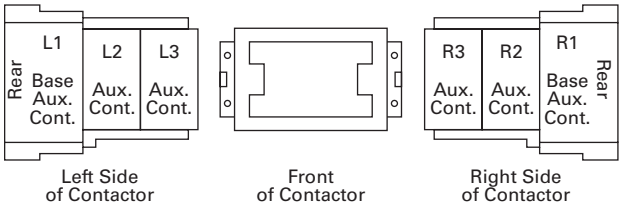
The sketches below illustrate the maximum number of auxiliary contacts that can be assembled to a contactor and their locations.

Note: A base auxiliary contact must be added in position R1 before additional auxiliary contacts can be mounted on NEMA Size 3 or in L1 on NEMA Sizes 4–5.

Mounting Positions

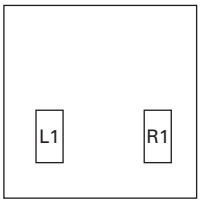
Size	Available Mounting Positions ①
NEMA Size 3	R2, R3, L1, L2, L3
NEMA Sizes 4–5	L2, L3, R1, R2, R3
NEMA Sizes 6–7	R1
NEMA Size 8	L2, R2

Auxiliary Contact Location

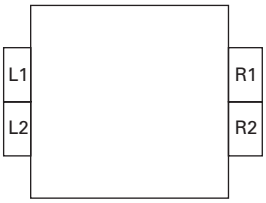


Left Side of Contactor — Front of Contactor — Right Side of Contactor

NEMA Sizes 3–5



NEMA Sizes 6 – 7



NEMA Size 8

Note

① Available positions on contactors or starters other than what is factory installed.

Heater Pack Selection

Heater packs H2001B to H2017B and H2101B to H2117B are to be used only with Series B overload relays Catalog Numbers C306DN3B (Part No. 10-7016) and C306GN3B (Part No. 10-7020). The load lugs are built into the overload relay base to allow load wiring prior to heater pack installation. The previous heater design had integral load lugs. The Series B heater packs are electrically equivalent to the previous heater design. Heaters H2018-3 to H2024-3 have not changed.

Note: The series of a starter is the last digit of the listed catalog number. Example: AN16DN0A**B**.

Starters with Series B Overload Relays

Size	Series
NEMA—AN Type	
00–0	**C**
1–2	**B**
5	**B**
6	**C**
7–8	**B**

Fast Trip—Class 10 Heater Selection

Overload Relay Size	Motor Full Load Ampere Rating Dial Position A	B	C	D	Catalog Number (Includes Three Heater Packs) ①
For Use with NEMA Sizes 00–0 Series C, NEMA Sizes 1–2 Series B					
32A or 75A	0.260	0.313	0.367	0.420	**H2101B-3**
	0.384	0.464	0.543	0.623	**H2102B-3**
	0.570	0.688	0.806	0.924	**H2103B-3**
	0.846	1.02	1.20	1.37	**H2104B-3**
	1.28	1.55	1.83	2.10	**H2105B-3**
	1.92	2.33	2.74	3.15	**H2106B-3**
	2.30	2.79	3.28	3.77	**H2107B-3**
	3.38	4.10	4.82	5.54	**H2108B-3**
	7.07	6.03	7.09	8.16	**H2109B-3**
	7.07	8.58	10.1	11.6	**H2110B-3**
	9.60	11.2	12.8	14.4	**H2111B-3**
	14.4	17.5	20.7	23.8	**H2112B-3**
	18.7	21.8	25.0	28.1	**H2113B-3**
	23.5	27.3	31.0	34.8	**H2114B-3**
For Use with NEMA Size 2—Series B					
75A	28.3	32.6	37.0	41.3	**H2115B-3**
	36.6	42.3	48.1	53.8	**H2116B-3**
	53.8	60.8	67.9	74.9	**H2117B-3**
For Use with Size 5 Starters Only—Series B					
32A ②	51	61	72	82	**H2104B-3**
	77	93	110	126	**H2105B-3**
	115	140	164	189	**H2106B-3**
	138	167	197	226	**H2107B-3**
	203	246	289	—	**H2108B-3**
For Use with Size 6 Starters Only—Series B					
32A ②	154	186	220	252	**H2105B-3**
	230	280	329	378	**H2106B-3**
	276	335	394	452	**H2107B-3**
	406	492	578	—	**H2108B-3**
For Use with Size 7 Starters Only—Series B					
32A ②	169	204	240	274	**H2104B-3**
	256	310	366	420	**H2105B-3**
	384	466	543	630	**H2106B-3**
	460	558	656	754	**H2107B-3**
	676	820	—	—	**H2108B-3**
For Use with Size 8 Starters Only—Series B					
32A ②	254	306	360	411	**H2104B-3**
	384	465	549	630	**H2105B-3**
	576	699	822	945	**H2106B-3**
	690	837	984	1131	**H2107B-3**
	1014	1230	—	—	**H2108B-3**

Notes

① Heater packs are shipped three to a carton. Catalog numbers are for three heater packs.

② Sizes 5–8 use the 32A overload relay with current transformers.

Standard Trip—Class 20 Heater Selection

Overload Relay Size	Motor Full Load Ampere Rating Dial Position A	B	C	D	Catalog Number (Includes Three Heater Packs) ①
For Use with NEMA Sizes 00–0 Series C, NEMA Sizes 1–2 Series B					
32A or 75A	0.254	0.306	0.359	0.411	**H2001B-3**
	0.375	0.452	0.530	0.607	**H2002B-3**
	0.560	0.676	0.791	0.907	**H2003B-3**
	0.814	0.983	1.15	1.32	**H2004B-3**
	1.20	1.45	1.71	1.96	**H2005B-3**
	1.79	2.16	2.53	2.90	**H2006B-3**
	2.15	2.60	3.04	3.49	**H2007B-3**
	3.23	3.90	4.56	5.23	**H2008B-3**
	4.55	5.50	6.45	7.40	**H2009B-3**
	6.75	8.17	9.58	11.0	**H2010B-3**
	9.14	10.8	12.4	14.0	**H2011B-3**
	14.0	16.9	19.9	22.8	**H2012B-3**
	18.7	22.7	26.7	30.7	**H2013B-3**
	23.5	28.5	33.5	38.5	**H2014B-3**
For Use with NEMA Size 2—Series B					
75A	29.0	34.0	39.1	44.1	**H2015B-3**
	39.6	45.5	51.5	57.4	**H2016B-3**
	53.9	60.9	67.9	74.9	**H2017B-3**
For Use with NEMA Sizes 3–4—Series A					
105A or 144A	8.0	9.2	10.3	11.5	**H2025-3**
	11.4	12.8	14.3	15.7	**H2026-3**
	14.3	15.7	17.4	19.0	**H2027-3**
	18.0	20.2	22.3	24.5	**H2018-3**
	24.6	27.6	30.5	33.4	**H2019-3**
	33.5	37.5	41.5	45.6	**H2020-3**
	45.7	51.2	56.7	62.1	**H2021-3**
	62.2	69.7	77.1	84.6	**H2022-3**
	84.7	95.0	105.0	115.0	**H2023-3**
	106.0	118.0	131.0	144.0	**H2024-3**
For Use with Size 5 Starters—Series B					
32A ②	49	59	69	79	**H2004B-3**
	72	87	103	118	**H2005B-3**
	107	130	152	174	**H2006B-3**
	129	156	182	209	**H2007B-3**
	194	234	274	—	**H2008B-3**
For Use with Size 6 Starters Only—Series B					
32A ②	144	174	205	235	**H2005B-3**
	215	259	304	348	**H2006B-3**
	258	312	365	419	**H2007B-3**
	388	468	547	627	**H2008B-3**
For Use with Size 7 Starters Only—Series B					
32A ②	163	197	230	264	**H2004B-3**
	240	290	342	392	**H2005B-3**
	358	432	506	580	**H2006B-3**
	430	520	608	698	**H2007B-3**
	646	780	912	—	**H2008B-3**
For Use with Size 8 Starters Only—Series B					
32A ②	244	295	345	396	**H2004B-3**
	360	435	513	588	**H2005B-3**
	537	648	759	870	**H2006B-3**
	645	780	912	1047	**H2007B-3**
	969	1170	1368	—	**H2008B-3**

Notes

① Heater packs are shipped three to a carton. Catalog numbers are for three heater packs.

② Sizes 5–8 use the 32A overload relay with current transformers.

DC Magnet Coils

When Ordering Specify

Conversion Kit for Field Assembly

- Catalog number

Factory Installed DC Coil

- For factory installed DC magnet coil on AC contactors or non-combination starters (open type only), substitute the code suffix from table below for the magnet coil identifier in the device catalog number.

  Example: For Size 0 AC contactor with a 24 Vdc coil, change CN15BN3**A**C to CN15BN3**T1**C

Application

- Connect for separate control
- Not for use with cover control switch operators
- Use twin break, heavy-duty pilot devices
- Designed for +10%, –20% rated voltage, continuous duty operation

Non-Reversing Kit Consists of:

- One encapsulated DC magnet coil
- One NCI or NO/NCI side-mounted auxiliary contact

  Note: These kits are supplied with a NO/NCI side-mounted auxiliary contact in place of the NCI contact.
- Two blue colored connection wires
- One instruction publication

Operation

These DC coil kits have separate pickup and seal windings. A **special** (side-mounted) early-break NCI auxiliary contact is used to either disconnect the pickup winding or insert the seal winding in series with the pickup winding, depending on the frame size of the contactor. DC coil kits come in two styles, a suffix **1** and a suffix **4**. The 1 suffix contains only the **special** (side-mounted) early break NCI auxiliary contact. The 4 suffix contains a NO contact in the same package as the **special** (side-mounted) early-break NCI auxiliary contact.

Note: NEMA Sizes 00 and 0 contactors may use either suffix 1 or 4 DC coil kits; starters may use suffix 4 DC coil kits only. For NEMA Sizes 1 and 2, both contactors and starters may use a suffix 4 DC coil kit only.

On the above sizes only, when the **special** auxiliary package is mounted on the side of a contactor or starter, **no** standard auxiliary contact may be mounted on the same side.

Note: For NEMA Sizes 3–5, the special coil NCI clearing contact is an add-on auxiliary (**must** mount on a base mount auxiliary contact; normally a 1NO). This arrangement will normally account for two of the three contact positions on the side of each contactor or starter.

See figure on **Page V10-T15-9**.

Product Selection

Contactor or Starter Size	Conversion Data						Complete Conversion Kit	
	Magnet Coil				NCI	Factory Installed		
NEMA	Volts	Coil Number	Amps P.U./Seal	Watts P.U./Seal	Interlock Number	Code Suffix	Ship Wt. Lbs (kg)	Catalog Number
Non-Reversing—Kit includes NCI Side-Mounted Auxiliary Contact								
00 and 0 CN35–A, B, D D15 relays	12	**9-2988-11**	6.4/0.28	76.8/3.36	**C320KGD1**	**R1**	1.0 (0.5)	**C335KD3R1**
	24	**9-2988-12**	3.2/0.14	76.8/3.36	**C320KGD1**	**T1**		**C335KD3T1**
	48	**9-2988-13**	1.6/0.07	76.8/3.36	**C320KGD1**	**W1**		**C335KD3W1**
	120	**9-2988-14**	0.64/0.028	76.8/3.36	**C320KGD1**	**A1**		**C335KD3A1**
① 00 and 0 CN35–A, B, D D15 relays	12	**9-2988-11**	6.4/0.28	76.8/3.36	**C320KGD2** ①	**R4**	1.0 (0.5)	**C335KD3R4**
	24	**9-2988-12**	3.2/0.14	76.8/3.36	**C320KGD2** ①	**T4**		**C335KD3T4**
	48	**9-2988-13**	1.6/0.07	76.8/3.36	**C320KGD2** ①	**W4**		**C335KD3W4**
	120	**9-2988-14**	0.64/0.028	76.8/3.36	**C320KGD2** ①	**A4**		**C335KD3A4**
1 and 2 CN35–G	12	**9-2990-1**	15.4/0.42	185/4.98	**C320KGD5**	**R4**	1.0 (0.5)	**C335KD4R4**
	24	**9-2990-2**	7.7/0.21	185/4.96	**C320KGD5**	**T4**		**C335KD4T4**
	48	**9-2990-3**	3.9/0.11	185/5.04	**C320KGD5**	**W4**		**C335KD4W4**
	120	**9-2990-4**	1.5/0.041	185/4.87	**C320KGD5**	**A4**		**C335KD4A4**
3 CN35–K	12	**9-3002-1**	24/0.40	293/4.84	**C320KGD3**	**R1**	2.0 (0.9)	**C335KD5R1**
	24	**9-3002-2**	12/0.20	288/4.75	**C320KGD3**	**T1**		**C335KD5T1**
	48	**9-3002-3**	6.1/0.097	295/4.67	**C320KGD3**	**W1**		**C335KD5W1**
	120	**9-3002-4**	2.5/0.038	298/4.57	**C320KGD3**	**A1**		**C335KD5A1**
4 and 5 CN35–N, S	24	**9-2026-4**	18/0.22	400/5.3	**C320KGD3**	**T1B**	2.5 (1.1)	**C335KA3T1**
	48	**9-2026-3**	9/0.11	400/5.2	**C320KGD3**	**W1B**		**C335KA3W1**
	120	**9-2026-2**	3.3/0.05	450/5.4	**C320KGD3**	**A1B**		**C335KA3A1**
	240	**9-2026-1**	1.7/0.02	440/4.9	**C320KGD3**	**B1B**		**C335KA3B1**

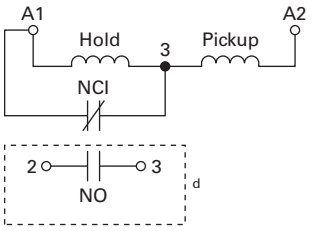
Note

① These kits are supplied with a NO/NCI side-mounted auxiliary contact in place of the NCI contact.

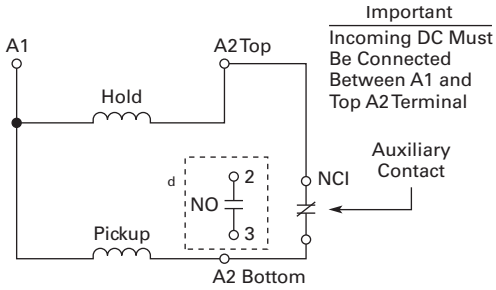
Product Selection, continued

Contactor or Starter Size	Conversion Data						Complete Conversion Kit	
		Magnet Coil			NCI	Factory Installed		
NEMA	Volts	Coil Number	Amps P.U./Seal	Watts P.U./Seal	Interlock Number	Code Suffix	Ship Wt. Lbs (kg)	Catalog Number
Reversing								
00 and 0 CN35–A, B, D D15 relays	12	**9-2988-1**	6.4/0.28	76.8/3.36	**C320KGD1**	**R1** ①	1.0 (0.9)	**C335KD3R1** ②
	24	**9-2988-2**	3.2/0.14	76.8/3.36	**C320KGD1**	**T1** ①		**C335KD3T1** ②
	48	**9-2988-3**	1.6/0.07	76.8/3.36	**C320KGD1**	**W1** ①		**C335KD3W1** ②
	120	**9-2988-4**	0.64/0.028	76.8/3.36	**C320KGD1**	**A1** ①		**C335KD3A1** ②
1 and 2 CN35–G	12	**9-2990-1**	15.4/0.42	185/4.98	**C320KGD3**	**R1** ①	—	③
	24	**9-2990-2**	7.7/0.21	185/4.96	**C320KGD3**	**T1** ①		③
	48	**9-2990-3**	3.9/0.11	185/5.04	**C320KGD3**	**W1** ①		③
	120	**9-2990-4**	1.5/0.041	185/4.87	**C320KGD3**	**A1** ①		③

Elementary Diagrams



DC Coil Elementary Diagram
for NEMA Sizes 1–3
Contactors and Starters



DC Coil Elementary Diagram
for NEMA Sizes 00, 0, 4 and 5
Contactors and Starters

Notes

① Factory installed DC coils on NEMA contactors and starters include a NO/NC top-mounted auxiliary contact on each contactor for electrical interlocking.
② Kit does not include mechanical interlock or crossover wiring. Two NO/NCI top-mounted auxiliary contacts are supplied for electrical interlocking.
③ Available factory assembled only.
④ 1NO available in suffix 4 kits only.

Remote Reset Module (32A Overload Relay)

The C316RR remote reset module for the C316F, C316S and C316U overload relays allows remote resetting of tripped (32A) overload relays by means of an electrical solenoid attachment that mounts on the side of the overload relay.

Product Selection

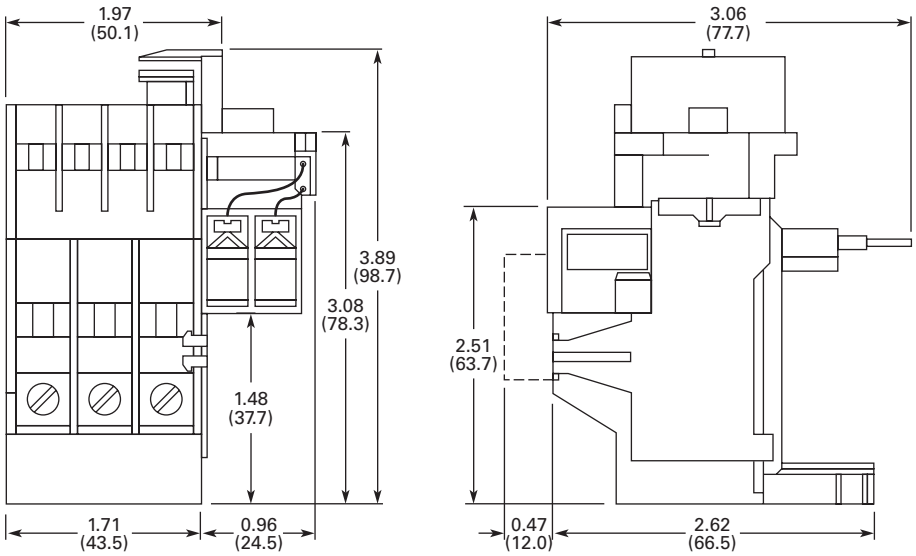
Remote Reset Module Operating Voltage	Catalog Number
24V 50/60 Hz	**C316RR1U**
110V 50/60 Hz	**C316RR1A**

Dimensions

Approximate Dimensions in Inches (mm)

Note: The operating coil is not suitable for a continuous duty. Recommended impulse duration 0.2–0.35 seconds with 15 operations maximum per hour.

Remote Reset Module



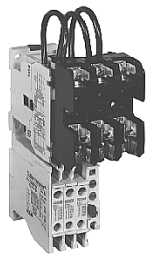
Three-Pole Top-Mounted Fuse Block Kit

NEMA Sizes 00–2

Field mount to Freedom Series starters and contactors. Designed to save space and reduce installation costs. They provide short-circuit protection for branch circuits.

Mounted Fuse Block Kit

Fuse Block Kit



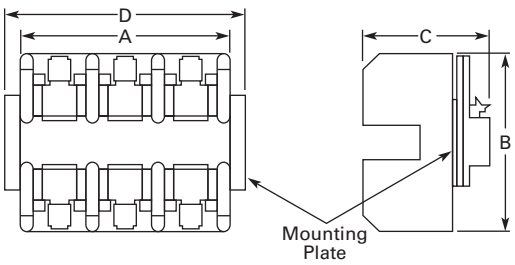
Fuse Block Kits

Fuse Type	Catalog Number	Fuse Type	Catalog Number
Class H — 30A 250V	**C350KH21**	Class T — 60A 300V	**C350KT32**
Class R — 30A 250V	**C350KR21**	Class J — 30A 600V	**C350KJ61**
Class G — 15A 300V	**C350KG37**	Class J — 60A 600V	**C350KJ62**
Class G — 20A 300V	**C350KG38**	Type M — 30A 600V ①	**C350KM61**
Class G — 30A 300V	**C350KG31**	Class CC — 30A 600V	**C350KC63**
Class G — 60A 300V	**C350KG32**	Class T — 30A 600V	**C350KT61**
Class T — 30A 300V	**C350KT31**	Class T — 60A 600V	**C350KT62**

Dimensions

Approximate Dimensions in Inches (mm)

Mounted Fuse Block



Fuse Block

Class	Amperes	Volts	Wide A	High B	Deep C	D
G	15, 20, 30	300	2.40 (61.0)	3.00 (76.2)	2.04 (51.8)	—
	60	300	2.62 (66.5)	4.25 (108.0)	2.08 (52.8)	—
H	30	250	3.00 (76.2)	3.10 (78.7)	2.23 (56.6)	3.62 (91.9)
J	30, 60	600	4.81 (122.2)	4.12 (104.6)	2.82 (71.6)	—
M, CC	30	600	2.40 (61.0)	3.00 (76.2)	2.04 (51.8)	—
R	30	250	3.00 (76.2)	3.10 (78.7)	2.23 (56.6)	3.62 (91.9)
T	30, 60	300	3.44 (87.4)	3.00 (76.2)	2.33 (59.2)	—
	30	600	3.75 (95.3)	3.31 (84.1)	2.26 (57.4)	—
	60	600	4.87 (123.7)	3.00 (76.2)	2.58 (65.5)	—

Note

① Type M fuse block not approved for branch circuit protection.

Mechanical Interlock and Reversing Kits

Mechanical interlocks and reversing kits are designed for field assembly of reversing contactors or starters from Freedom Series components. The reversing kits include a mechanical interlock, stabilizer bar and a pre-cut, trimmed and formed wire set. Auxiliary contacts, if required, must be ordered separately. See **Page V10-T15-2**.

Mechanical Interlock

Mechanical Interlock Only ①②

Application NEMA Size	Contactor Mounting	Catalog Number
00–2	Horizontal	**C321KM60B**
3	Horizontal	**C321KM30**
3 to 4	Horizontal	**C321KM43**
4	Horizontal	**C321KM40**
4 to 5	Horizontal	**C321KM45**
4 to 6	Horizontal	**C321KM80**
5	Horizontal	**C321KM50**
5 to 6	Horizontal	**C321KM56**
6	Horizontal	**C321KM70**
6 to 7	Horizontal	**C321KM90**
7	Horizontal	**C321KM34**
4 or 5 to 6	Vertical	**C321KM55**
5 to 6	Vertical	**C321KM65**
6	Vertical	**C321KM66**
6 to 7	Vertical	**C321KM67**

Reversing Kits (Horizontal Contactor Mounting Only)

Application NEMA Size	Catalog Number	Application NEMA Size	Catalog Number
00	**C321KM60K14B**	—	**C321KM60K21** ③
0	**C321KM60K13B**	—	**C321KM60K18** ③
1	**C321KM60K15B**	4	**C321KM60K19** ③
2	**C321KM60K16B**	5	**C321KM60K20** ③
3	**C321KM60K17** ③	—	**C321KM60K44** ③

Solid-State Timers

Solid-State ON DELAY Timer—Side-Mounted on Freedom Series NEMA 00–2 and C25D, C25E and C25F Frame

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

Solid-State Timer

Mounted Timer Product Selection

Timing Range	Catalog Number ④⑤⑥
0.1–1.0 seconds	**C320TDN1_**
1–30 seconds	**C320TDN30_**
30–300 seconds	**C320TDN300_**
5–30 minutes	**C320TDN2000_**

Pneumatic Timers—Top-Mounted

Attachment mounts on top of any NEMA Size 00–2 Freedom Series starter or contactor (top-mounted auxiliary contacts can not be installed on device when timer is used). Timer unit has 1NO-1NC isolated timed contacts—circuits in each pole must be the same polarity. Units are convertible from OFF to ON DELAY or vice-versa.

Pneumatic Timer

Product Selection

Timing Range	Catalog Number
0.1–30 seconds	**C320TP1**
10–180 seconds	**C320TP2**

Maximum Ampere Ratings

Description	Volts AC 120	240	480	600
Make	30	15	7.5	6
Break	3	1.5	0.75	0.6

Notes

① Without cross-wiring.
② For use with latest series product.
③ Kit includes two NC auxiliary contacts.
④ Add operating voltage suffix to catalog number. **A** = 120V, **B** = 240V, **E** = 208V.
⑤ Rated 0.5A pilot duty—not to be used on larger contactors.
⑥ Terminal connections are quick connects only. Two per side.

Locking Cover for Overload Relay—C306 Only

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

Locking Cover

Product Selection

Description	Minimum Ordering Qty. (Std. Pkg.)	Catalog Number
Clear cover, no accessibility	50	**C320PC3**
Gray cover, no accessibility, with auto only nib	50	**C320PC4**
Gray cover, no accessibility, with manual only nib	50	**C320PC5**
Gray cover with FLA dial accessibility, A, B, C, D positions and auto only nib	50	**C320PC6**
Gray cover with FLA dial accessibility, A, B, C, D positions and manual only nib	50	**C320PC7**

Control Circuit Fuse Block

These panel mounted fuse holders, designed for control circuit protection or other similar low current requirements, have extractor type fuse caps. The Class CC rejection type fuses (KTK-R) used in these holders are intended for use with equipment designated as being suitable for use on systems having high available fault currents. If branch circuit protective device is 45A or greater, C320FBR fuse kit may be required for control circuit protection per NEC 430-72.

Control Circuit Fuse Block

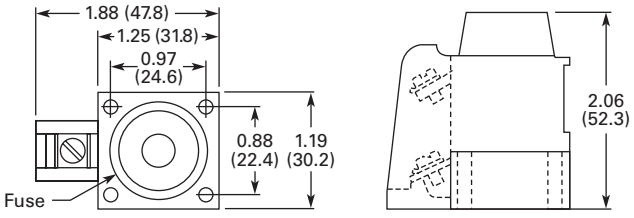
Product Selection

Type	Maximum Amperes	Catalog Number
Fuse holder only	15	**C320FB** ①
	30	**C320FBR** ②

Dimensions

Approximate Dimensions in Inches (mm)

Control Circuit Fuse Block



Transient Suppressor Kits

NEMA Sizes 00–2

These kits limit high voltage transients produced in the control circuit when power is removed from the contactor or starter coil. There are three separate suppressors for use on 24–120V, 208–240V or 277–480V coils respectively.

These devices mount directly to the coil terminals of Freedom Series contactors or starters NEMA Sizes 00–2 and lighting contactors 10–60A. Reversing devices will require two.

Transient Suppressor NEMA Sizes 00–2

Product Selection

Description	Coil Voltage 50/60 Hz ③	Catalog Number
Transient suppressor	24–120V	**C320TS1**
	208–240V	**C320TS2**
	277–480V	**C320TS3**

NEMA Sizes 3–5

This device mounts on top of any side-mounted auxiliary contact on Freedom Series NEMA Sizes 3–5 and lighting contactors 100–300A. It connects across coil terminals on any 120V contactor or starter magnet coil (reversing starters or contactors require 2).

Limits high voltage transients produced in the circuit when power is removed from the coil.

Transient Suppressor NEMA Sizes 3–5

Product Selection

Description	Coil Voltage	Catalog Number
Transient suppressor	120V	**C320AS1**

Shorting Bar Kits

These kits provide phase-to-phase power connections of contactors for field assembly. The kits include bus connections and mounting hardware. The shorting bars connect all three phases of a single contactor.

Product Selection

Description	Catalog Number	Description	Catalog Number
NEMA Size 3	**C321SB18**	NEMA Size 5	**C321SB21**
NEMA Size 4	**C321SB19**	NEMA Size 6	**C321SB22**

Notes

① A fuse is not supplied, but holder will accept a Bussman Type KTK or KTK-R (13/32 in x 1-1/2 in) fuse, 600V maximum.

② Includes a 5A, 600V KTK-R fuse.

③ Suppressor is compatible with coil voltages/ranges as shown, 50 and 60 Hz.

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DC/AC Interface Module

The catalog number C320DC Interface Module is an optically isolated solid-state switch which provides a means of operating AC coils with 5–48 Vdc control signal. It acts as a space saving interposing relay which can switch a specified 50/60 Hz AC source to the contactor or starter coil.

The module may be directly attached to the coil terminals of any Freedom Series contactor or starter—NEMA Sizes 00–3 and lighting contactors 10–100A. It also has provisions for DIN rail mounting.

The module will operate coils within the voltage ranges shown in the table below.

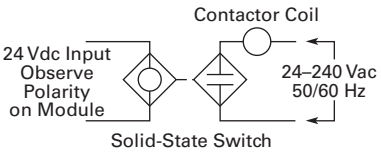
Design Characteristics

- DC Input: 5–48 Vdc at mA nominal
- AC operating voltage: 240 Vac (360 VA) ±10% 50/60 Hz
- DC operating voltage: 30 Vdc maximum (0.5A)
- AC current rating
  - 10A make (inrush)
  - 1A break (sealed)

Controller Coil Voltage Ranges

Controller Catalog Number Prefix	Controller Size or Rating	Coil Range Volts AC
AN16, AN56, CN15, CN55	00–0	24–240
	1–2	48–240
	3	110–240
CN35	10–30A	24–240
	60A	48–240
	100A	110–240

Typical Application



DC/AC Interface Module

Product Selection

Coil Voltage	Catalog Number
5 Vdc	**C320DC2V5**
6 Vdc	**C320DC2V6**
9 Vdc	**C320DC2V9**
12 Vdc	**C320DC2V12**
48 Vdc	**C320DC2V48**

Finger Protection Shields

Snap-on shields for both contactors and starters provide Type IP20 finger protection. Prevents accidental contact with line/load terminals.

Product Selection

Application	Catalog Number
NEMA Size 00	**C320LS1**
NEMA Size 0	**C320LS2**
NEMA Sizes 1–2	
Contactors	**C320LS3**
Reversing contactors	**C320LS4**
NEMA Size 1	
Starters	**C320LS5**
Reversing starters	**C320LS6**
NEMA Size 2	
Starters	**C320LS7**
Reversing starters	**C320LS8**

Adapter to DIN Rail Mount

NEMA 1–2 Contactors

Designed to allow DIN rail mounting of NEMA 1–2 contactors. Includes all hardware required to convert contactors from panel mounting to 35 mm DIN rail mounting.

Product Selection

Description	Catalog Number
Adapter to DIN rail mount	**C320DN65**

Adhesive Dust Cover

NEMA Sizes 00–2

These adhesive stickers come 25 to a package and provide extra protection from contaminants when applied to the sides of Freedom NEMA Sizes 00–2.

Adhesive covers are easily applied to side opening where auxiliaries are not installed and provide extra protection from metal filings and other debris.

Product Selection

Description	Catalog Number
25 to a package	**C320DSTCVR**

Add-On Power Pole Kit

NEMA Sizes 00–2

This device mounts on the side of Freedom NEMA Size 00–2 contactors. One unit can be mounted on each side and carries UL, cUL and IEC ratings. The device is rated for resistive, inductive and lighting applications.

Product Selection—Add-On Power Pole Kit

UL Ampere Rating						IEC 947 Ampere Rating			
Inductive 600V	Resistive 600V	hp Single-Phase 115V	hp Single-Phase 230V	Locked Rotor 240V	Lighting Ballast Tungsten 480V	AC-1 600V	AC-3 600V	AC-5a AC-5b 480V	1NO Power Pole Catalog Number
15	20	1/2	2	96	20	20	12	18	**C320PPD10**

Fuse Clips

C351 Fuse Clip Kit

C351—Fuse Clip Selection—Three Poles

Starter Size	Motor Voltage	Maximum hp (Three-Phase) Dual Element Fuses	Fuse Clip Rating Amperes	Fuse Clip Rating Volts	Fuse Clip Kit Factory Installed Position 10 Alpha ①	Fuse Clip Kit for Field Installation in Non-Fusible Starter For Non-Rejection Type Fuses Catalog Number	Fuse Clip Kit for Field Installation in Non-Fusible Starter For Use with "R" Rejection Type Fuses Catalog Number
Non-Fusible—without Fuse Clips Installed					**A**		
0	200/230	3	30	250	**B**	**C351KC21**	**C351KC21R**
	460/575	5	30	600	**C**	**C351KD22-61**	**C351KD22-61R**
1	200/230	7-1/2	30	250	**B**	**C351KC21**	**C351KC21R**
	460/575	10	30	600	**C**	**C351KD22-61**	**C351KD22-61R**
2	200	10	60	250	**D**	**C351KD22-61**	**C351KD22-61R**
	230	15	60	250	**D**	**C351KD22-61**	**C351KD22-61R**
	460/575	25	60	600	**E**	**C351KD62**	**C351KD62R**
3	200	25	100	250	**F**	**C351KE23-63** ②	**C351KE23-63** ②
	230	30	100	250	**F**	**C351KE23-63** ②	**C351KE23-63** ②
	460/575	50	100	600	**G**	**C351KE23-63** ②	**C351KE23-63** ②
4	200	40	200	250	**H**	**C351KF24-64** ②	**C351KF24-64** ②
	230	50	200	250	**H**	**C351KF24-64** ②	**C351KF24-64** ②
	460/575	100	200	600	**J**	**C351KF24-64** ②	**C351KF24-64** ②
5	200	75	400	250	**K**	Not available in kit form	Not available in kit form
	230	100	400	250	**K**		
	460/575	200	400	600	**L**		

Notes

① These fuse clips are for Class R fuses.

② Fuse clip "R" rejection members for use with Class R fuses are supplied loose in the fuse clip kits.

Kits do not include fuses.

Control Power Transformer Kits

These control transformer kits provide a convenient on-the-job addition of control transformers to the following Type 1, 3R, 4/4X and 12 enclosed starters. Adding or changing these kits does not affect the UL listing in most instances.

The transformer kit consists of:

- Control transformer
- Two primary and one secondary fuse
- Wires
- Mounting instruction publication

For Non-Combination Starters

These kits may be used for transformer voltage conversion on Freedom NEMA starters furnished from the factory with control transformers installed. Non-combination starters with CPTs factory installed are Class ECN07, ECA07, ECE07 and ECE11. These kits may also be installed in oversize enclosures that have been designed to accept transformers.

Combination Starters

Most combination starters have space for standard size (and 100 VA extra capacity) control power transformers. The panels are pre-drilled for mounting.

UL/CSA

UL Listed—File Number E10156, Guide XPTO.

When Ordering Specify

- Catalog number

Standard Transformer Sizes ①

Size	VA Capacity Freedom	Vacuum
0	50	—
1, 2	100	—
3	150	—
4	200	100
5	200	150
6	250	350

Control Transformer Kit

Control Transformer Kits

Continuous VA	Primary 208/277V Secondary 120V, 60 Hz Catalog Number	Primary 240/480V, 60 Hz 220/440V, 50 Hz Secondary 120V, 60 Hz 110V, 50 Hz Catalog Number	Primary 380V Secondary 110V, 50 Hz Catalog Number	Primary 600V, 60 Hz 550V, 50 Hz Secondary 120V, 60 Hz 110V, 50 Hz Catalog Number	Primary 240/480V Secondary 24V, 60 Hz Catalog Number
50	**C341AE**	**C341AC**	**C341AL**	**C341AD**	**C341AS**
75	**C341BE**	**C341BC**	**C341BL**	**C341BD**	**C341BS**
100	**C341CE**	**C341CC**	**C341CL**	**C341CD**	**C341CS**
150	**C341DE**	**C341DC**	**C341DL**	**C341DD**	**C341DS**
200	**C341EE**	**C341EC**	**C341EL**	**C341ED**	**C341ES**
250	**C341FE**	**C341FC**	**C341FL**	**C341FD**	**C341FS**
300	**C341GE**	**C341GC**	**C341GL**	**C341GD**	**C341GS**
350	**C341HE**	**C341HC**	**C341HL**	**C341HD**	**C341HS**
500	**C341JE**	**C341JC**	**C341JL**	**C341JD**	**C341JS**

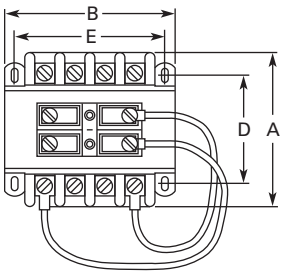
Note

① Non-reversing, single contactor only.

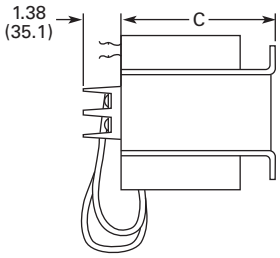
Dimensions

Approximate Dimensions in Inches (mm)

Open Type—50–500 VA with Fuse Block



Top View



Side View

Continuous VA	Wide A	High B	Deep C	Mounting D	E	Slots	Ship Wt. Lbs (kg)
50	3.00 (76.2)	3.00 (76.2)	2.56 (65.0)	2.00 (50.8)	2.50 (63.5)	0.203 x 0.375 (5.2 x 9.5)	3.0 (1.4)
75	3.50 (88.9)	3.00 (76.2)	2.56 (65.0)	2.50 (63.5)	2.50 (63.5)	0.203 x 0.375 (5.2 x 9.5)	4.3 (2.0)
100	3.38 (85.9)	3.38 (85.9)	2.88 (73.2)	2.38 (60.5)	2.81 (71.4)	0.203 x 0.375 (5.2 x 9.5)	4.6 (2.1)
150	4.00 (101.6)	3.75 (95.3)	3.18 (80.8)	2.88 (73.2)	3.12 (79.2)	0.203 x 0.375 (5.2 x 9.5)	7.0 (3.2)
200	4.00 (101.6)	4.50 (114.3)	3.81 (96.8)	2.50 (63.5)	3.75 (95.3)	0.203 x 0.375 (5.2 x 9.5)	7.7 (3.5)
250	4.38 (111.3)	4.50 (114.3)	3.81 (96.8)	2.88 (73.2)	3.75 (95.3)	0.203 x 0.375 (5.2 x 9.5)	10.0 (4.5)
300	4.75 (120.7)	4.50 (114.3)	3.81 (96.8)	3.25 (82.6)	3.75 (95.3)	0.203 x 0.375 (5.2 x 9.5)	13.0 (5.9)
350	5.25 (133.4)	4.50 (114.3)	3.81 (96.8)	3.75 (95.3)	3.75 (95.3)	0.203 x 0.375 (5.2 x 9.5)	14.0 (6.4)
500	5.50 (139.7)	5.25 (133.4)	4.75 (120.7)	4.25 (108.0)	4.38 (111.3)	0.312 x 0.688 (7.9 x 17.5)	18.0 (8.2)

A200 NEMA

Factory Modifications

A200 Factory Modifications

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

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	60 VA	10A
NEMA R300		
28–300 Vdc	28 VA	28 VA

Auxiliary Contact

Auxiliary Contact Types

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

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. **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.

Heater Selection—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 / For Size 3 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**
	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**

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 / For Size 3 Starters	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**
For Size 4 Starters	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**

Heater Selection—Type A and B Overload Relays, Sizes 5 and 6

Compensated Overload Relay Open Starter Full Load Current of Motor (Amps)	Compensated Overload Relay Enclosed Starter Full Load Current of Motor (Amps)	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**

Compensated Overload Relay Open Starter Full Load Current of Motor (Amps)	Compensated Overload Relay Enclosed Starter Full Load Current of Motor (Amps)	Heater (One Heater per Catalog Number) Catalog Number
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

Size 7 and larger—advise full load current.

Heater Selection—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 Using Three Heaters Full Load Current of Motor (Amps)	Single-Pole Type Overload Full Load Current of Motor (Amps)	Heater (One Heater per Catalog Number) Catalog Number	Non-Compensating Enclosed Starters Block Type Overload Using Three Heaters Full Load Current of Motor (Amps)	Single-Pole Type Overload Full Load Current of Motor (Amps)	Heater Catalog Number
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	0.44–0.48	**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	0.49–0.53	**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**
For Size 1 Starters	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**
	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**
For Size 2 Starters	26.3–28.7	30.4–33.3	**FH52**	24.4–26.6	28.9–31.4	**FH52**
	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**

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, maximum amplitude
- Maximum 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**

F-56 Fuse Block

- Facilitates installation of fuses (15A, 600V max.) in control circuits
- Utilizes Bussman type KTK fuses, or equivalent
- Mounts in same cavity as Type J auxiliary contact
- No tools or mounting hardware needed
- Fuse not included

Fuse Block

Mounting	Kit Catalog Number
Starter	**F56**
Panel	**F56-P**

R-56 Interposing Relay

The R-56AA interposing relay is a low energy solid-state device with a single NO solid-state contact. It can be used as a 120 Vac control relay, and will operate on as little as 40 Vac input. Is useful in applications requiring long control wiring runs where excessive voltage drop would prevent the contactor or relay from energizing. Will operate a Size 4 contactor from 10,000 ft using 18 AWG wire.

Interposing Relay

Type Mounting	Kit Catalog Number
Starter or panel	**R56-AA**

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)

AC Volts	Maximum Amperes 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**, that is 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.

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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	**PN0-0**
27	1	**PN0-1**
Normally Closed		
18	0	**PNC-0**
27	1	**PNC-1**

Replacement Auxiliary Contacts

Replacement Auxiliary Contacts

Contactor Size	Contact Arrangement	Aux. Elect. Contact Catalog Number	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

Mechanical Interlocks

Contactor Sizes	Style Numbers Horizontal	Vertical
3, 4 and 5	**2050A11G75**	**2050A11G65**
5 and 5	**2050A11G25**	**2050A11G15**
5 and 6	**2050A11G27**	**2050A11G17**
6 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**

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.

Notes

① Do not use with DC operated contactors.

② Size 7 and larger use DC coils as standard.

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

Contactor Size	Cable Size	Terminals Qty. in Kit	Qty. Req'd. per Pole	Kit Style Number
5	1-500 kcmil	6	2	**2119A76G01**
6	2-500 kcmil	6	2	**7858A96G01**
7	4-500 kcmil	12	4	**7858A96G02**
8	4-500 kcmil	12	4	**7858A96G03**

XT IEC

Auxiliary Contacts

Front mounted snap-on auxiliary contacts for ***XT*** contactors are available with screw or spring cage terminals in a variety of contact configurations.

The 7–32A XTCE contactors have positively driven contacts between the integrated auxiliary contact and the auxiliary contact module as well as within the auxiliary contact modules.

The 40–65A XTCE contactors have positively driven contacts within the auxiliary contact module. Six auxiliary contacts are possible with a combination of side-mounted and front-mount auxiliary contacts.

Frame B–C contactors with 1NC built-in auxiliary are mirror contacts (XTCE...B01_–XTCE...C01_).

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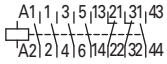
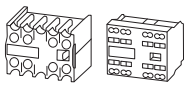
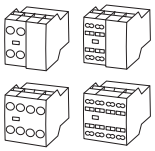
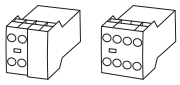
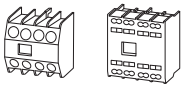
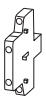
XTCE and XTCS Auxiliary Contact Overview

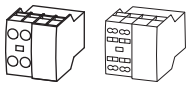
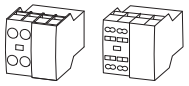
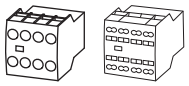
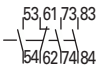
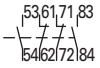
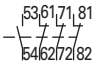
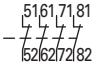
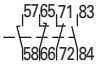
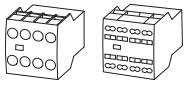
Frame	A	B	C	D	F	G	L–R
Catalog numbers	XTMC6A_– XTMC9A_	XTCE007B_– XTCE015B_	XTCE018C_– XTCE032C_	XTCE040D00_– XTCE065D00_	XTCE080F00_– XTCE095F00_	XTCE115G00_– XTCE150G00_	XTCE185L22_– XTCEC20R22_ ②
Contactor width	45 mm	45 mm	45 mm	55 mm	90 mm	90 mm	Various
Built-in auxiliary	1NO or 1NC	1NO or 1NC	1NO or 1NC	—	—	—	2NO-2NC
Contact sequence							
Front- (top) mount auxiliary	**Two- and four-pole (screw or spring cage):** 	**Standard two- and four-pole versions (screw or spring cage):**  **Tall version (screw only):** 		**Two-pole (screw only):**  **Four-pole (screw or spring cage):** 			N/A
Side-mount auxiliary	N/A	N/A	**Two-pole (screw only):** 	**Two-pole (screw or spring cage):** 			

Notes

① All mounting hardware is included in kit.

② Frame L–R auxiliary contacts also apply to XTCS185_–XTCS500M_ contactors.

Auxiliary Contacts

	Conventional Thermal Current, Open at 60°C $I_{th} = I_e$, AC-1 in Amps	Poles	Contact Configuration	Circuit Symbol	Pkg. Qty.	Screw Terminals Catalog Number	Spring Cage Terminals Catalog Number
Frame B–C—Front- (Top) Mount							
	16	2	2NO		5	**XTCEXFAC20**	**XTCEXFACC20**
	16	2	1NO-1NC		5	**XTCEXFAC11**	**XTCEXFACC11**
	16	2	2NC		5	**XTCEXFAC02**	**XTCEXFACC02**
	16	2	$1NO_E$-$1NC_L$		5	**XTCEXFALC11** ①	**XTCEXFALCC11** ①
	16	2	1NO-1NC		5	**XTCEXFDC11** ②	**XTCEXFDCC11** ②
	16	2	2NC		5	**XTCEXFCC02** ②	**XTCEXFCCC02** ②
	16	4	4NO		5	**XTCEXFAC40**	**XTCEXFACC40**
	16	4	3NO-1NC		5	**XTCEXFAC31**	**XTCEXFACC31**
	16	4	2NO-2NC		5	**XTCEXFAC22**	**XTCEXFACC22**
	16	4	1NO-3NC		5	**XTCEXFAC13**	**XTCEXFACC13**
	16	4	4NC		5	**XTCEXFAC04**	**XTCEXFACC04**
	16	4	$1NO_E$-$1NC_L$		5	**XTCEXFCLC22** ①	**XTCEXFCLCC22** ①
	16	4	2NO-2NC		5	**XTCEXFCC22** ②	**XTCEXFCCC22** ②
Frame B–C—Front- (Top) Mount—Tall Version ③							
	16	2	2NO		5	**XTCEXFATC20**	—
	16	2	1NO-1NC		5	**XTCEXFATC11**	—
	16	2	2NC		5	**XTCEXFATC02**	—

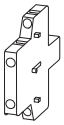
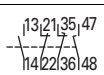
Notes

① One early-make contact ($1NO_E$), one late-break contact ($1NC_L$).

② To avoid duplicate terminal numbers in contact sequence, these auxiliary contacts should only be used with contactors having a built-in 1NO contact (XTCE...B10_, XTCE...C10_).

③ Front- (top) mount tall version is for use with Frame B electrical wire bridges and link kits and toolless plug combination connection kits: XTCEXRLB, XTCEXSDLB, XTPAXTPCB, XTPAXTPCRB, XTPAX.

Auxiliary Contacts, continued

	Conventional Thermal Current, Open at 60°C I_{th} = I_e, AC-1 in Amps	Poles	Contact Configuration	Circuit Symbol	Pkg. Qty.	Screw Terminals Catalog Number	Spring Cage Terminals Catalog Number
Frame B–C—Front- (Top) Mount—Tall Version, continued ①							
	16	4	2NO-2NC		5	**XTCEXFATC22**	—
Frame C—Side-Mount							
	10	2	1NO-1NC		1	**XTCEXSCC11** ②	—
Frame D–G							
	16	2	2NO		5	**XTCEXFBG20**	—
	16	2	1NO-1NC		5	**XTCEXFAG11**	—
	16	2	1NO-1NC		5	**XTCEXFBG11**	—
	16	2	2NC		5	**XTCEXFBG02**	—
	16	4	4NO-0NC		5	**XTCEXFBG40**	**XTCEXFBGC40**
	16	4	3NO-1NC		5	**XTCEXFBG31**	**XTCEXFBGC31**
	16	4	2NO-2NC		5	**XTCEXFBG22**	**XTCEXFBGC22**
	16	4	2NO-2NC		5	**XTCEXFAG22**	**XTCEXFAGC22**
	16	4	1NO-3NC		5	**XTCEXFBG13**	**XTCEXFBGC13**
	16	4	0NO-4NC		5	**XTCEXFBG04**	**XTCEXFBGC04**
	16	4	$1NO_E$-$1NC_L$		5	**XTCEXFBLG22** ③	**XTCEXFBLGC22** ③

Notes

① Front- (top) mount tall version is for use with Frame B electrical wire bridges and link kits and toolless plug combination connection kits: XTCEXRLB, XTCEXSDLB, XTPAXTPCB, XTPAXTPCRB, XTPAX.

② Can be mounted to the left side of contactor only. Cannot be used in combination with front- (top) mount auxiliary contacts or mechanical interlocks.

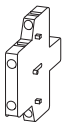
③ One early-make contact ($1NO_E$), one late-break contact ($1NC_L$).

Interlocked opposing contacts, to IEC/EN 60947-5-1 Annex L (positively driven), within the auxiliary contact modules (not NO [early make] and NC [late break] contacts) and for the built-in auxiliary contacts of the XTCE007B_–XTCE032C_.

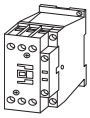
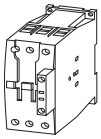
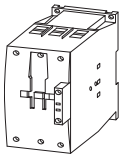
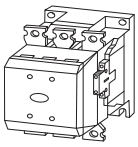
Auxiliary break contact can be used as mirror contact to IEC/EN 60947-4-1 Annex F (not NC [late break] contact).

No auxiliary contacts can be fitted between two contactors.

Side-Mount Auxiliary Contacts for Frame D–R, 40–2000A

	Conventional Free Air Thermal Current, $I_{th} = I_e$, AC-1 in Amps	Poles	Contact Configuration	Circuit Symbol	Pkg. Qty.	Screw Terminal Catalog Number	Spring Cage Terminal Catalog Number
	10	2	1NO-1NC		1	**XTCEXSBN11**	**XTCEXSBNC11**
	10	2	$1NO_E$-$1NC_L$		1	**XTCEXSBLN11** ①	—
	10	2	1NO-1NC		1	**XTCEXSCN11** ②	**XTCEXSCNC11** ②

Auxiliary Contacts Possible Combinations

Frame Size	Contactor	Built-In Auxiliary	Front- (Top) Mount Two-Pole	Front- (Top) Mount Four-Pole	Side-Mount Two-Pole	Total Auxiliary Contacts Available	Catalog Number
A		1NO or 1NC	1	—	—	3	**XTMC6A_ –** **XTMC9A_**
			—	1	—	5	
					—	—	
B		1NO or 1NC	1	—	—	3	**XTCE007B_ –** **XTCE015B_**
			—	1	—	5	
					—	—	
C		1NO or 1NC	1	—	—	3	**XTCE018C_ –** **XTCE032C_**
			—	1	—	5	
			—	—	1	3	
						—	
D		—	1	—	2	6	**XTCE040D00_ –** **XTCE065D00_**
			—	1	1	6	
						—	
F–G		—	1	—	2	6	**XTCE080F00_ –** **XTCE150G00_**
			—	1	2	8	
			—	—	4	8	
						—	
L–R		2NO-2NC	—	—	2	8	**XTCE185L22_ –** **XTCEC20R22_**
			—	—		—	

Notes

① One early-make contact ($1NO_E$), one late-break contact ($1NC_L$).

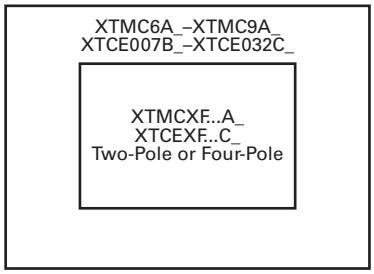
② To maintain proper terminal marking, XTCEXSCN_ should not be used with Frame D contactors and only used with Frame F–G contactors in combination with XTCEXSBN_.

Forced operation contact to IEC/EN 60947-5-1 Appendix L (positively driven), inside the auxiliary contact unit (not early close and late opening).

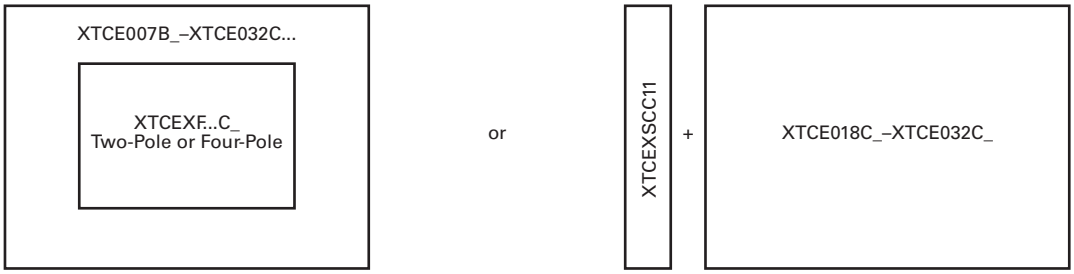
Auxiliary normally closed contact can be used as mirror contact to IEC/EN 60947-4-1 Appendix F (not late opening).

No auxiliary contacts can be fitted between two contactors.

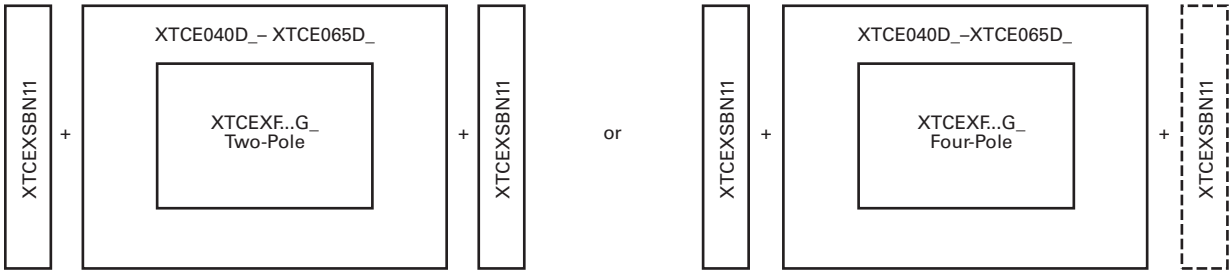
Auxiliary Contact Combinations



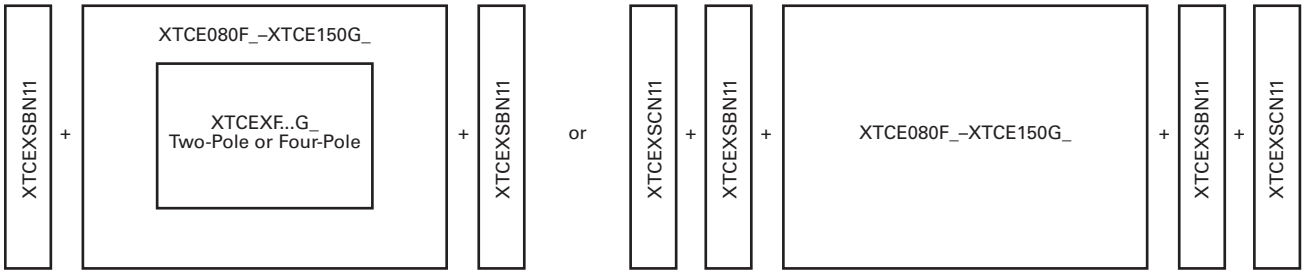
Frame A–B



Frame C



Frame D



Frame F–G

Frame L–R

Enclosures

Type 1 Enclosures

C899 Type 1 Enclosure

Type 1 Enclosures—NEMA (Freedom)

Starter Type	Box Number	NEMA Size	Catalog Number
Non-reversing starter	1	00–1 AN16	**C899B001** ①
	1	00–2 AN19	**C899B001** ①
	2	2 AN16	**C799B13**
	4	3–4	**C799B15**
	10	5	**C799B17**
Non-reversing starter with space for CPT	3	00–2	**C799B14** ②
	4	3–4	**C799B15** ③
Reversing starter	2	00–0	**C799B13**
	3	1–2	**C799B14**
	4	3	**C799B15**
	9	4	**C799B16**
	10	5	**C799B17**

Notes

① C899B001 is a universal enclosure that requires a specific reset rod length based on starter size. See Volume 10 Tab 2.
② Sub panel drilled for 50–200 VA CPTs.
③ Enclosure drilled for 150–300 VA CPTs.

Type 3R, 4X and 12 Enclosures

Type 3R Enclosure

Type 3R, 4X and 12 Enclosures—NEMA (Freedom)

Starter Type	Box Number	NEMA Size AN16	Type 3R Catalog Number	Type 12 Catalog Number	Type 4X Catalog Number
Non-reversing starter	5	00–1	**C799B21**	**C799B81**	**C799B41**
	6	2	**C799B24**	**C799B84**	**C799B43**
	6	—	**C799B25**	**C799B85**	**C799B44**
	8	3	**C799B210**	**C799B810**	**C799B47**
	8	—	**C799B212**	**C799B812**	**C799B49**
	8	4	**C799B211**	**C799B811**	**C799B48**
	10	5	**C799B218**	**C799B818**	**C799B413**
Non-reversing starter with space for CPT	6	00–2	**C799B24**	**C799B84**	**C799B43**
	6	—	**C799B25**	**C799B85**	**C799B44**
	8	3	**C799B210**	**C799B810**	**C799B47**
	8	—	**C799B212**	**C799B812**	**C799B49**
	8	4	**C799B211**	**C799B811**	**C799B48**
	10	5	**C799B218**	**C799B818**	**C799B413**
Reversing starter	6	00–2	**C799B24**	**C799B84**	**C799B43**
	6	—	**C799B25**	**C799B85**	**C799B44**
	8	3	**C799B210**	**C799B810**	**C799B47**
	8	—	**C799B212**	**C799B812**	**C799B49**
	9	4	**C799B215**	**C799B815**	**C799B411**
	10	5	**C799B218**	**C799B818**	**C799B413**
Multispeed	7 ①	0–2	**C799B223**	**C799B823**	**C799B417**

C899 Type 1 Enclosure

Enclosures—IEC (*XT* Type)

Starter Type	Box Number	IEC Size	Catalog Number
XT starters, SSOL	1	B–C	**C899B001** ②
XT starters, bi-metallic	1	B	**C899B001** ②
XT contactors/starters, bi-metallic	1	C	**C899B001** ②
XT contactors/starters without reset	2	D	**C799B34**
XT contactors/starters with resets	2	D	**C799B35**

Notes

① Blank cover provided.

② C899B001 is a universal enclosure that requires a specific reset rod length based on starter size. See Volume 10 Tab 3.

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Lighting Contactors

Electrically Held Base Contactor for C30CN/ECC

The C30CNE20_0 electrically held base contactor contains a 2NO power pole as standard and will allow the addition of power poles to build an electrically held contactor up to 12 poles maximum. A mechanically held module kit can also be added to convert the electrically held contactor into a mechanically held contactor in the field.

Electrically Held Base Contactor

Electrically Held Base Contactor

Power Poles	Catalog Number ①
2NO	**C30CNE20_0**

Coil Base Voltage (Digit 9)

Voltage (Digit 9)	Code Suffix	Voltage (Digit 9)	Code Suffix
115–120V 60 Hz/110V 50 Hz	**A**	265–277V 60 Hz/240V 50 Hz	**H**
230–240V 60 Hz/220V 50 Hz	**B**	24V 60 Hz/20V 50 Hz	**T**
460–480V 60 Hz/440V 50 Hz	**C**	28V 60 Hz/24V 50 Hz	**V**
575–600V 60 Hz/550V 50 Hz	**D**	347V 60 Hz	**X**
200–208V 60 Hz	**E**		

Power Poles for C30CNM/ECC

The C30CNM contactor accepts up to a maximum six single- or two-pole (or combinations) power poles. These can be used to form up to:

- 12 NO poles maximum when 6 two-poles are used in NO positions (1–6) or
- 8 NC poles maximum with 4 two-poles in the NC position (1–4) and 4 NO poles with 2 two-poles in the 2 NO positions (5–6)

Power Poles

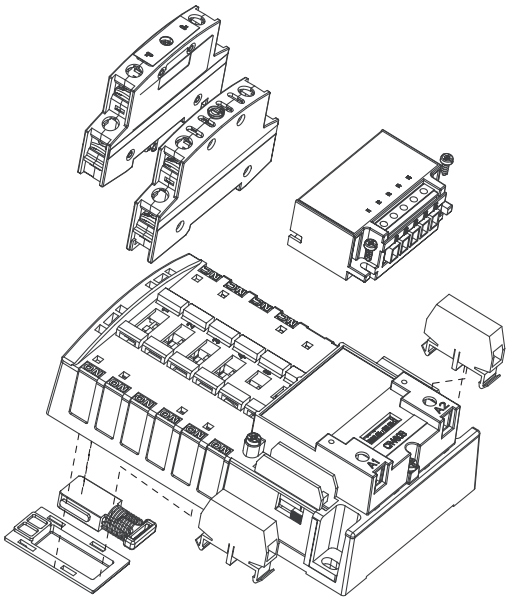
Power Poles

Power Poles	Catalog Number
Single-pole	**C320PRP1**
Two-pole	**C320PRP2**

Mechanically Held Module Kits for C30CN/ECC

These kits are for converting electrically held contactors to mechanically held units. Kits include control module, latch, latch cover and auxiliary contacts plus installation instructions. Conversion kits are suitable for coil voltages of 277V and below.

C30CNM Components—Exploded View



Conversion Kit

Mechanically Held Module Kits

Coil Volts	Control Volts	Catalog Number
Two-Wire		
24–277 Vac	110–120 Vac	**C320MH2WA0**
	200–277 Vac	**C320MH2WH0**
	24 Vac	**C320MH2WT0**
	12–24 Vdc	**C320MH2WT1**
Three-Wire		
24–277 Vac	110–120 Vac	**C320MH3WA0**
	200–277 Vac	**C320MH3WH0**
	24 Vac	**C320MH3WT0**
	12–24 Vdc	**C320MH3WT1**

Note

① When ordering, select required contactor by catalog number and replace the magnet coil alpha designation in the catalog number (_) with the proper code suffix from the Coil Base Voltage table above.

Auxiliary Contacts for C30CN/ECC

A mechanically held contactor with a two-wire control module uses 1NC auxiliary contact as standard for the control wiring circuit. The mechanically held contactor with a three-wire control module uses 1NO-1NC auxiliary contacts as standard for the control wiring circuit. See the table below for possible additional auxiliary contact configurations.

Auxiliary Contact Configurations

Two-Wire	Three-Wire
None	1NC (two-pole)
1NO (single-pole)	1NO (two-pole)
2NO (two-pole)	1NO-1NC (two-pole)
1NC (two-pole)	
1NO-1NC (NO single-pole, NC two-pole)	
2NO-1NC (two-pole)	

Auxiliary Contacts

Auxiliary Contacts

Auxiliary Block	Catalog Number
Single-pole	**C320AMH1**
Two-pole	**C320AMH2**

Transient Suppressor Kits for CN35/ECL

10–60A Contactors

These kits limit high voltage transients produced in the control circuit when power is removed from the contactor or starter coil. There are three separate suppressors for use on 24–120V, 240V or 480V coils respectively.

These devices mount directly to the coil terminals of lighting contactors 10–60A.

C320TS2

Kits for 10–60A

Description	Coil Voltage	Catalog Number
Transient suppressor	24–120V	**C320TS1**
	240V	**C320TS2**
	480V	**C320TS3**

100–300A Contactors

This device mounts on top of any side-mounted auxiliary contact on lighting contactors 100–300A. It connects across coil terminals on any 120V contactor magnet coil.

Limits high voltage transients produced in the circuit when power is removed from the coil.

C320AS1

Kits for 100–300A

Description	Coil Voltage	Catalog Number
Transient suppressor	120V	**C320AS1**

Auxiliary Contacts for CN35/ECL

CN35 lighting contactors include a 1NO maintaining auxiliary contact mounted on right hand side (on 10A, two- and three-pole devices, auxiliary contact occupies fourth power pole position—no increase in width). The 10–60A devices will accept additional auxiliary contacts on the top and/or sides.

Auxiliary contact blocks are designed for snap-on installation—fast, easy installation (no tools required up to 60A). All auxiliary contacts are of the bifurcated design with parallel circuit paths. This redundant path provides very high reliability. Auxiliary contacts can be snapped on the side (up to two circuits—per auxiliary contact) and on the top (up to four circuits). Auxiliary contacts for larger contactors, 100–400A sizes, will accept side-mounted auxiliaries only and easily attach to the side of the contactor with two screws.

Contact Configuration Code

This two-digit code is found on the auxiliary contact to assist in identifying the specific contact configuration. The first digit indicates the quantity of NO contacts and the second indicates the quantity of NC contacts.

Auxiliary Contacts—10–60A Contactors

Side-Mounted

Top-Mounted

Description	Contact Configuration Code ①	Catalog Number
Side-Mounted		
1NO	10	**C320KGS1**
1NC	01	**C320KGS2**
1NO-1NC	11	**C320KGS3**
2NO	20	**C320KGS4**
2NC	02	**C320KGS5**
Top-Mounted ②		
1NO	10	**C320KGT1**
1NC	01	**C320KGT2**
1NO-1NC	11	**C320KGT3**
2NO	20	**C320KGT4**
2NC	02	**C320KGT5**
3NO	30	**C320KGT9**
2NO-1NC	21	**C320KGT10**
1NO-2NC	12	**C320KGT11**
3NC	03	**C320KGT12**
4NO	40	**C320KGT13**
3NO-1NC	31	**C320KGT14**
2NO-2NC	22	**C320KGT15**
1NO-3NC	13	**C320KGT16**
4NC	04	**C320KGT17**

Notes

① For reference only—not part of catalog number.

② Cannot be added to contactors or starters mounted in Box 1 (Type 1).

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Base Auxiliary Contact

Base Auxiliary Contacts—100–400A Contactors

Circuit	Contact Configuration Code ①	100A Contactors Catalog Number	200 and 300A Contactors Catalog Number
NO	10	**C320KGS31**	**C320KGS41**
NO-NC	11	**C320KGS32**	**C320KGS42**

Auxiliary Contact

Auxiliary Contacts—100–400A Contactors

Circuit	Contact Configuration Code ①	Catalog Number
NO	10	**C320KGS20**
NC	01	**C320KGS21**
NO-NC ②	11	**C320KGS22**

Auxiliary Contact Ratings (Amperes)—NEMA A600

	AC Volts			
Current	120V	240V	480V	600V
Make and interrupting	60.0	30.0	15.0	12.0
Break	6.0	3.0	1.5	1.0
Continuous	10.0	10.0	10.0	10.0

Auxiliary Contact 5A Continuous Thermal Rating—NEMA P300

DC Volts	Make/Break Amperes
125	1.10
250	0.55

Notes

① For reference only—not part of catalog number.

② NO-NC occupies two positions—L2 and L3 or R2 and R3. See table on **Page V10-T15-33**.

Auxiliary Contact Location for CN35/ECL

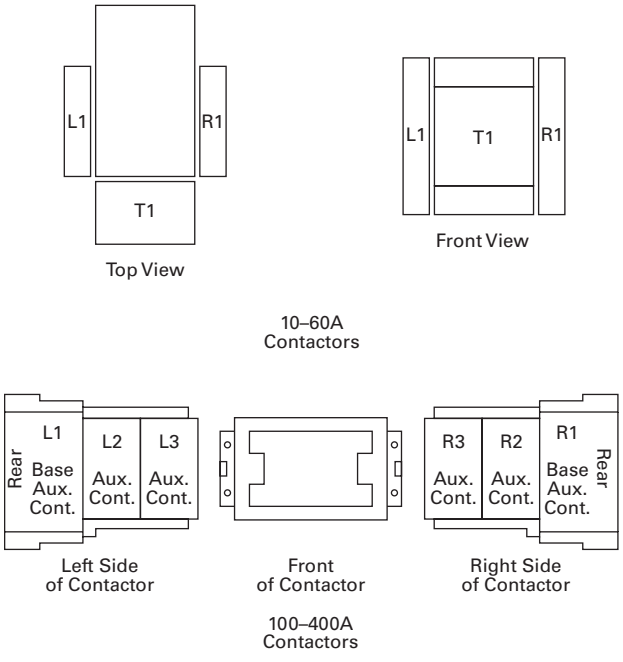
Auxiliary Contacts—Mounting Positions

The sketches below illustrate the maximum number of auxiliary contacts that can be assembled to a contactor and their locations in standard enclosures.

Auxiliary Contact Mounting Positions

		Available Mounting Positions ①②③		
Size	**Poles**	**Open Type**	**Type 1**	**Type 3R, 4X, 12**
10A	2–4	T1, L1, R1	L1	L1, T1
20–60A	2–3	T1, L1	L1	L1, T1
60A	4	T1, L1	—	L1, T1
60A	5	T1, L1	—	L1, T1
100A	2–3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3
200A	2–3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3
300A	2–3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3
400A	2–3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3

Auxiliary Contact Location



Pneumatic Timers—Top-Mounted for CN35/ECL

Attachment mounts on top of 10–60A lighting contactors (top-mounted auxiliary contacts cannot be installed on device when timer is used). Timer unit has DPST timed contacts—circuits in each pole must be the same polarity. Units are convertible from OFF to ON delay or vice-versa.

Pneumatic Timer

Pneumatic Timers

Timing Range	Catalog Number
0.1–30 seconds	**C320TP1**
10–180 seconds	**C320TP2**

Maximum Ampere Ratings

	Volts AC			
Description	**120**	**240**	**480**	**600**
Make	30.0	15.0	7.5	6.0
Break	3.0	1.5	0.75	0.6

Solid-State Timers for CN35/ECL

Solid-State ON DELAY Timer—Side-Mounted on CN35 Freedom Series Lighting Contactors Through 60A

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

Solid-State Timer

Product Selection—Mounted Timer

Timing Range	Catalog Number ④⑤⑥
0.1–1.0 seconds	**C320TDN1_**
1–30 seconds	**C320TDN30_**
30–300 seconds	**C320TDN300_**
5–30 minutes	**C320TDN3000_**

Notes

① Available positions on contactors or starters other than what is factory installed.
② When a pneumatic timer is mounted on contactor, only side-mounted auxiliary contact positions are available. The solid-state timer, when added, takes up side-mounted auxiliary contact position.
③ For 100–400A contactors, a base auxiliary contact must be added in position L1 before additional contacts can be mounted.
④ Add operating voltage suffix to catalog number. **A** = 120V, **B** = 240V, **E** = 208V.
⑤ Rated 0.5A pilot duty—not to be used on larger contactors.
⑥ Terminal connections are quick connects only. Two per side.

Type J Auxiliary Contact for A202/ECL

- 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	60 VA	10A
NEMA R300		
28–300 Vdc	28 VA	28 VA

Type J Auxiliary Contact

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**

SS-56 Surge Suppressor for A202/ECL

- 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**

F-56 Fuse Block for A202/ECL

- Facilitates installation of fuses (15A, 600V maximum) in control circuits
- Uses Bussman type KTK fuses, or equivalent
- Mounts in same cavity as Type J auxiliary contact
- No tools or mounting hardware needed
- Fuse not included

Fuse Block

Mounting	Kit Catalog Number
Starter	**F56**
Panel	**F56-P**

R-56 Interposing Relay for A202/ECL

The R-56AA interposing relay is a low energy solid-state device with a single NO solid-state contact. It can be used as a 120 Vac control relay, and will operate on as little as 40 Vac input. Is useful in applications requiring long control wiring runs where excessive voltage drop would prevent the contactor or relay from energizing. Will operate a Size 4 contactor from 10,000 ft using 18 AWG wire.

Interposing Relay

Type Mounting	Kit Catalog Number
Starter or panel	**R56-AA**

Power Pole Kit for A202/ECL

- 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 ②

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**

Notes

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

② Do not use with DC operated contactors.

Replacement Auxiliary Contacts for A202/ECL

Replacement Auxiliary Contacts

Contactor Size	Contact Arrangement	Aux. Elect. Contact Catalog Number	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 for A202/ECL

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 ①	2NO	**818D498G06**
	1NO	**818D498G04**

DC Coil Conversion Kits for A202/ECL

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**

Note

① Size 7 and larger use DC coils as standard.

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IT. Solid-State Soft Starters

Surge Suppressors for S801+/S811+

The surge suppressor can mount on either the line or load side of the ***IT.*** soft starter. It is designed to clip the line voltage (or load side induced voltage).

Surge Suppressor

Surge Suppressors

Description	Catalog Number
600V MOV for ***IT.*** soft starters	**EMS39**
690V MOV for ***IT.*** soft starters	**EMS41**

Lug Kits for S801+/S811+

The 200 mm and 290 mm soft starters do not include lugs.

The 200 mm and 290 mm soft starters each have different lug options based on your wiring needs. Each lug kit contains three lugs which can be mounted on either the load or line side.

Lug Kits

Lug Kits

Frame Size	Frame Designation	Description	Catalog Number
200 mm SSRV	T, U	2 cable connections, 4 AWG to 1/0 cable	**EML22**
		1 cable connection, 4/0 to 500 kcmil cable	**EML23**
		2 cable connections, 4/0 to 500 kcmil cable	**EML24**
		1 cable connection, 2/0 to 300 kcmil cable	**EML25**
		2 cable connections, 2/0 to 300 kcmil cable	**EML26**
290 mm SSRV	V	2 cable connections, 4/0 to 500 kcmil cable	**EML28**
		4 cable connections, 4/0 to 500 kcmil cable	**EML30**
		6 cable connections, 4/0 to 500 kcmil cable	**EML32**
		4 cable connections, 2/0 to 300 kcmil cable	**EML33** ①

Lug Cover Kits for S801+/S811+

Replacement covers for the T and V Frame are available in case of damage to the existing covers.

Lug Cover Kits

Description	Catalog Number
Lug cover T, U Frame	**EML27**
Lug cover V Frame	**EML34**

Digital Interface Module and Control Interface Module

The Digital Interface Module (DIM) and control interface module are available as replacement parts.

DIM and CIM

Description	Catalog Number
Blank cover (filler)	**EMA68**
DIM for S811+	**EMA91**
CIM for S801+	**EMA71**
CIM for S801+ pump control option	**EMA72**
Panel mounting kit	
3 ft cable	**EMA69A**
5 ft cable	**EMA69B**
8 ft cable	**EMA69C**
10 ft cable	**EMA69D**

Control Wire Connector

Control Wire Connector

Description	Catalog Number
12-pin, 5 mm pitch connector for control wiring	**EMA75L**

User Manual for S811+

A comprehensive user manual is available and can be downloaded free of charge from www.eaton.com by performing a document search for MN03902002E.

Mounting Plates for S801+/S811+

The mounting plates are designed to help make it easy to install or retrofit the soft starter into enclosures and MCCs. The soft starter can be mounted onto the plate prior to installation. The mounting plate is designed with tear drop mounting holes for easier installation.

Mounting Plates

Description	Catalog Number
Mounting plate N Frame	**EMM13N**
Mounting plate R Frame	**EMM13R**
Mounting plate T, U Frame	**EMM13T**
Mounting plate V Frame	**EMM13V**
Fan/hood accessory	**EMM18**

Note

① The EML33 does not have a CSA Listing.

Adapter Plates

The adapter plate allows customers to retrofit a V Frame 290 mm soft starter with the U Frame 200 mm soft starter.

Adapter Plates

Description	Catalog Number
Adapter Plates ①	**EMM13U**

Vibration Plates for S801+/S811+

The vibration plates allow the soft starter to be applied in high shock and vibration applications. The vibration plate allows vibration up to 5g and shock in up to 40g. The soft starter is mounted onto the vibration plate prior to installation in the panel.

Vibration Plates

Description	Catalog Number
Vibration plate N Frame	**EMM14N**
Vibration plate R Frame	**EMM14R**
Vibration plate T, U Frame	**EMM14T**
Vibration plate V Frame	**EMM14V**

Power Supplies

24 Vdc power supply that can be used with the S801+ or S811+ SSRV or as a standalone device.

Power Supplies

Description	SSRV	Catalog Number
115 Vac input	**S801+/S811+**	**PSG240E**
230 Vac input	**S801+/S811+**	**PSG240E**
380–480 Vac input	**S801+/S811+**	**PSG240F**

DIN Rail Power Supply Mounting Kit (35 mm)

DIN Rail Mounting Kit

Description	Catalog Number
DIN rail mounting kit (35 mm)	**PSSDIN**

NEMA Vacuum Break Control

Lug Sizes

- Size 4—12–4/0
- NEMA Size 5 and 6 and 320A, 540A and 610A—supplied without line or load lugs

Lug Kits—Consist of 6 Lugs

Size	Description	Catalog Number
5 and 320A	1/0–500 kcmil	**C325KAL8**
6, 540A and 610A	1/0–500 kcmil double barrel	**C325KAL9**
610A	1/0–600 kcmil double barrel	**80-19825-2**

Field Modification Kits

Auxiliary Electrical Contacts

Size 4—Three Type J auxiliary contacts may be mounted on the top of Size 4 contactors to provide six auxiliary, isolated 600V, 10A contacts for use in control circuits.

Sizes 5–6—Two Type J auxiliary contacts may be mounted on each side of Size 5 and 6 contactors to provide four auxiliary, isolated 600V,10A contacts for use in control circuits.

Auxiliary Electrical Contacts

Contact Arrangement	Catalog Number
1NO, 1NC	**J11**
2NO	**J20**
2NC	**J02**

Horizontal Mechanical Interlock

Size	Catalog Number
4	**180C113G04**
5	**180C113G16**
6	**180C113G17**

Note

① For more information see Pub51719.

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Heater Coils

Heater Coil Selection for Type B Overload Relay

Motor Full Load Current in Amperes for Use with 3 Heaters Only Open Starter Ambient Compensated Overload Relay	Heater Catalog Number ①
Size 4 and 160A	
12.8–14.1	**FH68**
14.2–15.5	**FH69**
15.6–17.1	**FH70**
17.2–18.9	**FH71**
19.0–20.8	**FH72**
20.9–22.9	**FH73**
23.0–25.2	**FH74**
25.3–27.8	**FH75**
27.9–30.6	**FH76**
30.7–33.5	**FH77**
33.6–37.5	**FH78**
37.6–41.5	**FH79**
41.6–46.3	**FH80**
46.4–50	**FH81**
51–55	**FH82**
56–61	**FH83**
62–66	**FH84**
67–73	**FH85**
74–78	**FH86**
79–84	**FH87**
85–92	**FH88**
93–101	**FH89**
102–110	**FH90**
111–122	**FH91**
123–129	**FH92**
130–133	**FH93**
—	**FH94**

Motor Full Load Current in Amperes for Use with 3 Heaters Only Open Starter Ambient Compensated Overload Relay	Heater Catalog Number ①
Size 5 and 320A with 300/5 Current Transformers	
107–117	**FH23**
118–129	**FH24**
130–141	**FH25**
142–155	**FH26**
156–170	**FH27**
171–187	**FH28**
188–205	**FH29**
206–224	**FH30**
225–244	**FH31**
245–263	**FH32**
264–292	**FH33**
293–318	**FH34**
319–350	**FH35**
Size 6 and 540A with 600/5 Current Transformers	
236–259	**FH24**
260–283	**FH25**
284–310	**FH26**
311–340	**FH27**
341–374	**FH28**
375–411	**FH29**
412–448	**FH30**
449–489	**FH31**
490–527	**FH32**
528–585	**FH33**
586–600	**FH34**

Notes

① Three are required per overload relay.

For information on H2001 heaters, see **Page V10-T15-6**.

Modification Codes

A—Ammeters, Auxiliary Contacts, Accelerating Relays, Autotransformers

Modification	Description	Catalog Number Suffix
Ammeter	Panel type wired to current transformer in Line 1, Type 1, 12	**A1**
	Panel type wired to current transformer in Line 1, Type 3R, 4X	
	Panel type, selector switch and three current transformers wired to ammeter via switch, Type 1, 12	**A2**
	Panel type, selector switch and three current transformers wired to ammeter via switch, Type 3R, 4X	
	Miniature (single-phase), Type 1, 12	**A3**
	Miniature with selector switch, Type 1, 12	**A4**
	Switchboard (single-phase), Type 1, 12	**A5**
	Switchboard (single-phase), Type 3R, 4X	
	Switchboard with selector switch, Type 1, 12	**A6**
	Switchboard with selector switch, Type 3R, 4X	
	Three-panel type (single-phase), Type 1, 12	**A7**
	Three-panel type (single-phase), Type 3R, 4X	
	Three miniature (single-phase), Type 1, 3R, 4X, 12	**A10**
	Three switchboard type (single-phase), Type 1, 12	**A11**
	Three switchboard type (single-phase), Type 3R, 4X	
	Ammeter order by description, Type 1, 3R, 4X, 12	**A12**
Auto-transformers	Hp rating selection, see **Tab 5**	**A8**
	Order by description	**A9**
Top-mounted auxiliary contacts ① (unwired)	1NO	**A13**
	1NC	**A14**
NEMA Sizes 00–2 only (unwired)	1NO-1NC	**A15**
	2NO	**A16**
	2NC	**A17**
IEC Sizes B–L only (unwired) ***XT*** Series	2NO-1NC	**A18**
	1NO-2NC	**A19**
	3NO	**A20**
	3NC	**A21**
	3NO-1NC	**A22**
	2NO-2NC	**A23**
	1NO-3NC	**A24**
	4NO	**A25**
	4NC	**A26**

Note

① Top-mounted auxiliary contacts cannot be added to contactors in Box 1 (Type 1).

A—Ammeters, Auxiliary Contacts, Accelerating Relays, Autotransformers, continued

Modification	Description	Catalog Number Suffix
Side-mounted auxiliary contacts ①	1NO	**A27**
	1NC	**A28**
	1NO-1NC	**A29**
	2NO	**A30**
	2NC	**A31**
	2NO-1NC	**A32**
	1NO-2NC	**A33**
	3NO	**A34**
	3NC	**A35**
	3NO-1NC	**A36**
	2NO-2NC	**A37**
	1NO-3NC	**A38**
	4NO	**A39**
	4NC	**A40**
Auxiliary contacts	Contacts mounted on operating mechanism of disconnect switch, 1NO-1NC	**A42**
	Contacts mounted on operating mechanism of disconnect switch, 2NO-2NC	**A43**
	With auxiliary contact omitted	**A44**
Accelerating relay	For two-speed	**A46**
	2NO/2NC 24 Vdc auxiliary relay—***IT.*** only	**A47**

B—Breaker Modifications, Backspin Timer, Undervoltage Release, Bell Alarm, Bus Choke

Modification	Description	Catalog Number Suffix
Breaker	1NO-1NC auxiliary contact on breaker	**B1**
	2NO-2NC auxiliary contacts on breaker	**B2**
	Shunt trip on circuit breaker—48–127 Vac or Vdc	**B3**
	Shunt trip on circuit breaker—9–24 Vac or Vdc	**B4**
	Shunt trip on circuit breaker—208–380 Vac	**B5**
	Shunt trip on circuit breaker—415–600 Vac or 220–250 Vdc	**B6**
	Undervoltage release for breaker	**B8**
	Current limiter mounted to breaker	**B9**
	Breaker—order by description	**B10**
	Thermal magnetic breaker	**B11**
Backspin timer	180 seconds	**B12**
Undervoltage release	Undervoltage release for circuit breaker—208–240 Vac	**B13**
	Undervoltage release for circuit breaker—380–480 Vac	**B14**
	Undervoltage release for circuit breaker—525–600 Vac	**B15**
Bell alarm	Bell alarm for circuit breaker	**B16**

Note

① Available on ***XT*** starters for 40A and greater only.

C—Control Power Transformer, Power Supplies, Control Relays, Cover Control (not elsewhere defined), Current Transformers, Compelling Relay, Control Wiring, Control Circuit Breaker, Separate Control, Customer-Supplied Components, Contactors, Counter, E-Stop Relay, DC/AC Interface, Separate Source Disconnect, Bypass Contactors

Modification	Description	Catalog Number Suffix
Control power transformers Make sure eighth character specifies primary/secondary voltage	Standard size control transformer, 120V/60 Hz, 110V/50 Hz secondary with two primary and one secondary fuse	**C1**
	Standard size control transformer, 24V/60 Hz secondary with two primary and one secondary fuse	**C2**
	50 VA extra capacity CPT 120V/60 Hz, 110V/50 Hz with two primary and one secondary	**C42**
	100 VA extra capacity CPT, 120V/60 Hz, 110V/50 Hz secondary with two primary and one secondary fuse	**C3**
	100 VA extra capacity CPT, 24V/60 Hz secondary with two primary and one secondary fuse	**C4**
	200 VA extra capacity CPT, 120V/60 Hz, 110V/50 Hz secondary with two primary and one secondary fuse	**C5**
	200 VA extra capacity CPT, 24V/60 Hz secondary with two primary and one secondary fuse	**C6**
	300 VA extra capacity CPT, 120V/60 Hz, 110V/50 Hz secondary with two primary and one secondary fuse	**C7**
	400 VA extra capacity CPT, 120V/60 Hz, 110V/50 Hz secondary with two primary and one secondary fuse	**C8**
	1 kVA extra capacity CPT, 120V/60 Hz, 110V/50 Hz secondary with two primary and one secondary fuse	**C9**
	2 kVA extra capacity CPT, 120V/60 Hz, 110V/50 Hz secondary with two primary and one secondary fuse	**C10**
	Control transformer—order by description	**C11**
	CPT with power supply for ***XT***	**C34**
Power supplies (***XT*** only)	Separate control 120 Vac to 24 Vdc	**C27**
	Power supply with extra capacity—order by description	**C28**
Control relays	Four-pole interposing relay, 600V (2NO/2NC)	**C12**
	Four-pole, unwired, A600 rtg.—2NO-2NC	**C14**
	Eight-pole, unwired, A600 rtg.—4NO-4NC	**C15**
	Control relay—order by description	**C16**
	Three-wire control module (C30 lighting)	**C18** ①
	Two-wire control relay for mechanical/magnetic lighting contactors	**C20** ①
Cover control	Convert position seven to E30 type cover control	**C17**
	Lock-off attachment added on cover control	**C19**
	Change to M22 (22 mm) cover controls	**C29**
Current transformer(s)	In phase 1	**C21**
	In phases 1 and 2	**C22**
	In 3 phases	**C23**
Compelling relay	—	**C25**
Control wiring	Omit control wiring	**C26**
	With separate control wiring and two 250V fuses in holder	**C30**
	With common control wiring and two 600V (Class C) fuses in holder	**C31**
	Control wiring type—order by description	**C33**
Control circuit breaker	Order by description	**C32**
Separate control	Wired for separate control (reduced voltage)	**C35**
Customer supplied components	Customer supplied components to be installed	**C36**
	Customer supplied wiring diagram to use	**C37**

Note

① Not available for ***XT*** starters.

C—Control Power Transformer, *IT.* Power Supplies, Control Relays, Cover Control (not elsewhere defined), Current Transformers, Compelling Relay, Control Wiring, Control Circuit Breaker, Separate Control, Customer-Supplied Components, Contactors, Counter, E-Stop Relay, DC/AC Interface, Separate Source Disconnect, Bypass Contactors, continued

Modification	Description	Catalog Number Suffix
Contactor/starter	Contactor/starter—order by description	**C40**
Counter	Operations counter	**C41**
E-stop relay	E-stop relay (DeviceNet)	**C43**
DC/AC interface	DC/AC interface module	**C44** ①
Separate source disconnect	IEC separate source disconnect for control circuitry	**C45**
Bypass contactors for ***IT.*** RVSS	Isolation contactor	**C46/J1**
	Output contactor	**C46/J2**
	Bypass contactor	**C46/J3**
	Isolation/output/bypass contactor	**C46/J4**

D—Device Labels, Deceleration Relay, Drain and Breather, Duplex Modifications

Modification	Description	Catalog Number Suffix
Device labels	(Each label)	**D1**
Decel. relay ①	Two-speed	**D2**
Drain and breather (Type 7/9 enclosure) ①	Drain and breather	**D5**
	Drain only	**D6**
	Breather only	**D7**
Duplex modifications	Alternator omitted (deduct price)	**D12**
	START/STOP pushbuttons—supplied for each motor	**D14**
	HAND/OFF/AUTO selector switch—supplied for each motor	**D15**
	No. 1 lead–No. 2 lead selector switch for manual selection of lead pump (alternator is omitted)	**D16**
	Red RUN pilot light—supplied for each motor	**D17**
	Push-to-test red RUN pilot light—supplied for each motor	**D18**
	TEST pushbutton for each motor	**D19**
	CPT, 120V secondary, two primary fuses and one secondary fuse—supplied for each motor	**D20**
	CPT with 100VA extra capacity, 120V secondary, two primary fuses and one secondary fuse—supplied for each motor	**D21**
	CPT with 200VA extra capacity, 120V secondary, two primary fuses and one secondary fuse—supplied for each motor	**D22**
	CPT for duplex—order by description	**D23**
	Add two relays to modify controller to operate with single-pole pilot devices	**D24**
	Add three relays to modify controller to operate with single-pole pilot devices	**D25**
	Green—OFF for each starter	**D26**
	Green—push-to-test OFF for each starter	**D27**
	Green—RUN light (duplex pump)	**D28**
	Red—STOP light (duplex pump)	**D29**
	P-T-T—green RUN light (duplex pump)	**D30**
	P-T-T—red STOP light (duplex pump)	**D31**
	Elapsed time meter (duplex pump)	**D32**

Note

① Not available for ***XT*** starters.

E—Enclosure Modifications, Elapsed Time Meter, Duplex Outlet, Enclosure for Starter, Enclosure Clear Cover, Enclosure Material

Modification	Description	Catalog Number Suffix
Enclosure modifications	Oversize enclosure	**E3**
	Enclosure—order by description	**E4**
	Enclosure with pole mounting hardware	**E5**
	Removable end plates	**E6**
	Service entrance rating (ground/neutral banding SE labels)	**E7**
	Service entrance rating with ground bar	**E8**
	Safety door interlock	**E11**
Elapsed time meter	Wired across coil, Type 1, 12	**E9**
	Wired across coil, Type 3R, 4X	
	Elapsed time meter—order by description	**E10**
Duplex outlet	Convenience duplex outlet mounted in side of enclosure	**E12**
Enclosure for starter ①	Horizontal combination starter, Size 0–2	**E13**
	Narrow combination starter, Size 0–2	**E14**
Enclosure clear cover for ***XT***	Clear cover for Halyester enclosure non-metallic	**E19**
Enclosure material	Convert to 316 stainless steel	**E16**
	Convert from Type 3R to stainless steel	**E21**
Irrigation pump panel	Bottom entry	**E17**

F—Fuse Clips, Fuse Blocks, Fungus Protection, Fingerproof Covers, EMI Filter

Modification	Description	Catalog Number Suffix
Fuse clips ①	Change fuse clips in position eight to Class J	**F1**
	Change fuse clips in position eight to Class H and K (30A and 60A only)	**F2**
Fuse blocks	Power fuses included—order by description	**F4**
	30A control circuit fuseholder (KTK) mounted on panel (unwired), fuse not supplied	**F5**
	30A control circuit fuseholder mounted on panel (unwired), FNQR fuse supplied	**F6**
	Three-pole power fuseholder mounted on front contactor	**F7**
	Separate fusing of control power supply—***IT.***	**F8**
	Blown fuse indicator (not for PFC)	**F10**
	Class CC fuses	**F21**

G—Ground Fault Relay, Grounding

Modification	Description	Catalog Number Suffix
Ground fault relay	Ground fault relay (wired)	**G1**
	Ground fault relay (unwired)	**G3**
Grounding	Special grounding—order by description	**G5**
	Ground fault protection and monitoring panel	**G7**

Note

① Not available for ***XT*** starters.

H—Heater (Space), Heater Packs Installed

Modification	Description				Catalog Number Suffix
Space heater	Space heater and thermostat				**H1**
	Space heater and NC interlock				**H2**
Install heater packs (Freedom Series)	**Class 20**		**Class 10**		**H5**
	/D1	H2001B-3	/D25	H2101B-3	
	/D2	H2002B-3	/D26	H2102B-3	
	/D3	H2003B-3	/D27	H2103B-3	
	/D4	H2004B-3	/D28	H2104B-3	
	/D5	H2005B-3	/D29	H2105B-3	
	/D6	H2006B-3	/D30	H2106B-3	
	/D7	H2007B-3	/D31	H2107B-3	
	/D8	H2008B-3	/D32	H2108B-3	
	/D9	H2009B-3	/D33	H2109B-3	
	/D10	H2010B-3	/D34	H2110B-3	
	/D11	H2011B-3	/D35	H2111B-3	
	/D12	H2012B-3	/D36	H2112B-3	
	/D13	H2013B-3	/D37	H2113B-3	
	/D14	H2014B-3	/D38	H2114B-3	
	/D15	H2015B-3	/D39	H2115-3	
	/D16	H2016B-3	/D40	H2116-3	
	/D17	H2017B-3	/D41	H2117-3	
	/D18	H2018-3			
	/D19	H2019-3			
	/D20	H2020-3			
	/D21	H2021-3			
	/D22	H2022-3			
	/D23	H2023-3			
	/D24	H2024-3			

K—Keypad

Modification	Description	Catalog Number Suffix
Keypad	Door mounted keypad (RVSS)	**K5**

L—Labels and Lighting Contactors

Modification	Description	Catalog Number Suffix
Lighting arrestor	Lighting arrestor installed in enclosure on panel	**L3**
Lugs	Special lugs (order by description)	**L9**
Carton label	Customer marking—specify	**L10**
Lighting contactors	1 NC pole	**L21**
	2 NC pole	**L22**
	3 NC pole	**L23**
	4 NC pole	**L24**
	5 NC pole	**L25**
	6 NC pole	**L26**
	7 NC pole	**L27**
	8 NC pole	**L28**
	Three-wire 120 Vac	**L29A**
	Three-wire 240 Vac	**L29B**
	Three-wire 24 Vac	**L29C**
	Three-wire 24 Vdc	**L29D**
	Two-wire 120 Vac	**L29E**
	Two-wire 240 Vac	**L29F**
	Two-wire 24 Vac	**L29G**

N—Nameplates

Modification	Description	Catalog Number Suffix
Nameplates	Enclosure nameplates	**N1**

P—Pilot Lights, Pushbuttons, Phase Relays, Potential Transformers, Power Factor Correction Capacitors, Program Timer, Percentage Timer, Photocell

Modification	Description	Catalog Number Suffix
Push-to-test pilot lights	Push-to-test pilot light (red RUN) wired to coil	**P1**
	Push-to-test pilot light (green OFF) wired in series with auxiliary contact	**P2**
	Combination of **P1** and **P2** above	**P3**
	Push-to-test pilot light (amber RUN) wired to coil	**P4**
	Push-to-test pilot light—green RUN	**P49**
	Push-to-test pilot light—green STOP	**P57**
Pushbuttons	EMERGENCY STOP—mushroom head	**P5**
	Pushbutton omitted	**P6**
	START/STOP	**P7**
	ON/OFF	**P8**
	START	**P9**
	ON	**P10**
	OFF	**P11**
	FORWARD/REVERSE/STOP	**P12**
	FAST/SLOW/STOP	**P13**
	FAST/OFF/SLOW	**P14**
	HIGH/LOW/STOP	**P15**
	HIGH/LOW	**P16**
	SLOW/FAST	**P17**
	Pushbutton with legend plate	**P18**
	UP/STOP/DOWN	**P52**
	OPEN/STOP/CLOSE	**P53**
	Red STOP pushbutton	**P72**
	START/STOP pushbuttons (located in top two holes)	**P73**
	Green START pushbutton	**P74**
Pilot lights	With one amber pilot light marked POWER AVAILABLE wired to load side of two fuses or circuit breaker	**P19**
	Pilot light (amber RUN) wired to coil	**P20**
	With one red pilot light marked RUN wired thru NO auxiliary contact	**P21**
	With one push-to-test red light marked RUN Wired thru NO auxiliary contact	**P22**
	Pilot light—red RUN	**P23**
	Pilot light—red ON	**P24**
	Pilot light—green OFF	**P25**
	Pilot light—order by description	**P26**
	Pilot light—red STOP	**P29**
	Pilot light—green STOP	**P61**
	FORWARD/REVERSE red pilot lights	**P62**
	UP/DOWN red pilot lights	**P63**
	OPEN/CLOSE red pilot lights	**P64**
	HIGH/LOW red pilot lights	**P65**
	FAST/SLOW red pilot lights	**P66**
	Green RUN light	**P67**
	LED bulbs	**P68**
	Blue OVERLOAD light	**P69**
	Amber fault pilot light	**P71**

P—Pilot Lights, Pushbuttons, Phase Relays, Potential Transformers, Power Factor Correction Capacitors, Program Timer, Percentage Timer, Photocell, continued

Modification	Description			Catalog Number Suffix
Illuminated pushbutton	Illuminated pushbutton—order by description			**P27**
Phase loss relay	Phase loss relay			**P28**
Phase reversal relay	Phase reversal relay			**P30**
Phase unbalance relay	Phase unbalance relay			**P32**
Phase monitoring relay	Phase monitoring relay			**P34**
Power factor correction capacitors	/F1 20 kVar	/F9 70 kVar	/F17 200 kVar	**P38**
	/F2 25 kVar	/F10 75 kVar	/F18 225 kVar	
	/F3 30 kVar	/F11 80 kVar	/F19 250 kVar	
	/F4 35 kVar	/F12 90 kVar	/F20 300 kVar	
	/F5 40 kVar	/F13 100 kVar	/F21 350 kVar	
	/F6 45 kVar	/F14 125 kVar	/F22 400 kVar	
	/F7 50 kVar	/F15 150 kVar		
	/F8 60 kVar	/F16 175 kVar		
Potential transformers	Potential transformer—wired L1–L2			**P39**
	Potential transformer—wired L1– L2 and L2–L3			**P40**
	Potential transformer—three phases			**P41**
Pump controller	Pump controller for ***IT.***			**P42**
Program timers	15-minute program timer			**P43**
	24-hour program timer			**P44**
	7-day program timer with day omission feature			**P45**
Percentage timers	15-minute percentage timer			**P47**
	60-minute percentage timer			**P48**
Photocell	Photoelectric receptacle with photocell			**P70**

Q—IQ Products, DN50

Modification	Description	Catalog Number Suffix
IQ products	IQ 500	**Q1**
	IQ100	**Q2**
	IQ 1000	**Q3**
	IQ 4000	**Q5**
IQ data metering module	IQ data metering module	**Q12**
	IQ 220 with cable	**Q14**
DN50	DeviceNet input/output module	**Q13**

R—Ramp, Relays, Solid-State Electronic Overload Relays, Resets, Overload Relay Modifications, Reversing, DeviceNet Interface

Modification	Description	Catalog Number Suffix
Ramp	Extended ramp of ***IT.***	**R1**
Relay	Overvoltage relay	**R2**
	Omit overload relay	**R4**

R—Ramp, Relays, Solid-State Electronic Overload Relays, Resets, Overload Relay Modifications, Reversing, DeviceNet Interface, continued

Modification	IEC Size	NEMA Size	Full Load Current Adjustment Range (A)	Three-Phase without Ground Fault Auto/Manual Reset Overload Selectable Class 10/20/30	Three-Phase with Ground Fault Auto/Manual Reset Overload Selectable Class 10/20/30
Solid-state electronic overload relay ①	B and C	00	0.33–1.65 ②	**R63/A**	**R64/A**
			1–5	**R63/B**	**R64/B**
			4–20	**R63/C**	**R64/C**
	C and D	0 and 1	0.33–1.65 ②	**R63/A**	**R64/A**
			1–5	**R63/B**	**R64/B**
			4–20	**R63/C**	**R64/C**
			9–45	**R63/D**	**R64/D**
	D	2	9–45	**R63/D**	**R64/D**
	D, F and G	3	20–100	**R63/E**	**R64/E**
	G	4	28–140	**R63/F**	**R64/F**
	N/A	5	60–300 ③	**R63/G**	**R64/G**
	N/A	6	120–600 ④	**R63/H**	**R64/H**

Modification	Description	Catalog Number Suffix
Resets ⑤	Change external reset to internal reset—hole covered with plug	**R5**
	Internal reset—no hole plug	**R6**
	Overload reset (order by description)	**R7**
	Manual reset only on overload relay	**R44**
	Auto reset only on overload relay	**R45**
	Internal trip indicator—no external reset	**R47**
	External reset with external trip indicator	**R48**
	External reset with bell alarm	**R49**
	N3R reset boot added (Type 1/12 only)	**R71**
Reversing ⑤	Reversing contactor/starter	**R54**
Overload relay mods	Anti plug-in	**R53**
DeviceNet interface	DeviceNet interface	**R69**
	Standard reset for DeviceNet	**R65**
	Lighted reset for DeviceNet	**R66**
	Trip indicator for DeviceNet	**R67**

Notes

① Features:
- Self-powered
- Phase loss protection
- Current adjustment knob
- ±1% repeat accuracy
- 1NO and 1NC isolated contacts

② Not UL Listed.

③ NEMA Size 5 starter available with 60–300A panel mounted CTs. Starter as an assembled unit with 1–5A C440 overload relay (C440A1A005SELAX or C440A2A005SELAX).

④ NEMA Size 6 starter available with 120–600A panel mounted CTs. Starter as an assembled unit with 1–5A C440 overload relay (C440A1A005SELAX or C440A2A005SELAX).

⑤ Not available for ***XT*** starters.

S—System Voltage, Selector Switches, Suppressor, Incomplete Sequence Protection, Single-Phase Jumper, Surge Capacitor, Speed Potentiometer

Modification	Description	Catalog Number Suffix
System voltage selection	System voltage selection for internal components	**S1**
	/H1 208V 60 Hz	
	/H2 240V 60 Hz	
	/H3 277V 60 Hz, single-phase	
	/H4 480V 60 Hz	
	/H5 600V 60 Hz	
	/H6 796V 60 Hz	
	/H7 220V 50 Hz	
	/H8 380V 50 Hz	
	/H9 415V 50 Hz	
	/H10 550V 50 Hz	
	/H11 660V 50 Hz	
	/H12 380V 60 Hz	
	/H13 1500V 60 Hz	
	System voltage selection—specify on order	**S2**
Selector switches ①	HAND/OFF/AUTO	**S3**
	HAND/AUTO	**S4**
	HAND/OFF/AUTO selector switch with one red RUN pilot light	**S5**
	RUN/OFF/AUTO	**S6**
	AUTO/OFF/TEST	**S7**
	AUTO/OFF/TEST selector switch with one red RUN pilot light	**S8**
	AUTO/OFF/TEST selector switch with one red RUN pilot light and one green pilot light	**S9**
	OFF/AUTO	**S10**
	START/STOP	**S11**
	OFF/ON	**S12**
	HIGH/LOW	**S13**
	FAST/OFF/SLOW	**S14**
	SLOW/FAST	**S15**
	FORWARD/REVERSE	**S16**
	HIGH/OFF/LOW	**S17**
	HIGH/LOW/OFF/AUTO	**S18**
	Selector switch omitted (pumps only)	**S19**
	HAND/OFF/AUTO spring return from left	**S21**
	OPEN/OFF/CLOSE	**S41**
	FORWARD/OFF/REVERSE	**S42**
	FAST/OFF/SLOW/AUTO	**S43**
	Selector switch omitted (pump panels only)	**S19**
	Selector switch—order by description	**S40**
	RVSS/BYPASS (soft starters only)	**S44**
	LOCAL/REMOTE selector switch	**S45**
	RUN/OFF selector switch	**S46**
Suppressor	Transient suppressor mounted on magnet coil	**S24**
Surge suppression	MOV (***IT.***)	**S20**
Sequence timer	Sequence timer (pump panels)	**S26**
Sequence protection	Incomplete sequence protection	**S27**
Pump	480V BP9000 pump	**S28**
Single-phase	Convert contactor or starter from three-phase to single-phase—install jumper	**S29**
	Single-phase rev. 120V	**S30**
	Single-phase rev. 240V	**S31**
Surge capacitor	Surge capacitor wired to disconnect line side	**S37**

Note

① When using three-position selector switch with magnetic lighting contactor, mod **C20** must also be used (ECL04, ECL13, ECL15).

T—Timers, Time Delay Relays, Terminal Blocks, Terminal Points, Ring Lug Connections

Modification	Description	Catalog Number Suffix
Timers	Pneumatic timer installed on contactor, unwired, 30 seconds maximum	**T1**
	Pneumatic timer installed on contactor, unwired, 180 seconds maximum	**T2**
	Pneumatic timer mounted in enclosure, unwired, 180 seconds maximum	**T3**
	Solid-state ON delay timer (1–30 seconds)	**T4**
	Solid-state ON delay timer (30–300 seconds)	**T5**
	Timer—order by description	**T25**
Time delay relays	Time delay relay, 3 minutes maximum, unwired, ON DELAY	**T6**
	Time delay relay, 3 minutes maximum, unwired, OFF DELAY	**T7**
	Time delay low voltage release relay	**T8**
Terminal blocks	With one single circuit terminal block, unwired	**T9**
	With two single circuit terminal block, unwired	**T10**
Terminal points	With 6 terminal points, unwired	**T11**
	With 12 terminal points, unwired	**T12**
	With 18 terminal points, unwired	**T13**
	Terminal point per customer specification, unwired (price each)	**T14**
	Terminal point per customer specification, wired (unwired without customer diagram)	**T15**
	Three terminals mounted between contactor and overload for power factor capacitors—Sizes 0–2	**T21**
	Three terminals mounted between contactor and overload for power factor capacitors—Sizes 3–4	**T22**
	Quick-connect terminals added to DP contactor/starter	**T23**
Ring lug connections	Ring lug connections on power wires	**T16** ①
	Ring lug connections on control wires	**T17**

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U—Undervoltage Relay, Time Delay Undervoltage Relay

Modification	Description	Catalog Number Suffix
Undervoltage relays	Undervoltage relay, non-adjustable	**U1**
	Undervoltage relay, adjustable	**U2**
Time delay undervoltage relays	Time delay undervoltage relay, non-adjustable	**U4**
	Time delay undervoltage relay, adjustable	**U5**
Under- and overvoltage relay	Under- and overvoltage relay	**U7**

Note

① Not available for ***XT*** starters.

V—Voltmeter, Varmeter, Vacuum Starter

Modification	Description	Catalog Number Suffix
Voltmeters	One panel type voltmeter wired L1–L2	**V1**
	Panel type voltmeter and selector switch wired to read three-line voltages	**V2**
	Miniature voltmeter wired L1–L2	**V3** ①
	Miniature voltmeter and selector switch wired to read three-line voltages	**V4** ①
	Switchboard type voltmeter wired L1 – L2	**V5**
	Switchboard type voltmeter and selector switch wired to read three-line voltage	**V6** ①
	Three panel type voltmeters wired in each phase	**V7**
	Three miniature voltmeters wired in each phase	**V8** ①
	Three switchboard type voltmeters wired in each phase	**V9** ①
	Voltmeter—order by description	**V10**
Varmeter ②	Varmeter	**V11**
	Varmeter—order by description	**V12**
Vacuum starter ②	Vacuum starter—1500V rating	**V13**

W—Wattmeter, Watt-Hour Meter, Wiremarkers, Wiring Diagram

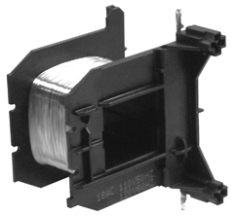
Modification	Description	Catalog Number Suffix
Wattmeter ①	Wattmeter	**W1**
Watt-hour meter ①	Watt-hour meter	**W3**
	Watt-hour meter with demand attachment	**W5**
Wiremarkers	Wiremarkers	**W7**
	Wiremarkers—order per customer diagram or specifications	**W8**
	Wiremarkers—order by description	**W9**
WYE-Delta hp	See **Tab 5**	**W10** ②
Windows in enclosure	Enclosure windows	**W11**
Wiring diagram	Reduced copy of custom wiring diagram laminated on inside of door	**W12**

Notes

① Type 1/12 only.

② Not available for ***XT*** starters.

XT **Line Replacement Coils**



Lighting Contactor Magnetic Coil

Freedom Line

NEMA Sizes 00, 0, 1, 2 and 3

For a complete listing of parts, refer to the Renewal Parts Publication Number referenced below.

For Catalog Numbers AN16, AN30, AN40, AN56, AN70, AN80, AN800, CN15, CN35 ① and CN55 Contactors and Starters (Size 00, 0)

Description		NEMA Size 00 Series B1 Part No.	Series C1 Part No.	NEMA Size 0 Series B1 Part No.	Series C1 Part No.
Renewal Parts Publication Number		**22177**	**22177**	**22177**	**22177**
Contact Kits					
Two-pole		②	②	②	②
Three-pole		②	②	②	②
Four-pole		②	②	②	②
Five-pole		②	②	②	②
Magnet Coils	**Coil Suffix**				
120V 60 Hz or 110V 50 Hz	**A**	**9-2875-1**	**9-2875-1**	**9-2876-1**	**9-2876-1**
240V 60 Hz or 220V 50 Hz	**B**	**9-2875-2**	**9-2875-2**	**9-2876-2**	**9-2876-2**
480V 60 Hz or 440V 50 Hz	**C**	**9-2875-3**	**9-2875-3**	**9-2876-3**	**9-2876-3**
600V 60 Hz or 550V 50 Hz	**D**	**9-2875-4**	**9-2875-4**	**9-2876-4**	**9-2876-4**
208V 60 Hz	**E**	**9-2875-5**	**9-2875-5**	**9-2876-5**	**9-2876-5**
277V 60 Hz	**H**	**9-2875-12**	**9-2875-12**	**9-2876-12**	**9-2876-12**
208/240V 60 Hz	**J**	**9-2875-37**	**9-2875-37**	**9-2876-17**	**9-2876-17**
240V 50 Hz	**K**	**9-2875-11**	**9-2875-11**	**9-2876-11**	**9-2876-11**
380–415V 50 Hz	**L**	**9-2875-6**	**9-2875-6**	**9-2876-6**	**9-2876-6**
380V 50 Hz	**L**	—	—	—	—
415V 50 Hz	**M**	—	—	—	—
550V 50 Hz	**N**	—	—	—	—
24V 60 Hz–24V 50 Hz	**T**	**9-2875-36**	**9-2875-36**	**9-2876-36**	**9-2876-36**
24V 60 Hz	**T**	—	—	—	—
24V 50 Hz	**U**	**9-2875-36**	**9-2875-36**	**9-2876-36**	**9-2876-36**
32V 50 Hz	**V**	**9-2875-16**	**9-2875-16**	**9-2876-16**	**9-2876-16**
48V 60 Hz	**W**	**9-2875-8**	**9-2875-8**	**9-2876-8**	**9-2876-8**
48V 50 Hz	**Y**	**9-2875-9**	**9-2875-9**	**9-2876-9**	**9-2876-9**
Magnet Frame Armature					
Lower magnet frame		②	②	②	②
Upper magnet frame		②	②	②	②

Notes

① CN35A = Size 00, CN35B and CN35D = Size 0, CN35G = Size 2, CN35K = Size 3, CN35N = Size 4, and CN35S = Size 5.

② Replace with complete contactor.

For a complete listing of parts, refer to the Renewal Parts Publication Number referenced below.

For Catalog Numbers AN16, AN30, AN40, AN56, AN70, AN80, AN800, CN15, CN35 ① and CN55 Contactors and Starters (Size 1, 2)

Description		NEMA Size 1 Series A1 Part No.	Series B1 Part No.	NEMA Size 2 Series A1 Part No.	Series B1 Part No.	NEMA Size 3 Part No.
Renewal Parts Publication Number		**20861**	**22177**	**20861**	**22177**	**20426**
Contact Kits						
Two-pole		**6-65**	**6-65**	**6-65-7**	**6-65-7**	**6-43-5**
Three-pole		**6-65-2**	**6-65-2**	**6-65-8**	**6-65-8**	**6-43-6**
Four-pole		**6-65-9**	**6-65-9**	**6-65-15**	**6-65-15**	—
Five-pole		**6-65-10**	**6-65-10**	**6-65-16**	**6-65-16**	—
Magnet Coils	**Coil Suffix**					
120V 60 Hz or 110V 50 Hz	**A**	**9-3285-1**	**9-3285-1**	**9-3285-1**	**9-3285-1**	**9-2756-1 KIT**
240V 60 Hz or 220V 50 Hz	**B**	**9-2703-2 KIT**	**9-2703-2 KIT**	**9-2703-2 KIT**	**9-2703-2 KIT**	**9-2756-2 KIT**
480V 60 Hz or 440V 50 Hz	**C**	**9-2703-3 KIT**	**9-2703-3 KIT**	**9-2703-3 KIT**	**9-2703-3 KIT**	**9-2756-3 KIT**
600V 60 Hz or 550V 50 Hz	**D**	**9-2703-4 KIT**	**9-2703-4 KIT**	**9-2703-4 KIT**	**9-2703-4 KIT**	**9-2756-4 KIT**
208V 60 Hz	**E**	**9-2703-9 KIT**	**9-2703-9 KIT**	**9-2703-9 KIT**	**9-2703-9 KIT**	**9-2756-5 KIT**
277V 60 Hz	**H**	**9-2703-7 KIT**	**9-2703-7 KIT**	**9-2703-7 KIT**	**9-2703-7 KIT**	**9-2756-9 KIT**
208/240V 60 Hz	**J**	—	—	—	—	—
240V 50 Hz	**K**	**9-2703-14 KIT**	**9-2703-14 KIT**	**9-2703-14 KIT**	**9-2703-14 KIT**	**9-2756-13 KIT**
380–415V 50 Hz	**L**	**9-2703-8 KIT**	**9-2703-8 KIT**	**9-2703-8 KIT**	**9-2703-8 KIT**	—
380V 50 Hz	**L**	—	—	—	—	**9-2756-12 KIT**
415V 50 Hz	**M**	—	—	—	—	**9-2756-8 KIT**
550V 50 Hz	**N**	—	—	—	—	**9-2756-14 KIT**
24V 60 Hz–24V 50 Hz	**T**	—	—	—	—	—
24V 60 Hz	**T**	**9-2703-6 KIT**	**9-2703-6 KIT**	**9-2703-6 KIT**	**9-2703-6 KIT**	**9-2756-6 KIT**
24V 50 Hz	**U**	**9-2703-12 KIT**	**9-2703-12 KIT**	**9-2703-12 KIT**	**9-2703-12 KIT**	**9-2756-11 KIT**
32V 50 Hz	**V**	**9-2703-10 KIT**	**9-2703-10 KIT**	**9-2703-10 KIT**	**9-2703-10 KIT**	**9-2756-10 KIT**
48V 60 Hz	**W**	**9-2703-11 KIT**	**9-2703-11 KIT**	**9-2703-11 KIT**	**9-2703-11 KIT**	**9-2756-15 KIT**
48V 50 Hz	**Y**	**9-2703-13 KIT**	**9-2703-13 KIT**	**9-2703-13 KIT**	**9-2703-13 KIT**	**9-2756-7 KIT**
Magnet Frame Armature						
Lower magnet frame		**17-18200**	**17-18200**	**17-18200**	**17-18200 KIT**	**17-8955-2 KIT**
Upper magnet frame		**48-1936**	**48-1936**	**48-1936**	**48-1936 KIT**	**48-1902 KIT**

Note

① CN35A = Size 00, CN35B and CN35D = Size 0, CN35G = Size 2, CN35K = Size 3, CN35N = Size 4, and CN35S = Size 5.

NEMA Sizes 4, 5 and 6

For a complete listing of parts, refer to the Renewal Parts Publication Number referenced below.

For Catalog Numbers AN16, AN30, AN40, AN56, AN70, AN80, AN800, CN15, CN35 ① and CN55 Contactors and Starters (Size 4, 5, 6)

Description		NEMA Size 4 Series A1 Part No.	NEMA Size 4 Series B1 Part No.	NEMA Size 5 Series A1 Part No.	NEMA Size 5 Series B1 Part No.	NEMA Size 6 Contactor and Starter Series A1, Starter Series B1 Part No.	NEMA Size 6 Contactor and Starter Series B1, Starter Series C1 Part No.
Renewal Parts Publication Number		**20428**	**20428**	**20429**	**20429**	**20146**	**23349**
Contact Kits							
Two-pole		**6-44**	**6-26**	**6-45**	**6-45**	**6-601-2**	—
Three-pole		**6-44-2**	**6-26-2**	**6-45-2**	**6-45-2**	**6-601**	**6-648**
Magnet Coils	**Coil Suffix**						
120V 60 Hz or 110V 50 Hz	**A**	**9-1891-1 KIT**	**9-1891-1 KIT**	**9-1891-1 KIT**	**9-1891-1 KIT**	**9-2698**	**9-3006**
240V 60 Hz or 220V 50 Hz	**B**	**9-1891-2 KIT**	**9-1891-2 KIT**	**9-1891-2 KIT**	**9-1891-2 KIT**	**9-2698-2**	**9-3006-2**
480V 60 Hz or 440V 50 Hz	**C**	**9-1891-3 KIT**	**9-1891-3 KIT**	**9-1891-3 KIT**	**9-1891-3 KIT**	**9-2698-3**	**9-3006-3**
600V 60 Hz or 550V 50 Hz	**D**	**9-1891-4 KIT**	**9-1891-4 KIT**	**9-1891-4 KIT**	**9-1891-4 KIT**	**9-2698-4**	**9-3006-4**
208V 60 Hz	**E**	**9-1891-13 KIT**	**9-1891-13 KIT**	**9-1891-13 KIT**	**9-1891-13 KIT**	**9-2698-5**	—
277V 60 Hz	**H**	**9-1891-26 KIT**	**9-1891-26 KIT**	**9-1891-26 KIT**	**9-1891-26 KIT**	—	—
208/240V 60 Hz	**J**	—	—	—	—	—	—
240V 50 Hz	**K**	**9-1891-20 KIT**	**9-1891-20 KIT**	**9-1891-20 KIT**	**9-1891-20 KIT**	—	—
380–415V 50 Hz	**L**	—	—	—	—	**9-2698-6**	**9-3006-7**
380V 50 Hz	**L**	**9-1891-14 KIT**	**9-1891-14 KIT**	**9-1891-14 KIT**	**9-1891-14 KIT**	—	—
415V 50 Hz	**M**	**9-1891-21 KIT**	**9-1891-21 KIT**	**9-1891-21 KIT**	**9-1891-21 KIT**	—	—
550V 50 Hz	**N**	**9-1891-8 KIT**	**9-1891-8 KIT**	**9-1891-8 KIT**	**9-1891-8 KIT**	—	—
24V 60 Hz–24V 50 Hz	**T**	—	—	—	—	—	**9-3006-8**
24V 60 Hz	**T**	**9-1891-15 KIT**	**9-1891-15 KIT**	**9-1891-15 KIT**	**9-1891-15 KIT**	—	—
24V 50 Hz	**U**	**9-1891-16 KIT**	**9-1891-16 KIT**	**9-1891-16 KIT**	**9-1891-16 KIT**	—	—
48V 60 Hz	**W**	—	—	—	—	**9-2698-8**	**9-3006-9**
48V 50 Hz	**Y**	**9-1891-18 KIT**	**9-1891-18 KIT**	**9-1891-18 KIT**	**9-1891-18 KIT**	—	—
Overload Relays							
For replacement on existing starters three-pole—ambient compensated bimetallic		**10-6530-4**	**10-6530-4**	**C306DN3B**	**C306DN3B**	**C306DN3B**	**C306DN3B**
Current Transformer		—	—	**42-3564**	**42-3564**	**42-3598**	**42-3598**
Magnet Frame Armature ②							
Lower Magnet Frame		**48-1030-2**	**48-1030-2**	**48-1030-2**	**48-1030-2**	—	—
Upper Magnet Frame		**48-1029-4**	**48-1029-4**	**48-1029-4**	**48-1029-4**	—	—

Notes

① CN35A = Size 00, CN35B and CN35D = Size 0, CN35G = Size 2, CN35K = Size 3, CN35N = Size 4, and CN35S = Size 5.

② Consult factory.

NEMA Sizes 7 and 8

NEMA Sizes 7 and 8—See Contactor/Starter Nameplate to Determine Series A1 or B1

Description		NEMA Size 7 Series A1 Part Number	Series B1 Part Number	NEMA Size 8 Series A1 Part Number	Series B1 Part Number
Renewal Parts Publication Number		20848	20848	20849	20849
Contact Kits					
Two-pole		—	—	—	—
Three-pole		**6-613**	**6-613**	**6-571**	**6-571**
Magnet Coils	**Coil Suffix**				
120V 60 Hz or 110V 50 Hz	**A**	**9-2698**	**9-2698**	**9-2654**	**9-2654**
240V 60 Hz or 220V 50 Hz	**B**	**9-2698-2**	**9-2698-2**	**9-2654-2**	**9-2654-2**
480V 60 Hz or 440V 50 Hz	**C**	**9-2698-3**	**9-2698-3**	**9-2654-3**	**9-2654-3**
600V 60 Hz or 550V 50 Hz	**D**	**9-2698-4**	**9-2698-4**	**9-2654-4**	**9-2654-4**
208V 60 Hz	**E**	**9-2698-5**	**9-2698-5**	**9-2654-6**	**9-2654-6**
277V 60 Hz	**H**	—	—	—	—
208/240V 60 Hz	**J**	—	—	—	—
240V 50 Hz	**K**	—	—	—	—
380–415V 50 Hz	**L**	—	—	—	—
380V 50 Hz	**L**	**9-2698-6**	**9-2698-6**	**9-2654-5**	**9-2654-5**
415V 50 Hz	**M**	—	—	—	—
550V 50 Hz	**N**	—	—	—	—
24V 60 Hz–24V 50 Hz	**T**	—	—	—	—
24V 60 Hz	**T**	—	—	—	—
24V 50 Hz	**U**	—	—	—	—
32V 50 Hz	**V**	—	—	—	—
48V 60 Hz	**W**	—	—	—	—
48V 50 Hz	**Y**	—	—	—	—
Overload Relays					
For replacement on existing starters					
Three-pole—ambient compensated bimetallic		**C306DN3B**	**C306DN3B**	**C306DN3B**	**C306DN3B**
Current Transformer					
—		**42-3598-2**	**42-3598-2**	**42-3598-3**	**42-3598-3**
Magnet Frame Armature ①					
Lower magnet frame		—	—	—	—
Upper magnet frame		—	—	—	—

Note

① Consult factory.

NEMA Sizes 7 and 8—See Contactor/Starter Nameplate to Determine Series A1 or B1, continued

		NEMA Size 7		NEMA Size 8	
		Series A1	Series B1	Series A1	Series B1
Volts	Hertz	Part Number	Part Number	Part Number	Part Number
Renewal Parts Publication Number		20848	20848	20849	20849
Feeder Group Renewal ①					
110–120	50/60	**9-2705**	**9-2705**	—	—
220–240	50/60	**9-2705-2**	**9-2705-2**	—	—
440–480	50/60	**9-2705-3**	**9-2705-3**	—	—
550–600	50/60	**9-2705-4**	**9-2705-4**	—	—
208	50/60	**9-2705-5**	**9-2705-5**	—	—
380–415	50/60	**9-2705-6**	**9-2705-6**	—	—
48–52	50/60	**9-2705-8**	**9-2705-8**	—	—
120	50/60	—	—	**9-2664**	**9-2664**
240	50/60	—	—	**9-2664-2**	**9-2664-2**
480	50/60	—	—	**9-2664-3**	**9-2664-3**
600	50/60	—	—	**9-2664-4**	**9-2664-4**
380	50/60	—	—	**9-2664-5**	**9-2664-5**
208	50/60	—	—	**9-2664-6**	**9-2664-6**
416	50/60	—	—	**9-2664-7**	**9-2664-7**
110	50/60	—	—	**9-2664-8**	**9-2664-8**
220	50/60	—	—	**9-2664-9**	**9-2664-9**
550	50/60	—	—	**9-2664-10**	**9-2664-10**
440	50/60	—	—	**9-2664-11**	**9-2664-11**

Note

① Voltage ratings of the main coils must match those of the feeder group for proper operation of the starter/contactor.

A200 Line

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 a 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.

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

JF Autostarters

JF Autostarter Kits

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) ①

Volt	Hz	Style Number ②	Volt	Hz	Style Number ②
115	60	**5264C05H01**	460	60	**5264C05H03**
230	60	**5264C05H02**	575	60	**5264C05H04**

Notes

① When replacing solenoid assembly series 416C160 use adapter plate style 9917D02H01—one required.

② 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** ②
	5	**373B331G19**	**373B331G05**	**373B331G10**	—
Arc box ③	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**
K.O. 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- and Four-Pole Style Number	Five-Pole Style Number	Size 2 Two- and Three-Pole Style Number	Four- and 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- and Four Pole Style Number	Size 2 Single-, Two- and 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 Use one each of 373B331G11 and 373B331G12.
③ Mounting hardware included.
④ Two- and three-pole.
⑤ Four- and 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

Note: 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 Above

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 and 1NC 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

Model J–K Series 3, 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]	[5]	**5250C81G18**
	5	[6]	[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**	—
K.O. spring (package of 10)	All	**503C796G02**	**503C796G02**	**672B788G50**
Terminal line/load (package of 3)	All	**372B357G12**	**372B357G18**	**372B357G18**

Accessories for Model J–K, Series 3, 4

DC Coils [8]

Voltage	Model J Size 3, 4 Two- and Three-Pole Style Number	Voltage	Model J Size 3, 4 Two- and Three-Pole Style Number
24	**1255C68G04**	250	**1255C68G02**
48	**1255C68G05**	125/250 [9]	**1255C68G03**
125	**1255C68G01**		

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 2 of 626B187G12.
[5] Use quantity 2 of 626B187G16.
[6] Use quantity 1 each of 626B187G12 and 626B187G13.
[7] Use quantity 1 each of 626B187G16 and 626B187G17.
[8] Use only on units originally supplied with DC coil.
[9] Dual voltage coils. Use only on contactors or starters originally supplied with dual voltage coil.

AC Coils

Voltage	Hz	Model J Size 3, 4 Two- and Three-Pole Style Number	Four- and Five-Pole Style Number	Model K Size 4 ① Two- and Three-Pole Style Number	Four- and 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 ③

Part	Size 5 Style Number	Size 6 Style Number	Size 7 Style Number	Size 8 Style Number	Size 9 Style Number
Contact kit (1 per pole)	**477B477G05** ④	**2066A10G11**	**461A757G17**	**646C829G05**	**5264C42G01** ⑤
	—	—	—	—	**5264C42G02** ⑥
Arc box	**2050A15G45**	**2066A10G45**	**831D580G01**	**831D580G01**	**9917D69G02**
Magnet assembly	**2050A15G46**	**2050A15G46**	**N/A**	**N/A**	**N/A**
Magnet spring kit	**2050A15G47**	**2050A15G47**	**N/A**	**N/A**	**N/A**
Acr cup kit	**2050A15G48**	**N/A**	**N/A**	**N/A**	**N/A**
Load conn. kit	**2050A15G49**	**2066A10G49**	**N/A**	**N/A**	**N/A**
Line conn. 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 ⑦	**N/A**	**2066A10G18**	**N/A**	**N/A**	**N/A**
C.T. 800/5 ⑦	**N/A**	**2066A10G19**	**N/A**	**N/A**	**N/A**
Phase barrier	**N/A**	**N/A**	**640C441G01**	**640C441G01**	**5264C35G03** ⑤
Cross bar	**2050A15G12**	**2066A10G15**	**N/A**	**N/A**	**N/A**
Shunt	**N/A**	**2066A10G48**	**650C129G01**	**646C831G02** ⑧	**5264C39G02** ⑨

Notes

① Model K replaces Model J, offering superior design life characteristics. Renewal parts are different. Use parts for proper model only.
② Dual voltage coils. Use only on contactors or starters originally supplied with dual voltage coil.
③ Catalog number A201/A200 series replaces GCA/GPD series. Renewal parts are the same.
④ Use 477B477G06 for silver tungsten applications.
⑤ R.C.
⑥ F.C.
⑦ 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.
⑧ Set of three.
⑨ 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
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**

Sizes 7 and 8

Line Voltage	Required	Size 7, 8 Style Number
125 Vdc	2	**438C805G04**
230 Vdc	2	**438C805G02**
250 Vdc	2	**438C805G03**
110/120 Vac ①②	2	**438C805G12**
220/240 Vac ②③	2	**438C805G11**
380 Vac ②④	2	**438C805G15**
440/480 Vac ②④	2	**438C805G10**
550/575 Vac ②④	2	**438C805G13**

Size 9

Line Voltage	Size 9 Style Number
110 Vdc	**5264C34G01** ⑤

Notes

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

XT Line

XTCERENC_

Replacement Coil—Frame C

Voltage	Coil Suffix	Catalog Number
110/50 120/60	**A**	**XTCERENCOILCA**
110–130 Vdc	**AD**	**XTCERENCOILCAD**
220/50 240/60	**B**	**XTCERENCOILCB**
200–240 Vdc	**BD**	**XTCERENCOILCBD**
415/50 480/60	**C**	**XTCERENCOILCC**
550/50 600/60	**D**	**XTCERENCOILCD**
208/60	**E**	**XTCERENCOILCE**
230/50	**F**	**XTCERENCOILCF**
190/50 220/60	**G**	**XTCERENCOILCG**
240/50 277/60	**H**	**XTCERENCOILCH**
380/50 440/60	**L**	**XTCERENCOILCL**
400/50	**N**	**XTCERENCOILCN**
380/60	**P**	**XTCERENCOILCP**
12/50 12/60	**R**	**XTCERENCOILCR**
12–14 Vdc	**RD**	**XTCERENCOILCRD**
24/50 24/60	**T**	**XTCERENCOILCT**
24–27 Vdc	**TD**	**XTCERENCOILCTD**
42/50 48/60	**W**	**XTCERENCOILCW**
48–60 Vdc	**WD**	**XTCERENCOILCWD**
48/50	**Y**	**XTCERENCOILCY**

Replacement Coil—Frame D

Voltage	Coil Suffix	Catalog Number
110/50 120/60	**A**	**XTCERENCOILDA**
110–130 Vdc	**AD**	**XTCERENCOILDAD**
220/50 240/60	**B**	**XTCERENCOILDB**
200–240 Vdc	**BD**	**XTCERENCOILDBD**
415/50 480/60	**C**	**XTCERENCOILDC**
550/50 600/60	**D**	**XTCERENCOILDD**
208/60	**E**	**XTCERENCOILDE**
230/50	**F**	**XTCERENCOILDF**
190/50 220/60	**G**	**XTCERENCOILDG**
240/50 277/60	**H**	**XTCERENCOILDH**
380/50 440/60	**L**	**XTCERENCOILDL**
400/50	**N**	**XTCERENCOILDN**
380/60	**P**	**XTCERENCOILDP**
12/50 12/60	**R**	**XTCERENCOILDR**
12–14 Vdc	**RD**	**XTCERENCOILDRD**
24/50 24/60	**T**	**XTCERENCOILDT**
24–27 Vdc	**TD**	**XTCERENCOILDTD**
42/50 48/60	**W**	**XTCERENCOILDW**
48–60 Vdc	**WD**	**XTCERENCOILDWD**
48/50	**Y**	**XTCERENCOILDY**

Replacement Coil—Frame F ①

Voltage	Coil Suffix	Catalog Number
110/50 120/60	**A**	**XTCERENCOILFA**
110–130 Vdc	**AD**	**XTCERENCOILFAD**
220/50 240/60	**B**	**XTCERENCOILFB**
200–240 Vdc	**BD**	**XTCERENCOILFBD**
415/50 480/60	**C**	**XTCERENCOILFC**
550/50 600/60	**D**	**XTCERENCOILFD**
208/60	**E**	**XTCERENCOILFE**
230/50	**F**	**XTCERENCOILFF**
190/50 220/60	**G**	**XTCERENCOILFG**
240/50 277/60	**H**	**XTCERENCOILFH**
380/50 440/60	**L**	**XTCERENCOILFL**
400/50	**N**	**XTCERENCOILFN**
380/60	**P**	**XTCERENCOILFP**
12/50 12/60	**R**	**XTCERENCOILFR**
24/50 24/60	**T**	**XTCERENCOILFT**
24–27 Vdc	**TD**	**XTCERENCOILFTD**
42/50 48/60	**W**	**XTCERENCOILFW**
48–60 Vdc	**WD**	**XTCERENCOILFWD**
48/50	**Y**	**XTCERENCOILFY**

Replacement Coil—Frame G ②

Voltage	Coil Suffix	Catalog Number
100–120V 50/60	**A**	**XTCERENCOILGA**
110–130 Vdc	**AD**	**XTCERENCOILGAD**
190–240V 50/60	**B**	**XTCERENCOILGB**
200–240 Vdc	**BD**	**XTCERENCOILGBD**
480–500V 50/60	**C**	**XTCERENCOILGC**
380–440V 50/60	**L**	**XTCERENCOILGL**
4/50 24/60	**T**	**XTCERENCOILGT**
24–27 Vdc	**TD**	**XTCERENCOILGTD**
42–48V 50/60	**W**	**XTCERENCOILGW**
48–60 Vdc	**WD**	**XTCERENCOILGWD**

Notes

① Frame F replacement coils can only be used with contactors having the following date codes: DC coils, 2706 or later; AC coils, 4706 or later.

② Frame G replacement coils can only be used with contactors having date codes of 2706 or later.

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Replacement Coil—Frame L ①

Voltage	Coil Suffix	Catalog Number
110–250 Vac/Vdc	**A**	**XTCERENCOILLA**
250–500V 40–60	**C**	**XTCERENCOILLC**
24–48 Vdc	**TD**	**XTCERENCOILLTD**
48–110 Vac/Vdc	**Y**	**XTCERENCOILLY**

Replacement Coil—Frame L, S-Series

Voltage	Coil Suffix	Catalog Number
110–120V 50/60 Hz	**A**	**XTCSRENCOILLA**
220–240V 50/60 Hz	**B**	**XTCSRENCOILLB**

Replacement Coil—Frame M ①

Voltage	Coil Suffix	Catalog Number
110–250 Vac/Vdc	**A**	**XTCERENCOILMA**
250–500V 40–60	**C**	**XTCERENCOILMC**
24–48 Vdc	**TD**	**XTCERENCOILMTD**
48–110 Vac/Vdc	**Y**	**XTCERENCOILMY**

Replacement Coil—Frame M, S-Series

Voltage	Coil Suffix	Catalog Number
110–120V 50/60 Hz	**A**	**XTCSRENCOILMA**
220–240V 50/60 Hz	**B**	**XTCSRENCOILMB**

Replacement Coil—Frame N ①

Voltage	Coil Suffix	Catalog Number
110–250 Vac/Vdc	**A**	**XTCERENCOILNA**
250–500V 40–60	**C**	**XTCERENCOILNC**
48–110 Vac/Vdc	**Y**	**XTCERENCOILNY**

Replacement Contact Kit

For Use with…	Catalog Number
XTCE040D–XTCE065D	**XTCERENCONTACTD**
XTCE185L–XTCE250L	**XTCERENCONTACTL**
XTCE300M–XTCE570M	**XTCERENCONTACTM**
XTCE085F–XTCE095F	**XTCERENCONTACTF**
XTCE115G–XTCE150G	**XTCERENCONTACTG**

Replacement Vacuum Tube Assembly

For Use with…	Catalog Number
XTCE580N	**XTCERENVACT580**
XTCE650N	**XTCERENVACT650**
XTCE750N	**XTCERENVACT750**
XTCE820N	**XTCERENVACT820**

Replacement Arc Chamber

For Use with…	Catalog Number
XTCE185L	**XTCERENARC185**
XTCE225L	**XTCERENARC225**
XTCE250L	**XTCERENARC250**
XTCE300M	**XTCERENARC300**
XTCE400M	**XTCERENARC400**
XTCE500M–XTCE570M	**XTCERENARC500**

Note

① Electronic modules including coils.

C30CN Lighting Contactors

Magnet Coils for the Base Contactor

Magnetic Coils

Magnetic Coils

Coil Voltage	Catalog Number
115–120V 60 Hz/110V 50 Hz	**9-3242-1**
230–240V 60 Hz/220V 50 Hz	**9-3242-2**
460–480V 60 Hz/440V 50 Hz	**9-3242-3**
575–600V 60 Hz/550V 50 Hz	**9-3242-4**
200–208V 60 Hz	**9-3242-5**
265–277V 60 Hz/240V 50 Hz	**9-3242-6**
24V 60 Hz/20V 50 Hz	**9-3242-7**
28V 60 Hz/24V 50 Hz	**9-3242-8**
347V 60 Hz	**9-3242-9**

CN35 Lighting Contactors

Renewal Parts for CN35 Lighting Contactors

Description		10A Series C1 Part No.	20A, 30A Series C1 Part No.	60A Series B1 Part No.	100A Part No.	200A Part No.	300A Series B1 Part No.
Contact Kits							
Two-pole		①	①	**6-65-7**	**6-43-5**	**6-44**	**6-45**
Three-pole		①	①	**6-65-8**	**6-43-6**	**6-44-2**	**6-45-2**
Four-pole		①	①	**6-65-15**	—	—	—
Five-pole		①	①	**6-65-16**	—	—	—
Magnet Coils	**Coil Suffix**						
120V 60 Hz or 110V 50 Hz	**A**	**9-2875-1**	**9-2876-1**	**9-2703-1**	**9-2756-1**	**9-1891-1**	**9-1891-1**
240V 60 Hz or 220V 50 Hz	**B**	**9-2875-2**	**9-2876-2**	**9-2703-2**	**9-2756-2**	**9-1891-2**	**9-1891-2**
480V 60 Hz or 440V 50 Hz	**C**	**9-2875-3**	**9-2876-3**	**9-2703-3**	**9-2756-3**	**9-1891-3**	**9-1891-3**
600V 60 Hz or 550V 50 Hz	**D**	**9-2875-4**	**9-2876-4**	**9-2703-4**	**9-2756-4**	**9-1891-4**	**9-1891-4**
208V 60 Hz	**E**	**9-2875-5**	**9-2876-5**	**9-2703-9**	**9-2756-5**	**9-1891-13**	**9-1891-13**
277V 60 Hz	**H**	**9-2875-12**	**9-2876-12**	**9-2703-7**	**9-2756-9**	**9-1891-26**	**9-1891-26**
208/240V 60Hz	**J**	**9-2875-37**	**9-2876-37**	—	—	—	—
240V 50Hz	**K**	**9-2875-11**	**9-2876-11**	**9-2703-14**	**9-2756-13**	**9-1891-20**	**9-1891-20**
380–415V 50 Hz	**L**	**9-2875-6**	**9-2876-6**	**9-2703-8**	—	—	—
380V 50 Hz	**L**	—	—	—	**9-2756-12**	**9-1891-14**	**9-1891-14**
415V 50 Hz	**M**	—	—	—	**9-2756-8**	**9-1891-21**	**9-1891-21**
550V 50 Hz	**N**	—	—	—	**9-2756-14**	**9-1891-8**	**9-1891-8**
24V 60 Hz–24V 50 Hz	**T**	**9-2875-36**	**9-2876-36**	—	—	—	—
24V 60 Hz	**T**	—	—	**9-2703-6**	**9-2756-6**	**9-1891-15**	**9-1891-15**
24V 50 Hz	**U**	**9-2875-36**	**9-2876-13**	**9-2703-12**	**9-2756-11**	**9-1891-16**	**9-1891-16**
32V 50 Hz	**V**	**9-2875-16**	**9-2876-16**	**9-2703-10**	**9-2756-10**	—	—
48V 60 Hz	**W**	**9-2875-8**	**9-2876-8**	**9-2703-11**	**9-2756-15**	—	—
48V 50 Hz	**Y**	**9-2875-9**	**9-2876-9**	**9-2703-13**	**9-2756-7**	**9-1891-18**	**9-1891-18**

Note

① Replace with complete contactor.

A202 Lighting Contactors

AC Coil Renewal Parts for A202—Magnetically Latched

Voltage	Hz	Two-, Three- and Four-Pole Part Number	Five-Pole Part Number
30 Ampere			
110/120	50/60	**7874A93G01**	**7874A89G01**
208/240		**7874A93G02**	**7874A89G02**
277		**7874A93G03**	**7874A89G03**
440/480		**7874A93G04**	**7874A89G04**
575		**7874A93G05**	**7874A89G05**

Voltage	Hz	Two- and Three-Pole Part Number	Four- and Five-Pole Part Number
60 Ampere			
110/120	50/60	**7874A93G01**	**7874A87G01**
208/240		**7874A93G02**	**7874A87G02**
277		**7874A93G03**	**7874A87G03**
440/480		**7874A93G04**	**7874A87G04**
575		**7874A93G05**	**7874A87G05**

Voltage	Hz	Two- and Three-Pole Part Number	Four- and Five-Pole Part Number
100 and 200 Ampere			
110/120	50/60	**7874A85G01**	**7874A83G01**
208/240		**7874A85G02**	**7874A83G02**
277		**7874A85G03**	**7874A83G03**
440/480		**7874A85G04**	**7874A83G04**
550/575		**7874A85G05**	**7874A83G05**

Terminals (Line and Load)

Two-Pole Part Number	Three-Pole Part Number	Four-Pole Part Number	Five-Pole Part Number
30 Ampere			
N/A	**N/A**	**N/A**	**N/A**
60 Ampere			
179C755G17	**179C755G16**	**179C755G17**	**179C755G16**
—	—	①	**179C755G17** ②
100 Ampere			
179C755G19	**179C755G18**	**179C755G19**	**179C755G18**
—	—	①	**179C755G19** ②
200 Ampere Model K Electrically Held			
179C755G28	**179C755G27**	**179C755G28**	**179C755G27**
—	—	①	**179C755G28** ②
200 Ampere Model J Magnetically Latched			
179C755G31	**179C755G30**	**179C755G31**	**179C755G30**
—	—	①	**179C755G31** ②

Other Accessories

Description	Size	Part Number
Control module (rectifier)	30–200A	**3915B98G01**

Arc boxes, upper base assemblies and cross bars are equivalent to the A201 series. Consult Eaton.

Contact kits are equivalent to the A201 Model J series, with the exception of the magnetically latched 200A unit. It uses catalog number 672B788G07 for the three-pole device. For other poles, consult Eaton.

Notes

① Order quantity of two for four-pole design.

② Group members for the five-pole terminal represent the combination of the two- and three-pole number.

Replacement Coils

Vacuum Contactor—Replacement Coils

Description	Suffix	Part Number
Size 4		
110/120 Vac, 50/60 Hz	**J**	**9085A57G01**
220/240 Vac, 50/60 Hz	**K**	**9085A57G02**
380/415 Vac, 50/60 Hz	**H**	**1D89221G07**
440/480 Vac, 50/60 Hz	**U**	**9085A57G03**
Size 5		
110/120 Vac, 50/60 Hz	**J**	**7874A09G01** ①
220/240 Vac, 50/60 Hz	**K**	**7874A09G04** ②
380/415 Vac, 50/60 Hz	**H**	**7874A09G10**
440/480 Vac, 50/60 Hz	**U**	**7874A09G05**
Size 6		
110/120 Vac, 50/60 Hz	**J**	**7874A24G01** ①
220/240 Vac, 50/60 Hz	**K**	**7874A24G02** ②
380/415 Vac, 50/60 Hz	**H**	**7874A24G07**
440/480 Vac, 50/60 Hz	**U**	**7874A24G03**

Notes

① 125 Vdc can be directly applied to the Size 5 and 6 coil rated for 120V/60 Hz AC (cannot be applied to Size 4).

② 250 Vdc can be directly applied to the Size 5 and 6 coil rated for 240V/60 Hz AC (cannot be applied to Size 4).

NEMA Freedom Combination Starter

IEC Contactors and Starter

Lighting Contactor

S801+ and S811+ Combination Soft Starters

Control Power Transformer Kit

Standards and Certifications

UL File Numbers

The enclosed control products from Eaton's electrical sector are covered by three UL file numbers. Where UL or UL 508 is listed under the Standards and Certifications headers in this catalog or labeled on the products, the following UL file numbers apply. For example: ECN0521AAA is covered by UL file number E19224, while ECS92S1EAF is covered by UL file number E175513.

- E19224—Non-Combination Motor Controllers
- E176513—Combination Motor Controllers
- E195239—Power Conversion Equipment

ABS Type Approval

The Eaton enclosed control products have been tested and approved for American Bureau of Shipping standards. Both a Product Quality Assurance and Design Assessment approvals must be met in order to comply to ABS Type Approval. The following are Eaton's ABS file numbers for products:

- QA-1597-X—Product Quality Assurance
- 63-HS385744-PDA—Design Assessment

cUL Label

The Eaton enclosed control products have been tested and approved for Canadian UL where cUL is listed in this catalog under the Standards and Certifications headers or labeled on the products. The cUL label also indicates that the appropriate **CSA Standard** has been investigated. The following numbers demonstrate cUL approval:

- E19224—Non-Combination Motor Controllers
- E176513—Combination Motor Controllers
- E195239—Power Conversion Equipment

CE Label

Where the CE label is applied or certification is mentioned, Eaton has undergone the proper testing to meet or exceed CE requirements. As CE is a self-administered certification, no CE file number is available. However, several products have undergone KEMA KEUR testing, a third party CE-certification testing agency. KEMA reference numbers are available upon request.

Other standards and certifications may apply as noted in product literature. For additional reference information, refer to the Consulting Application Guide or your local Eaton distributor.

Component Standards and Certifications

The standards and certifications described in this catalog are for enclosed control products from Eaton's electrical sector. Testing has been done on the complete enclosed assembly in order to achieve these certifications. For additional information on the standards and certifications for the components used in Eaton's enclosed control, please refer to the Eaton Control Products Catalog.

Short-Circuit Testing

Interrupting ratings—All Eaton enclosed control products have been designed and tested for short-circuit interrupting capabilities.

Interrupting Ratings

- **Fusible**—Sizes 1–5 suitable for use on a circuit capable of delivering not more than 100,000 rms symmetrical amperes. 600V maximum where a Class R fuse clip kit is properly installed and Class R fuses are used. If Class R fuses are not used, the switch should not be installed on circuits capable of delivering more than 10,000 rms symmetrical amperes. Size 6 is limited to 18,000 and Size 7 is limited to 30,000 rms symmetrical amperes
- **Circuit breaker HMCPE**—Sizes 1–3 controllers are suitable for use on circuits capable of delivering not more than 100,000 rms symmetrical amperes at 480V maximum; for 600V applications not more than 25,000 rms symmetrical amperes
- **HVAC panel and ECP irrigation pump panel**—suitable for use on circuits capable of delivering not more than 10,000 rms symmetrical amperes at 600V maximum

Freedom Line

Furnish as indicated Eaton Class ECN combination starters manufactured by Eaton's electrical sector or approved equal. All starters shall be UL listed and conform to the latest standards and the National Electric Code.

Non-Reversing

Description	Catalog Number
Disconnect switch	**ECN16**
Disconnect switch with control power transformer	**ECN18**
Circuit breaker (HMCPE/HMCP)	**ECN22**
Circuit breaker with control power transformer	**ECN24**

Reversing

Description	Catalog Number
Disconnect switch	**ECN17**
Circuit breaker (HMCPE/HMCP)	**ECN23**

General

- All motor starters shall be NEMA Sizes 0–9. Each starter shall have one NO auxiliary contact, or as scheduled
- Overload relays shall be ambient compensated bimetallic type with interchangeable heaters, calibrated for 1.0 and 1.15 service factor motors. Electrically isolated NO and NC contacts shall be provided on the relay. Visual trip indication shall be standard. A test trip feature shall be provided for ease of troubleshooting and shall be conveniently operable without removing components or the motor starter
- Control circuit transformers, where specified, shall be encapsulated. Primary and secondary fusing shall be provided. Unless otherwise specified, the secondary shall be 120 Vac. 50 VA is minimum
- Pilot devices, where specified, shall be oiltight and mounted in the flange. Pilot lights shall be transformer type for longer lamp life. Pilot device legend plates shall be engraved aluminum
- Solid-state overloads (SSOL), when specified, shall be heaterless and be capable of selecting Class 10, 20 or 30 protection with manual or automatic reset options. Full-load current settings shall be dial-adjustable

Enclosure

- Enclosures shall be Type 1, 3R, 4, 4X, 7/9 or 12, as scheduled
- The operating mechanism shall be mounted on the flange and shall have positive, non-teasing ON/OFF action. The handle shall be color-coded: red for ON and black for OFF
- The operating handle shall have a means to lock the handle in the OFF position with a minimum of three standard padlocks having 1/4 in diameter shackles
- The enclosure sub-panel shall be easily removed without disturbing the operating mechanism on Sizes 0–3
- Enclosures shall have means for locking the cover

Short-Circuit Protective Device

Disconnect Switch

- Where specified, a disconnect switch with double break, rotary blades and quick make/quick break action shall be provided
- A line shield with test probe holes for inspection shall be provided. The shield shall be removable
- The switch shall have readily visible blades in the open (OFF) position
- The fusible disconnect switch (through 100A) shall have built-in fuse pullers to make it easier to remove fuses

Circuit Breaker

- Where specified, an adjustable instantaneous trip, magnetic only circuit breaker shall be provided
- A manual push-to-trip button shall be provided to exercise the trip unit

Short-Circuit Rating

- Fusible disconnect switches shall be UL listed for 100,000 amperes available when Class R fuses are used
- Combination starters with adjustable instantaneous trip, magnetic only circuit breakers shall be UL listed for 100,000 amperes available through 480 Vac
- Note specific short-circuit ratings for the ECP irrigation pump panel and the HVAC panel on **Page V10-T17-2**

Technical Data

All data is based on a standard contactor with no auxiliary devices and a 120 Vac or 24 Vdc magnet coil. Coil data has a ±5% range depending on the application, therefore specific data may vary.

Coil Data Notes

P.U. Pickup time is the average time taken from closing of the coil circuit to main contact touch

D.O. Dropout time is the average time taken from opening of the coil circuit to main contact separation

Cold Coil data with a cold coil

Hot Coil data with a hot coil

Specifications—Sizes 00–3

	Contactor Catalog Number/Size				
Description	**CN15A NEMA Size 00**	**CN15B NEMA Size 0**	**CN15D NEMA Size 1**	**CN15G NEMA Size 2**	**CN15K NEMA Size 3**
Configuration					
Number of poles	2, 3, 4	2, 3	2, 3, 4, 5	2, 3, 4, 5	2, 3
Auxiliary contacts, standard	Fourth pole NO (1)	Side NO (1)	Side NO (1)	Side NO (1)	Side NO (1)
Add-on auxiliary contacts	Top (4) or side (4)	Top (4) or side (3)	Top (4) or side (3)	Top (4) or side (3)	Left side (4) or right side (3)
Frame size	45 mm	45 mm	65 mm	65 mm	90 mm
Maximum voltage rating	600 Vac	600 Vac	600 Vac	600 Vac	600 Vac
Continuous ampere ratings (I)	9A	18A	27A	45A	90A
Maximum Horsepower (hp)					
Single-phase					
115V	1/3	1	2	3	7-1/2
230V	1	2	3	7-1/2	15
Three-phase					
200V	1-1/2	3	7-1/2	10	25
230V	1-1/2	3	7-1/2	15	30
460V	2	5	10	25	50
575V	2	5	10	25	50
AC Magnet Coil Data					
Pickup volts—cold	74%	74%	74%	74%	72%
Pickup volts—hot	78%	78%	78%	78%	76%
Pickup voltamperes	80	100	230	230	390
Pickup watts	49	65	95	95	112
Sealed voltamperes	7.5	10	28	28	49.8
Sealed watts	2.4	3.1	7.8	7.8	13
Dropout volts—cold	45%	45%	49%	49%	50%
Dropout volts—hot	46%	46%	50%	50%	52%
Maximum operation rate—ops/hour	12,000	12,000	12,000	12,000	7,200
Pickup time (ms)	12	12	20	20	14
Dropout time (ms)	12	12	14	14	11
Coil operating range % of rated voltage	–15% to +10%	–15% to +10%	–15% to +10%	–15% to +10%	–15% to +10%
DC magnet coil data	For DC magnet coils (and coil data), see Accessories, **Tab14**.				
Operating temperature	–20° to 65°C	–20° to 65°C	–20° to 65°C	–20° to 65°C	–20° to 65°C
Maximum operating altitude (ft)	6000	6000	6000	6000	6000
Mechanical life	20,000,000	20,000,000	10,000,000	10,000,000	6,000,000

Specifications—Sizes 00–3, continued

Description	Contactor Catalog Number/Size CN15A NEMA Size 00	CN15B NEMA Size 0	CN15D NEMA Size 1	CN15G NEMA Size 2	CN15K NEMA Size 3
Electrical Life (480V/60 Hz)					
AC-3	4,000,000	3,000,000	5,000,000	3,500,000	1,700,000
AC-4	90,000	85,000	200,000	62,000	80,000
Wire Range					
Power terminals	12–16 stranded, 12–14 solid Cu	8–16 stranded, 10–14 solid Cu	8–14 stranded or solid Cu	2–14 (upper) and/or 6–14 (lower) stranded or solid Cu	1/0–14 Cu
Control terminals	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu
Power terminal torque line and load—lb-in	7	15	20	40 (14–8 AWG) 45 (6–4 AWG) 50 (3 AWG)	35 (14–10 AWG) 40 (8 AWG) 45 (6–4 AWG) 50 (3–1/0 AWG)
Auxiliary contact rating	A600, P300	A600, P300	A600, P300	A600, P300	A600, P300

Specifications—Sizes 4–8

Description	Contactor Catalog Number/Size CN15N NEMA Size 4	CN15S NEMA Size 5	CN15T NEMA Size 6	CN15U NEMA Size 7	CN15V NEMA Size 8
Configuration					
Number of poles	2, 3	2, 3	3	3	3
Auxiliary contacts, standard	Side NO (1)	Side NO (1)	Top left 2NO/2NC (1)	Top left 2NO/2NC (1)	Side 2NO/NC (1)
Add-on auxiliary contacts	Left side (3) or right side (4)	Left side (3) or right side (4)	Top right 2NO/2NC (1)	Top right 2NO/2NC (1)	NO/NC (2)
Frame size	180 mm	180 mm	280 mm	280 mm	334 mm
Maximum voltage rating	600 Vac	600 Vac	600 Vac	600 Vac	600 Vac
Continuous ampere ratings (I)	135A	270A	540A	810A	1215A
Maximum Horsepower (hp)					
Single-phase					
115V	—	—	—	—	—
230V	—	—	—	—	—
Three-phase					
200V	40	75	150	200	400
230V	50	100	200	300	450
460V	100	200	400	600	900
575V	100	200	400	600	900
AC Magnet Coil Data					
Pickup volts—cold	72.5%	75%	75%	75%	75%
Pickup volts—hot	76%	77%	75%	75%	75%
Pickup voltamperes	1158	1158	1600	1600	2450
Pickup watts	240	240	1345	1345	2060
Sealed voltamperes	100	100	25	25	75
Sealed watts	27.2	27.2	22	22	60

Specifications—Sizes 4–8, continued

Description	Contactor Catalog Number/Size CN15N NEMA Size 4	CN15S NEMA Size 5	CN15T NEMA Size 6	CN15U NEMA Size 7	CN15V NEMA Size 8
AC Magnet Coil Data, continued					
Dropout volts—cold	54%	63%	①	①	①
Dropout volts—hot	56%	64%	①	①	①
Maximum operation rate—ops/hour	2,400	2,400	N/A	N/A	N/A
Pickup time (ms)	28	25	105	105	70
Dropout time (ms)	14	13	200	200	50
Coil operating range % of rated voltage	–15% to +10%	–15% to +10%	–15% to +10%	–15% to +10%	–15% to +10%
DC magnet coil data	For DC magnet coils (and coil data), see Accessories, **Tab 15**				
Operating temperature	–20° to 65°C	–20° to 65°C	–20° to 65°C	–20° to 65°C	–20° to 65°C
Maximum operating altitude (ft)	6,000	6,000	6,000	6,000	6,000
Mechanical life	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000
Electrical Life (480V/60 Hz)					
AC-3	800,000	500,000	590,000	450,000	420,000
AC-4	70,000	34,000	7,400	5,000	4,200
Wire Range					
Power terminals	Open—3/0–8 Cu, Enclosed— 250 kcmil–6 Cu/Al	750 kcmil—2 or (2) 250 kcmil–3/0 Cu/Al	(2) 750 kcmil–3/0 Cu/Al	(3) 750 kcmil– 3/0 Cu/Al	(4) 750 kcmil–1/0 Cu/Al
Control terminals	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu
Power terminal torque line and load—lb-in	200	550	550	550	500
Auxiliary contact rating	A600, P300	A600, P300	A600, P300	A600, P300	A600, P300

Note

① 20–30% of rated coil voltage.

Electrical Life—AC-3 and AC-4 Utilization Categories

Life Load Curves

Eaton's Freedom Series NEMA contactors have been designed and manufactured for superior life performance in any worldwide application. All testing has been based on requirements as found in NEMA and UL standards and conducted by Eaton. Actual application life may vary depending on environmental conditions and application duty cycle.

Utilization Categories

AC-1—Non-inductive or slightly inductive loads, such as resistance furnaces and heating.

AC-2—Starting of slip-ring motors.

AC-3—Squirrel cage motors; starting, switching off motors during running.

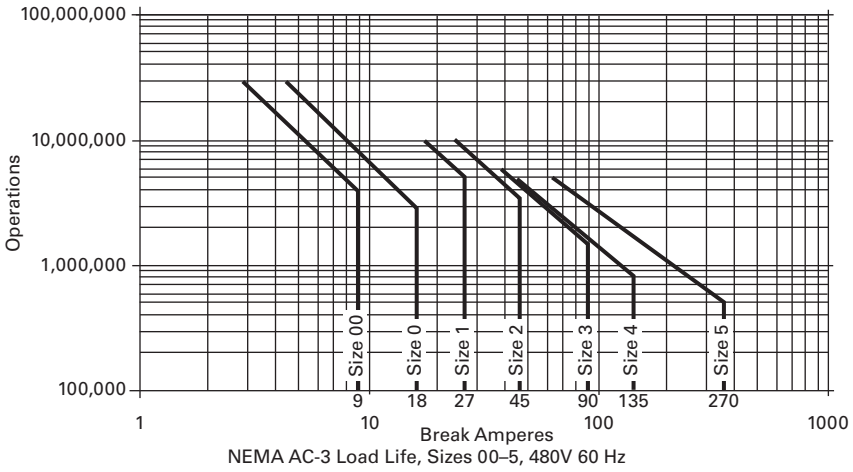
AC-4—Squirrel cage motors; starting, plugging, inching or jogging.

Note: AC-3 tests are conducted at rated device currents and AC-4 tests are conducted at six times rated device currents. All tests have been run at 460V, 60 Hz.

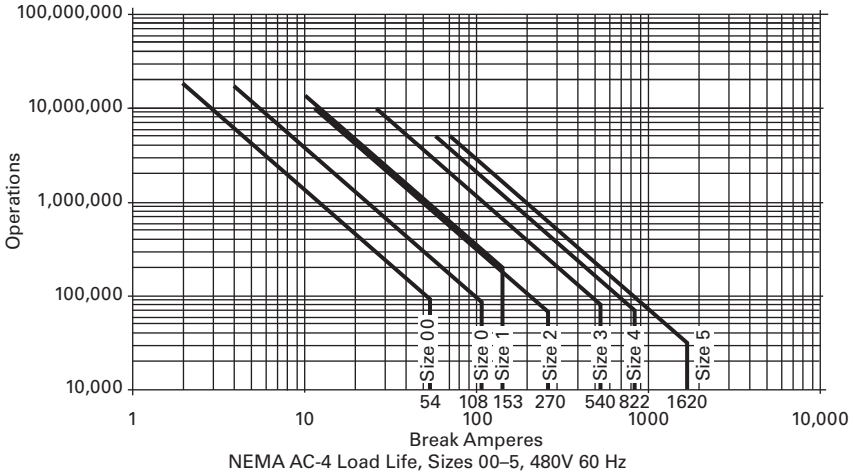
Contactor Choice

- Decide what utilization category your application is and choose the appropriate curve
- Locate the intersection of the life-load curve of the appropriate contactor with the applications operational current (I_e), as found on the horizontal axis
- Read the estimated contact life along the vertical axis in number of operational cycles

AC-3 and AC-4 Utilization Categories



NEMA AC-3 Load Life, Sizes 00–5, 480V 60 Hz

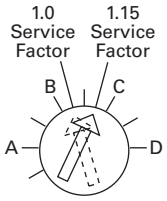


NEMA AC-4 Load Life, Sizes 00–5, 480V 60 Hz

17

C306 Overload Relay Setting

FLA Dial Adjustment



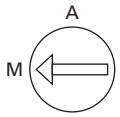
Example of 12.0 FLA Setting for Heater Pack Number H2011B Showing Position for 1.0 or 1.15 Service Factor Motors

For motors having a 1.15 service factor, rotate the FLA adjustment dial to correspond to the motor's FLA rating.

Estimate the dial position when the motor FLA falls between two letter values as shown in the example.

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

Manual/Automatic Reset



Example of Setting for Manual Reset

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

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

Test for Trip Indication

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

Warning—To provide continued protection against fire or shock hazard, the complete overload relay must be replaced if burnout of the heater element occurs.

Heater Pack Selection

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

Time Current Characteristics

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

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

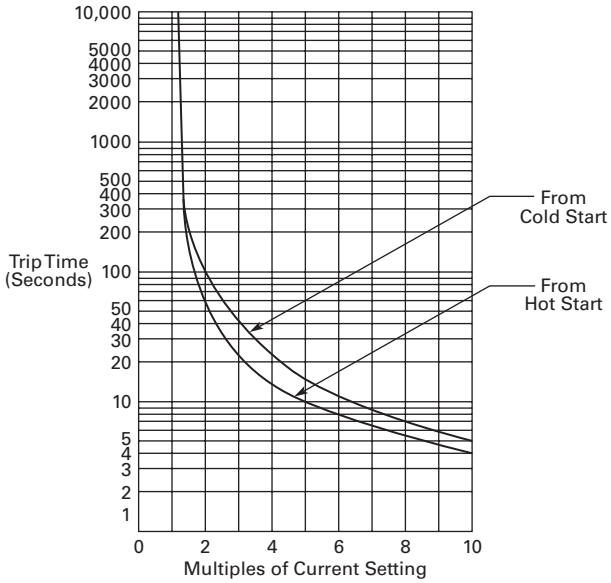
"Current rating" is defined as the minimum current at which the relay will trip. Per NEC, an overload must ultimately trip at 125% of FLA current (heater) setting for a 1.15 service factor motor and 115% FLA for a 1.0 service factor motor.

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

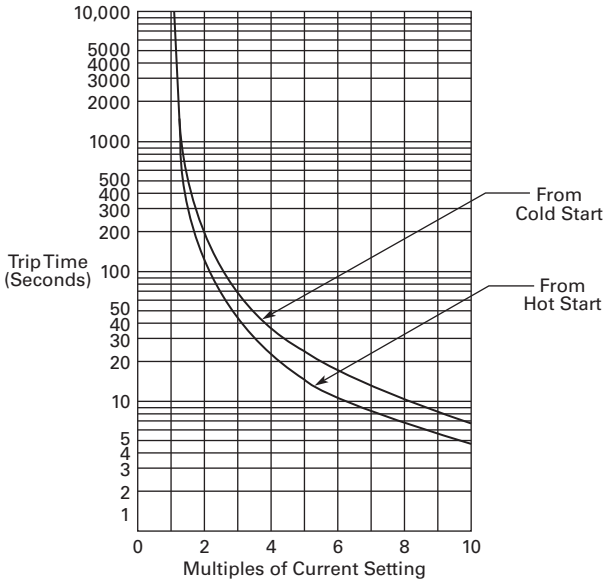
Example: 600% of current rating is defined as 750% (600 x 1.25) of FLA current (heater) setting for a 1.15 service factor motor. A 10A heater setting must trip in 20 seconds or less at 75A motor current for a Class 20 relay.

17

Class 10 and Class 20 Trip Curves



Class 10 Overload Relay 25°C Open Rating



Class 20 Overload Relay 25°C Open Rating

Relays

Wire (75°C) Sizes—AWG or kcmil—NEMA Sizes 00–2—Open

NEMA Size	Cu Only
Power Terminals—Line	
00	12–16 stranded, 12–14 solid
0	8–16 stranded, 10–14 solid
1	8–14 stranded or solid
2	3–14 (upper) and/or 6–14 (lower) stranded or solid ①

Power Terminals—Load—Cu Only (Stranded or Solid)		
Terminal	**Wire Size**	**Catalog Number**
32A	14–6 AWG	**C306DN3B**
75A	14–2 AWG	**C306GN3B**
Control Terminals—Cu Only		
12–16 AWG stranded, 12–14 AWG solid		

Wire (75°C) Sizes—AWG or kcmil—NEMA Sizes 3–8—Open

NEMA Size	Wire Size
Power Terminals—Line and Load	
3	1/0–14 Cu/Al
4	Open—3/0–8 Cu
	Enclosed—250 kcmil—6 Cu/Al
5	750 kcmil—2 or (2) 250 kcmil—3/0 Cu/Al
6–7	(2) 750 kcmil—3/0 Cu/Al
8	(2) 750 kcmil—1/0 Cu/Al
Control Terminals—Cu Only	
12–16 AWG stranded, 12–14 AWG solid	

Overload Relay UL/CSA Contact Ratings Control Circuit ②

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

Notes

① Two compartment box lug.

② DC ratings cover Freedom Series coils only.

③ Maximum horsepower where operation is interrupted more than 5 times per minute or more than 10 times in a 10 minute period. NEMA standard ICS 2-1993 table 2-4-3.

Power Terminal Torque Line and Load Terminals

Terminal	Torque in lb-in	Catalog Number
32A	20	**C306DT3B**
75A	35 (14–10 AWG)	**C306GT3B**
	40 (8 AWG)	
	45 (6–4 AWG)	
	50 (3–2 AWG)	
105A	120 (3/16)	**C306KN3** (Socket head screw)
	200 (1/4)	
	250 (5/16)	
144A	120 (3/16)	**C306NN3** (Socket head screw)
	200 (1/4)	
	250 (5/16)	
	35 (14–10 AWG)	**C306NN3** (Slotted head screw)
	40 (8 AWG)	
	45 (6–4 AWG)	
	50 (3–1/0 AWG)	

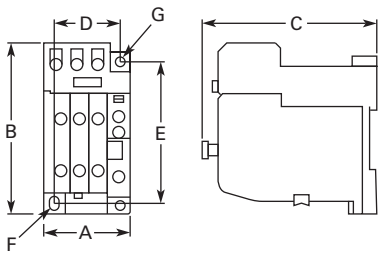
Plugging and Jogging Service Horsepower Ratings ③

NEMA Size	200V	230V	460V	575V
00	—	1/2	1/2	1/2
0	1-1/2	1-1/2	2	2
1	3	3	5	5
2	7-1/2	10	15	15
3	15	20	30	30
4	25	30	60	60
5	60	75	150	150
6	125	150	300	300

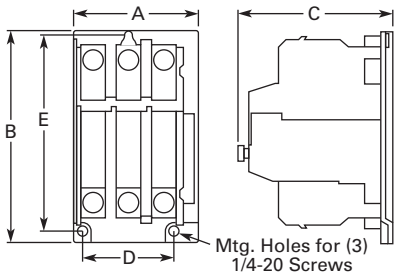
Dimensions and Weights

Approximate Dimensions in Inches (mm)

C306 Standalone Overload Relays



32A and 75A Sizes
C306DT3B and C306GT3B



105A and 144A Sizes
C306KN3 and C306NN3

Ampere Size	Wide A	High B	Deep C	Mounting D	E	F (Slot)	G (Hole)	Ship. Wt. Lbs (kg)
32A	1.77 (45.0)	4.13 (104.9)	3.69 (93.7)	1.36 (34.5)	3.74 (95.0)	0.18 x 0.30 (4.6 x 7.6)	0.18 (4.6) dia.	0.8 (0.4)
75A	2.54 (64.5)	4.69 (119.1)	3.74 (95.0)	2.00 (50.8)	3.45 (87.6)	0.22 x 0.26 (5.6 x 6.6)	0.21 (5.3) dia.	1.4 (0.6)
105 and 144A	4.00 (101.6)	7.17 (182.1)	4.91 (124.7)	3.00 (76.2)	6.62 (168.1)	—	—	4.0 (1.8)

XT Line

Furnish as indicated Eaton Class ECX combination starters manufactured by Eaton's electrical sector or approved equal. All starters shall be UL listed and conform to the latest IEC Standards and the National Electric Code.

Non-Reversing

Description	Catalog Number
Disconnect switch	**ECX19**
Circuit breaker (HMCP)	**ECX25**

Reversing

Description	Catalog Number
Disconnect switch	**ECX20**
Circuit breaker (HMCP)	**ECX26**

General

- All motor starters shall be IEC Sizes A–N (60 hp at 460V). Each starter shall have one NO auxiliary contact, or as scheduled
- Overload relays shall be ambient compensated bimetallic type with interchangeable heaters, calibrated for 1.0 and 1.15 service factor motors. Electrically isolated NO and NC contacts shall be provided on the relay. Visual trip indication shall be standard. A test trip feature shall be provided for ease of troubleshooting and shall be conveniently operable without removing components or the motor starter. Overload relays may also be solid-state
- Control circuit transformers, where specified, shall be encapsulated. Primary and secondary fusing shall be provided. Unless otherwise specified, the secondary shall be 120 Vac. 50 VA is minimum
- Pilot devices, where specified, shall be oiltight and mounted in the flange. Pilot lights shall be transformer type for longer lamp life. Pilot device legend plates shall be engraved aluminum

Enclosure

- Enclosures shall be Type 1, 3R, 4, 4X, 7/9 or 12, as scheduled
- The operating mechanism shall be mounted on the flange and shall have positive, non-teasing ON/OFF action. The handle shall be color-coded: red for ON and black for OFF
- The operating handle shall have a means to lock the handle in the OFF position with a minimum of three standard padlocks having 1/4 in diameter shackles
- The enclosure sub-panel shall be easily removed without disturbing the operating mechanism
- Enclosures shall have means for locking the cover

Short-Circuit Protective Device

Disconnect Switch

- Where specified, a disconnect switch with double break, rotary blades and quick make/quick break action shall be provided
- A line shield with test probe holes for inspection shall be provided. The shield shall be removable
- The switch shall have readily visible blades in the open (OFF) position
- The fusible disconnect switch (through 100A) shall have built-in fuse pullers to make it easier to remove fuses

Circuit Breaker

- Where specified, an adjustable instantaneous trip, magnetic only circuit breaker shall be provided
- A manual push-to-trip button shall be provided to exercise the trip unit

Short-Circuit Rating

- Fusible disconnect switches shall be UL listed for 100,000 amperes available when Class R fuses are used
- Combination starters with adjustable instantaneous trip, magnetic only circuit breakers shall be UL listed for 100,000 amperes available through 480 Vac

Technical Data

Instructional Leaflets

Instructional Leaflets

Publication Number	Description
Pub51210	7–15A, B Frame XTCE, XTCEC and XTCF Contactors and Accessories (inside of packaging)
Pub51211	18–32A, C Frame XTCE and XTCEC Contactors and Accessories (inside of packaging)
Pub51221	XTOB, D Frame Overload Relays (inside of packaging)
Pub51222	XTOB, B–C Frame Overload Relays (inside of packaging)
Pub51237	7–12A, B Frame XTCE Contactors and Auxiliary Contacts
Pub51232	18–32A, C Frame XTCE Contactors and Auxiliary Contacts
Pub51216	40–65A, D Frame XTCE Contactors and Auxiliary Contacts
Pub51203	185–500A, L–M Frame XTCE Contactors and Auxiliary Contacts
Pub51215	S-Series 185–500A, L–M Frame XTCE Contactors and Auxiliary Contacts
Pub51204	580–1000A, N Frame XTCE Contactors and Auxiliary Contacts
Pub51209	1400–2000A, P–R Frame XTCE Contactors and Auxiliary Contacts
Pub51213	7–150A, B–G Frame XTAE non-reversing and XTAR Reversing Starters
Pub51217	XTCEXFA and XTCEXSA Front and Side-mount Auxiliary Contacts from 40–150A, D–G Frame XTCE Contactors
Pub51212	XTCEXML Mechanical Interlock for 7–150A, B–G Frame XTCE Contactors
Pub51214	XTCEXRL Reversing Link Kits for 18–32A, C Frame XTCE Contactors
Pub51218	XTCEXTL Lug Kits for 500–820A, M–N Frame XTCE Contactors
Pub51219	XTCEXRLB and XTCEXSDLB Reversing and Star-Delta (Wye-Delta) Link Kits for 7–12A, B Frame XTCE Contactors
Pub51205	Accessories for 185–500A, L–M Frame XTCE Contactors
Pub51207	Replacement DC Coils
Pub51213	Renewal Parts—Coils for 18–32A, C Frame XTCE Contactors
Pub51186	Renewal Parts—Coils for 40–65A, D Frame XTCE Contactors

Coil Data

Frame B–D

Coil Data—Frame B–D

Description	XTCE007B	XTCE009B	XTCE012B, XTCF020B	XTCE015B	XTCE018C	XTCE025C	XTCE032C	XTCE040D	XTCE050D	XTCE065D
Voltage Tolerance										
Pickup (x U_c)										
AC operated	0.8–1.1	0.8–1.1	0.8–1.1	0.8–1.1	0.8–1.1	0.8–1.1	0.8–1.1	0.8–1.1	0.8–1.1	0.8–1.1
DC operated	0.8–1.1 ①	0.8–1.1 ①	0.8–1.1 ①	0.8–1.1 ①	0.7–1.2 ②	0.7–1.2 ②	0.7–1.2 ②	0.7–1.2 ②	0.7–1.2 ②	0.7–1.2 ②
Dropout (x U_c)										
AC operated	0.3–0.6	0.3–0.6	0.3–0.6	0.3–0.6	0.3–0.6	0.3–0.6	0.3–0.6	0.3–0.6	0.3–0.6	0.3–0.6
DC operated	0.15–0.6	0.15–0.6	0.15–0.6	0.15–0.6	0.15–0.6	0.15–0.6	0.15–0.6	0.15–0.6	0.15–0.6	0.15–0.6
Power Consumption of the Coil at Cold State and 1.0 x U_c										
AC operated										
Single-voltage coil 50 Hz										
Pickup VA	24	24	24	24	52	52	52	149	149	149
Pickup W	19	19	19	19	40	40	40	80	80	80
Sealing VA	3.4	3.4	3.4	3.4	7.1	7.1	7.1	16	16	16
Sealing W	1.2	1.2	1.2	1.2	2.1	2.1	2.1	4.3	4.3	4.3
Single-voltage coil 60 Hz										
Pickup VA	30	30	30	30	67	67	67	178	178	178
Pickup W	23	23	23	23	50	50	50	117	117	117
Sealing VA	4.4	4.4	4.4	4.4	8.7	8.7	8.7	19	19	19
Sealing W	1.4	1.4	1.4	1.4	2.6	2.6	2.6	5.3	5.3	5.3
50/60 Hz										
Pickup VA	27	27	27	27	62	62	62	168	168	168
	25	25	25	25	58	58	58	154	154	154
Pickup W	22	22	22	22	48	48	48	120	120	120
	21	21	21	21	43	43	43	43	43	43
Sealing VA	4.2	4.2	4.2	4.2	9.1	9.1	9.1	22	22	22
	3.3	3.3	3.3	3.3	6.5	6.5	6.5	14	14	14
Sealing W	1.4	1.4	1.4	1.4	2.5	2.5	2.5	5.3	5.3	5.3
	1.2	1.2	1.2	1.2	2	2	2	4.3	4.3	4.3
DC operated										
Pickup W	3	3	4.5	4.5	12 at 24V	12 at 24V	12 at 24V	24 at 24V	24 at 24V	24 at 24V
Sealing W	3	3	4.5	4.5	0.5 at 24V	0.5 at 24V	0.5 at 24V	0.5 at 24V	0.5 at 24V	0.5 at 24V
Duty factor (%DF)	100	100	100	100	100	100	100	100	100	100
Switching Time at 100% U_c (Approximate Values)										
Main contact										
AC operated										
Closing delay (ms)	<21	<21	<21	<21	<22	<22	<22	<18	<18	<18
Opening delay (ms)	<18	<18	<18	<18	<14	<14	<14	<13	<13	<13
DC operated										
Closing delay (ms)	<31	<31	<31	<31	<47	<47	<47	<54	<54	<54
Opening delay (ms)	<12	<12	<12	<12	<30	<30	<30	<24	<24	<24
Arcing time (ms)	10	10	10	10	10	10	10	10	10	10
Electromagnetic Compatibility (EMC)										
Emitted interference	To EN-60947-1									
Noise immunity	To EN-60947-1									

Notes

① 0.7–1.3 without additional auxiliary contact modules and ambient temperature +40°C (104°F).

② Coil suffix TD: U_{min} 24 Vdc/U_{max} 27 Vdc.
Coil suffix WD: U_{min} 48 Vdc/U_{max} 60 Vdc.
Coil suffix AD: U_{min} 110 Vdc/U_{max} 130 Vdc.
Coil suffix BD: U_{min} 200 Vdc/U_{max} 240 Vdc.
Example:
U_c = 0.7 x U_{min}—1.2 x U_{max}
U_c = 0.7 x 24V—1.2 x 27 Vdc

Frame F–G

Coil Data—Frame F–G

	XTCE80F	XTCE95F	XTCE115G	XTCE150G
Voltage Tolerance				
Pickup (x U_c)				
AC operated	0.8–1.1	0.8–1.1	0.8–1.1	0.8–1.1
DC operated	0.7–1.2 ①	0.7–1.2 ①	0.7–1.2 ①	0.7–1.2 ①
Dropout (x U_c)				
AC operated	0.3–0.6	0.3–0.6	0.25–0.6	0.25–0.6
DC operated	0.15–0.6	0.15–0.6	0.15–0.6	0.15–0.6
Power Consumption of the Coil at Cold State and 1.0 x U_c				
AC operated				
Single-voltage coil 50 Hz				
Pickup VA	310	310	180	180
Pickup W	165	165	130	130
Sealing VA	26	26	3.1	3.1
Sealing W	5.8	5.8	2.1	2.1
Single-voltage coil 60 Hz				
Pickup VA	345	345	170	170
Pickup W	190	190	130	130
Sealing VA	30	30	3.1	3.1
Sealing W	7.1	7.1	2.1	2.1
50/60 Hz				
Pickup VA	372	328	170	170
Pickup W	190	190	130	130
Sealing VA	37.1	22.6	3.1	3.1
Sealing W	7.5	6.1	2.1	2.1
DC operated				
Pickup W	90 at 24V	90 at 24V	149 at 24V	149 at 24V
Sealing W	1.3 at 24V	1.3 at 24V	2.1 at 24V	2.1 at 24V
Duty factor (%DF)	100	100	100	100
Switching Time at 100% U_c (Approximate Values)				
Main contact				
AC operated				
Closing delay (ms)	<20	<20	<33	<33
Opening delay (ms)	<14	<14	<41	<41
DC operated				
Closing delay (ms)	<45	<45	<35	<35
Opening delay (ms)	<34	<34	<30	<30
Arcing time (ms)	15	15	15	15
Permissible residual current with actuation of A1–A2 by the electronics (with 0 signal) (mA)	≤1	≤1	≤1	≤1
Electromagnetic Compatibility (EMC)				
Emitted interference	To EN60947-1			
Noise immunity	To EN60947-1			

Note

① At 24V: 0.7–1.3 without additional auxiliary contact modules and ambient temperature +40°C (104°F).

Frame L–R

Coil Data—Frame L–R

Description	XTCE185L	XTCE225L, XTCE250L	XTCE300M, XTCE400M	XTCE500M
Voltage Tolerance				
Pickup (x U_c)				
XTCE185L–XTCEC20R	0.7 x U_{cmin}—1.15 x U_{cmax}			
XTCS185L–XTCS500M	0.85 x U_{cmin}—1.1 x U_{cmax}			
Dropout (x U_c)				
XTCE185L–XTCEC20R	0.2 x U_{cmin}—0.6 x U_{cmax}			
XTCS185L–XTCS500M	0.2 x U_{cmin}—0.4 x U_{cmax}			
Power Consumption of the Coil at Cold State and 1.0 x U_c				
XTCE185L–XTCEC20R				
Pickup VA	250 ①	250 ①	450 ①	450 ①
Pickup W	200	200	350	350
Sealing VA	4.3	4.3	4.3	4.3
Sealing W	3.3	3.3	3.3	3.3
XTCS185L–XTCS500M				
Pickup VA	360	360	715	715
Pickup W	325	325	645	645
Sealing VA	4.3	4.3	4.3	4.3
Sealing W	3.3	3.3	3.3	3.3
Duty Factor (%DF)	100	100	100	100
Switching Time at 100% Main Contact U_c (Approximate Values)				
XTCE185L–XTCEC20R				
Closing delay (ms)				
Opening delay (ms)	<100	<100	<80	<80
XTCS185L–XTCS500M	<80	<80	<80	<80
Closing delay (ms)	<50	<50	<50	<50
Opening delay (ms)	<40	<40	<40	<40
Reaction in Threshold and Sealing State Transition Range (XTCE185L–XTCEC20R)				
Voltage interruptions				
(0–0.2 x U_{cmin}) ≤10 ms	Time is bridged successfully			
(0–0.2 x U_{cmin}) >10 ms	Dropout of the contactor			
Voltage dips				
(0.2–0.6 x U_{cmin}) ≤12 ms	Time is bridged successfully			
(0.2–0.6 x U_{cmin}) >12 ms	Dropout of the contactor			
(0.6–0.7 x U_{cmin})	Contactor remains switched on			
Excess voltage				
(1.15–1.3 x U_{cmax})	Contactor remains switched on			
(>1.3 x U_{cmax}) ≤3s	Contactor remains switched on			
(>1.3 x U_{cmax}) >3s	Dropout of the contactor			
Pickup phase				
(0–0.7 x U_{cmin})	Contactor does not switch on			
(0.7 x U_{cmin} –1.15 x U_{cmax})	Contactor switches on with certainty			
(>1.15 x U_{cmax})	Contactor switches on with certainty			
Permissible contact resistance (of the external command device with actuation of A11), ohms	≤500	≤500	≤500	≤500
Permissible residual current (with actuation of A11 by the electronics with 0 signal)	≤1	≤1	≤1	≤1
SPS signal level (A3–A4) to IEC/EN 61131-2 (Type 2)				
High	15V	15V	15V	15V
Low	5V	5V	5V	5V
Electromagnetic compatibility (EMC)	This product is designed for operation in industrial environments. Usage in domestic areas can cause radio frequency interference (RFI). Noise suppression measures must be provided for the additional interference.			

Note

① Control transformer with U_k ≤6%.

Coil Data—Frame L–R, continued

Description	XTCE580N	XTCE750N, XTCE820N	XTCEC10N	XTCEC14P	XTCEC20R
Voltage Tolerance					
Pickup (x U_c)					
XTCE185L–XTCEC20R	0.7 x U_{cmin}—1.15 x U_{cmax}				
XTCS185L–XTCS500M	0.85 x U_{cmin}—1.1 x U_{cmax}				
Dropout (x U_c)					
XTCE185L–XTCEC20R	0.2 x U_{cmin}—0.6 x U_{cmax}				
XTCS185L–XTCS500M	0.2 x U_{cmin}—0.4 x U_{cmax}				
Power Consumption of the Coil at Cold State and 1.0 x U_c					
XTCE185L–XTCEC20R					
Pickup VA	800 ①	800 ①	800 ①	800 ①	1600 ①
Pickup W	700	700	700	700	1400
Sealing VA	7.5	7.5	7.5	7.5	7.5
Sealing W	6.5	6.5	6.5	6.5	6.5
XTCS185L–XTCS500M					
Pickup VA	—	—	—	—	—
Pickup W	—	—	—	—	—
Sealing VA	—	—	—	—	—
Sealing W	—	—	—	—	—
Duty Factor (%DF)	100	100	100	100	100
Switching Time at 100% Main Contact U_c (Approximate Values)					
XTCE185L–XTCEC20R					
Closing delay (ms)	<70	<70	<70	<70	<70
Opening delay (ms)	<70	<70	<70	<70	<70
XTCS185L–XTCS500M					
Closing delay (ms)	—	—	—	—	—
Opening delay (ms)	—	—	—	—	—
Reaction in Threshold and Sealing State Transition Range (XTCE185L–XTCEC20R)					
Voltage interruptions					
(0–0.2 x U_{cmin}) ≤10 ms	Time is bridged successfully				
(0–0.2 x U_{cmin}) >10 ms	Dropout of the contactor				
Voltage dips					
(0.2–0.6 x U_{cmin}) ≤12 ms	Time is bridged successfully				
(0.6–0.7 x U_{cmin})	Dropout of the contactor				
(0.6–0.7 x U_{cmin})	Contactor remains switched on				
Excess voltage					
(1.15–1.3 x U_{cmax})	Contactor remains switched on				
(>1.3 x U_{cmax}) ≤3s	Contactor remains switched on				
(>1.3 x U_{cmax}) >3s	Dropout of the contactor				
Pickup phase					
(0–0.7 x U_{cmin})	Contactor does not switch on				
(0.7 x U_{cmin} –1.15 x U_{cmax})	Contactor switches on with certainty				
(>1.15 x U_{cmax})	Contactor switches on with certainty				
Permissible contact resistance (of the external command device with actuation of A11), ohms	≤500	≤500	≤500	≤500	≤500
Permissible residual current (with actuation of A11 by the electronics with 0 signal)	≤1	≤1	≤1	≤1	≤1
SPS signal level (A3–A4) to IEC/EN 61131-2 (Type 2)					
High	15V	15V	15V	15V	15V
Low	5V	5V	5V	5V	5V
Electromagnetic compatibility (EMC)	This product is designed for operation in industrial environments. Usage in domestic areas can cause radio frequency interference (RFI). Noise suppression measures must be provided for the additional interference.				

Note

① Control transformer with U_k ≤7%.

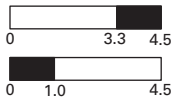
Contactor Contact Travel Diagrams

The diagrams indicate the closing and travel of the contacts of the contactors and auxiliary contacts at no-load. Tolerances are not taken into consideration.

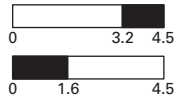
Contactor Contact Travel Diagrams

Frame B

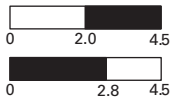
XTCE 7–15A, XTCF—AC



XTCEXSAC11

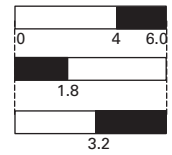


XTCEXF...LC_

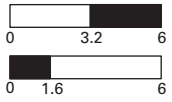


Frame C

XTCE 15–32A



XTCEXSAC11, XTCEXF...C–



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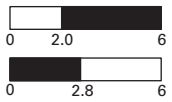
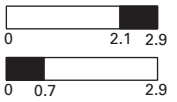
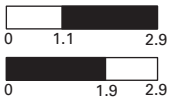


XTCE 7–9A—DC



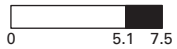
XTCEXSAC11

XTCEXF...LC_

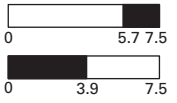


Frame D

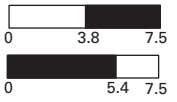
XTCE 40–65A



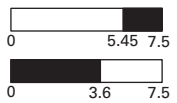
XTCEXF...G_



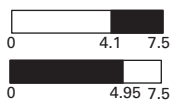
XTCEXF...LG_



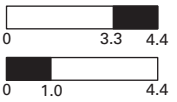
XTCEXS...N_



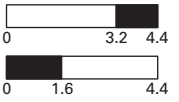
XTCEXSBLN11



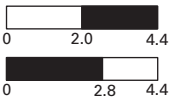
XTCE 12–15A, XTCF—DC



XTCEXSAC11

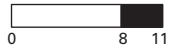


XTCEXF...LC_

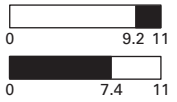


Frame F and G

XTCE 80–150A



XTCEXF...G–



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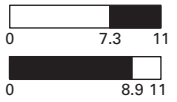
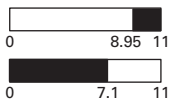
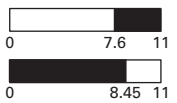


XTCEXS...N_



XTCEXSBLN11



Auxiliary Contacts

Auxiliary Contacts Technical Data and Specifications

Description	XTCE007B_– XTCE032C	XTCEXFAC_ XTCEXFATC_	XTCEXFCC_ XTCEXSCC_	XTCEXFAG_	XTCEXSBLN_ XTCEXSBN_ XTCEXSBNC_ XTCEXSCN_ XTCEXSCNC_
Interlocked opposing contacts with an auxiliary contact module (to IEC 60947-5 -1 Annex L)	—	Yes	Yes	Yes	Yes
Break contact (not late-break contact) suitable as a mirror contact (to IEC/EN 60947-4 -1 Annex F)	XTCE007B_– XTCE032C	XTCE007B_– XTCE032C	XTCE007B_– XTCE032C	XTCE040D_– XTCE065D_	XTCE040D_– XTCE065D_ XTCE185L_– XTCEC10N_
Rated impulse withstand voltage, (U_{imp}) Vac	6000	6000	6000	6000	6000
Overvoltage category/pollution degree	III/3	III/3	III/3	III/3	III/3
Rated insulation voltage, (U_i) Vac	690	690	690	690	690
Rated operational voltage, (U_e) Vac	500	500	500	500	500
Safe isolation to VDE 0106 Part 101 and Part 101(A) in Vac					
Between coil and auxiliary contacts	400	400	400	440	440
Between the auxiliary contacts	400	400	400	440	440
Rated operational current, I_e					
AC-15					
230V	6A	6A	6A	6A	6A
380/415V	4A	3A	4A	4A	4A
500V	1.5A	—	1.5A	1.5A	1.5A
DC-3 L/R ≤5 ms ①					
24V	10A	10A	10A	10A	10A
60V	6A	6A	6A	6A	6A
110V	3A	3A	3A	3A	3A
220V	1A	1A	1A	1A	1A
Conventional thermal current, I_{th}	16A	16A	16A ②	10A	10A
Control circuit reliability (at U_e = 24 Vdc, U_{min} = 17 V, I_{min} = 5.4 mA)	$<10^{-8}$, < one failure at 100 million operations				
Component lifespan, operations x 10^6 at U_e = 230V, AC-15, 3A	1.3	1.3	1.3	1.3	1.3
Short-circuit rating without welding ③					
Maximum fuse, gG/gL	10A	10A	10A	16A	16A

Notes

① Making and breaking conditions to DC-13, time L/R contact as stated.
② Conventional thermal current (I_{th}) of XTCEXSCC_ is 10A.
③ See fuses overlay for time/current characteristic (on request).

Parallel Link Technical Data and Specifications

Description	XTCEXPLKB	XTECXPLKC	XTCEXPLKD	XTCEXPLKG	XTCEXPLK185
Terminal capacity					
Solid (mm^2)	1–16	16	16	—	—
Flexible with ferrule (mm^2)	1 x (0.5–25) 2 x (0.5–16)	1 x (16–35)	1 x (16–120)	—	—
Stranded (mm^2)	1 x (0.5–25) 2 x (0.5–16)	1 x (16–50)	1 x (16–120)	1 x (35–300) 2 x (35–120)	—
Flat conductor— number of segments x width x thickness (mm)	6 x 9 x 0.8	—	—	2 x (11 x 21 x 1)	1 x (6 x 16 x 0.8) 2 x (20 x 32 x 0.5) 2 x (11 x 21 x 1)
Tightening torque (Nm)	4	4	14	—	—
Tools					
Pozidriv screwdriver	Size 2	Size 2	—	—	—
Hexagon socket head spanner—SW (mm)	—	—	5	6	—
Conventional thermal current					
Three-pole (I_{th}) A	60	100	180	400	—
Four-pole (I_{th}) A	60	—	—	—	—

Cable Terminal Block, Flat Cable Terminal Technical Data and Specifications

Description	XTCEXTLA225	XTCEXTLA400	XTCEXPLK185	XTCEXTFB650	XTCEXTFB820
Terminal capacity					
Stranded (mm^2)	1 x (16–185) 2 x (16–150)	1 x (120–300) 2 x (70–240)	—	—	—
Stranded (AWG)	1 x (6–350 kcmil) 2 x (6–300 kcmil)	1 x (1/0–600 kcmil) 2 x (1/0–500 kcmil)	—	—	—
Flat conductor— number of segments x width x thickness (mm)	1 x (3 x 9 x 0.8) 2 x (10 x 16 x 0.8)	1 x (10 x 16 x 0.8) 2 x (20 x 24 x 0.5) 2 x (11 x 21 x 1)	1 x (6 x 16 x 0.8) 2 x (20 x 32 x 0.5) 2 x (11 x 21 x 1)	1 x (6 x 16 x 0.8) 2 x (20 x 32 x 0.5) 2 x (11 x 21 x 1)	1 x (6 x 16 x 0.8) 2 x (10 x 40 x 1) 2 x (20 x 40 x 0.5)

AC Ratings—AC-1 Operation

Description	XTCE007B	XTCE009B	XTCE012B	XTCE015B	XTCE018C	XTCE025C	XTCE032C
Conventional free air thermal current, three-pole, 50–60 Hz							
Open							
at 40°C (I_{th})	22A	22A	22A	22A	40A	45A	45A
at 50°C (I_{th})	21A	21A	21A	21A	38A	43A	43A
at 55°C (I_{th})	21A	21A	21A	21A	37A	42A	42A
at 60°C (I_{th})	20A	20A	20A	20A	35A	40A	40A
Enclosed	18A	18A	18A	18A	32A	36A	36A
Conventional free air thermal current, single-pole (I_{th})							
Open	50A	50A	50A	50A	88A	100A	100A
Enclosed	45A	45A	45A	45A	80A	90A	90A

AC Ratings—AC-3 Operation

Description	XTCE007B	XTCE009B	XTCE012B	XTCE015B	XTCE018C	XTCE025C	XTCE032C
Rated operational current, 50/60 Hz ① (I_e) in amperes							
220/230V	7	9	12	15.5	18	25	32
240V	7	9	12	15.5	18	25	32
380/400V	7	9	12	15.5	18	25	32
415V	7	9	12	15.5	18	25	32
440V	7	9	12	15.5	18	25	32
500V	5	7	10	12.5	18	25	32
660/690V	4	5	7	9	12	15	18
1000V	—	—	—	—	—	—	—
Rated power (P) in kilowatts							
220/230V	2.2	2.5	3.5	4	5	7.5	10
240V	2.2	3	4	4.6	5.5	8.5	11
380/400V	3	4	5.5	7.5	7.5	11	15
415V	4	5.5	7	8	10	14.5	19
440V	4.5	5.5	7.5	8.4	10.5	15.5	20
500V	3.5	4.5	7	7.5	12	17.5	23
660/690V	3.5	4.5	6.5	7	11	14	17
1000V	—	—	—	—	—	—	—

Note

① At maximum permissible ambient temperature.

AC Ratings—AC-4 Operation

Description	XTCE007B	XTCE009B	XTCE012B	XTCE015B	XTCE018C	XTCE025C	XTCE032C
Rated operational current, 50/60 Hz ① (I_e) in amperes							
220/230V	5	6	7	7	10	13	15
240V	5	6	7	7	10	13	15
380/400V	5	6	7	7	10	13	15
415V	5	6	7	7	10	13	15
440V	5	6	7	7	10	13	15
500V	4.5	5	6	6	1	13	1
660/690V	4	4.5	5	5	8	10	12
1000V	—	—	—	—	—	—	—
Rated power (P) in kilowatts							
220/230V	1	1.5	2	2	2.5	3.5	4
240V	1.5	1.6	2.2	2.2	3	4	4.5
380/400V	2.2	2.5	3	3	4.5	6	7
415V	2.3	2.8	3.4	3.4	5	6.5	7.5
440V	2.4	3	3.6	3.6	5.5	7	8
500V	2.5	2.8	3.5	3.5	6	8	9
660/690V	2.9	3.6	4.4	4.4	6.5	8.5	10
1000V	—	—	—	—	—	—	—

Note

① Example—
The transformer has a nominal current of 10A with an inrush current of 18 times the nominal current. So, the contactor must have an AC-3 current of 18/6 x 10A = 30A. Using an XTCE032C (32A AC-3) contactor is recommended.

AC Ratings—AC-6A Operation

Description	XTCE007B	XTCE009B	XTCE012B	XTCE015B	XTCE018C	XTCE025C	XTCE032C
Transformer loads	Values are application specific	Values are application specific	Values are application specific	Values are application specific	Values are application specific	Values are application specific	Values are application specific
Calculation is I_e AC-3 = X / 6 * I_e transformer where X is the inrush current of the transformer and I_e transformer is the nominal current. ①							

AC Ratings—AC-6B Operation

Description	XTCE007B	XTCE009B	XTCE012B	XTCE015B	XTCE018C	XTCE025C	XTCE032C
Capacitor loads Individual compensation rated operational current I_e of three-phase capacitors in amperes							
Up to 525V	See **Volume 5—Motor Control and Protection**, CA08100006E, Tab 27 for capacitor ratings						
690V	See **Volume 5—Motor Control and Protection**, CA08100006E, Tab 27 for capacitor ratings						
Maximum inrush current peak (x I_e)	30	30	30	30	30	30	30
Component lifesaving (operations)	—	—	—	—	—	—	—
Maximum operating frequency (ops/hr)	—	—	—	—	—	—	—

AC Ratings—AC-1 Operation

Description	XTCE040D	XTCE050D	XTCE065D	XTCE072D	XTCE080F	XTCE095F	XTCE115G	XTCE150G	XTCE170G
Conventional free air thermal current, three-pole, 50–60 Hz									
Open									
at 40°C (I_{th})	60A	80A	98A	98A	110A	130A	160A	190A	275A ②
at 50°C (I_{th})	57A	71A	88A	88A	98A	125A	142A	180A	200A
at 55°C (I_{th})	55A	68A	83A	83A	94A	115A	135A	170A	190A
at 60°C (I_{th})	50A	65A	80A	80A	90A	110A	130A	160A	185A
Enclosed	45A	58A	72A	72A	80A	100A	115A	144A	166A
Conventional free air thermal current, single-pole (I_{th})									
Open	125A	162A	200A	200A	225A	275A	325A	400A	460A
Enclosed	112A	145A	180A	180A	200A	250A	285A	360A	415A

Notes

① Example—
The transformer has a nominal current of 10A with an inrush current of 18 times the nominal current. So, the contactor must have an AC-3 current of 18/6 x 10A = 30A. Using an XTCE032C (32A AC-3) contactor is recommended.

② For 225–275A, use 2X 70 mm^2 wire.

③ At maximum permissible ambient temperature.

AC Ratings—AC-3 Operation

Description	XTCE040D	XTCE050D	XTCE065D	XTCE072D	XTCE080F	XTCE095F	XTCE115G	XTCE150G	XTCE170G
Rated operational current, 50/60 Hz ① (I_e) in amperes									
220/230V	40	50	65	72	80	95	115	150	170
240V	40	50	65	72	80	95	115	150	170
380/400V	40	50	65	7	80	95	115	150	170
415V	40	50	65	72	80	95	115	150	170
440V	40	50	65	72	80	95	115	15	170
500V	40	50	65	72	80	95	115	150	170
660/690	25	32	37	37	65	80	93	100	150
1000V	—	—	—	—	—	—	—	—	—
Rated power (P) in kilowatts									
220/230V	12.5	15.5	20	22	25	30	37	48	52
240V	13.5	17	22	35	27.5	34	40	52	57
380/400V	18.5	22	30	37	37	45	55	75	90
415V	24	30	39	41	43	57	70	91	100
440V	25	32	41	44	51	60	75	95	105
500V	28	36	47	45	58	70	85	110	120
660/690V	23	30	35	35	63	75	90	96	140
1000V	—	—	—	—	—	—	—	—	—

AC Ratings—AC-4 Operation

Description	XTCE040D	XTCE050D	XTCE065D	XTCE072D	XTCE080F	XTCE095F	XTCE115G	XTCE150G	XTCE170G
Rated operational current, 50/60 Hz ① (I_e) in amperes									
220/230V	18	21	25	25	40	50	55	65	65
240V	18	21	25	25	40	50	55	65	65
380/400V	18	21	25	25	40	50	55	65	65
415V	18	21	25	25	40	50	55	65	65
440V	18	21	25	25	40	50	55	65	65
500V	18	21	25	25	40	50	55	65	65
660/690V	14	17	20	20	40	50	45	50	50
1000V	—	—	—	—	—	—	—	—	—
Rated power (P) in kilowatts									
220/230V	5	6	7	7	12	16	17	20	20
240V	5.5	6.5	7.5	7.5	13	17	19	22	22
380/400V	9	10	12	12	20	26	28	33	33
415V	9.5	11	13	13	24	30	33	39	39
440V	10	12	14	14	25	32	35	41	41
500V	11	13	16	16	29	36	40	47	47
660/690V	12	14	17	17	26	35	43	48	48
1000V	—	—	—	—	—	—	—	—	—

Note

① At maximum permissible ambient temperature.

AC Ratings—AC6-A Operation

Description	XTCE040D	XTCE050D	XTCE065D	XTCE072D	XTCE080F	XTCE095F	XTCE115G	XTCE150G	XTCE170G
Transformer loads	Values are application specific	Values are application specific	Values are application specific	Values are application specific	Values are application specific	Values are application specific	Values are application specific	Values are application specific	Values are application specific
Calculation is I_e AC-3 = X / 6 * I_e transformer where X is the inrush current of the transformer and I_e transformer is the nominal current. ①									

AC Ratings—AC6-B Operation

Description	XTCE040D	XTCE050D	XTCE065D	XTCE072D	XTCE080F	XTCE095F	XTCE115G	XTCE150G	XTCE170G
Capacitor loads Individual compensation rated operational current I_e of three-phase capacitors in amperes									
Up to 525V	See **Volume 5—Motor Control and Protection**, CA08100006E, Tab 27 for capacitor ratings								
690V	See **Volume 5—Motor Control and Protection**, CA08100006E, Tab 27 for capacitor ratings								
Maximum inrush current peak (x I_e)	30	30	30	30	30	30	30	30	30
Component lifesaving (operations)	—	—	—	—	—	—	—	—	—
Maximum operating frequency (ops/hr)	—	—	—	—	—	—	—	—	—

AC Ratings—AC-1 Operation

Description	XTCE185L	XTCE225L	XTCE250L	XTCE300M	XTCE400M	XTCE500M	XTCE570M	XTCE580N
Conventional free air thermal current, three-pole, 50–60 Hz								
at 40°C (I_{th})	337	386	429	490	612	857	857	980
at 50°C (I_{th})	301	345	383	438	548	767	767	876
at 55°C (I_{th})	287	329	366	418	522	731	731	836
at 60°C (I_{th})	275	315	350	400	500	700	700	800
Conventional free air thermal current, single-pole (I_{th})	685	785	875	1000	1250	1750	1750	2000

Note

① Example—The transformer has a nominal current of 10A with an inrush current of 18 times the nominal current. So, the contactor must have an AC-3 current of 18/6 x 10A = 30A. Using an XTCE032C (32A AC-3) contactor is recommended.

AC Ratings—AC-3 Operation

Description	XTCE185L	XTCE225L	XTCE250L	XTCE300M	XTCE400M	XTCE500M	XTCE570M	XTCE580N
Rated operational current, 50/60 Hz ① (I_e) in amperes								
220/230V	185	225	250	300	400	500	580	580
240V	185	225	250	300	400	500	580	580
380/400V	185	225	250	300	400	500	580	580
415V	185	225	250	300	400	500	580	580
440V	185	225	250	300	400	500	580	580
500V	185	225	250	300	400	500	580	580
660/690V	185	225	250	300	400	500	580	580
1000V	76	76	76	95	95	95	95	435
Rated power (P) in kilowatts								
220/230V	55	70	75	90	125	155	185	185
240V	62	75	85	100	132	170	200	200
380/400V	90	110	132	160	200	250	315	315
415V	110	132	148	180	240	300	348	348
440V	115	142	157	190	255	345	370	370
500V	132	160	180	21	290	360	420	420
660/690V	175	215	240	286	344	344	344	560
1000V	108	108	108	132	132	132	132	600

AC Ratings—AC-4 Operation

Description	XTCE185L	XTCE225L	XTCE250L	XTCE300M	XTCE400M	XTCE500M	XTCE570M	XTCE580N
Rated operational current, 50/60 Hz ① (I_e) in amperes								
220/230V	136	164	200	240	296	360	360	456
240V	136	164	200	240	296	360	360	456
380/400V	136	164	200	240	296	360	360	456
415V	136	164	200	240	296	360	360	456
440V	136	164	200	240	296	360	360	456
500V	136	164	200	240	296	360	360	456
660/690V	136	164	200	240	296	360	360	456
1000V	76	76	76	95	95	95	95	348
Rated power (P) in kilowatts								
220/230V	41	51	62	75	92	112	112	143
240V	45	54	68	82	101	122	122	156
380/400V	75	90	110	132	160	200	200	250
415V	80	96	117	142	176	216	216	274
440V	85	102	125	151	186	229	229	290
500V	96	116	143	172	214	260	260	330
660/690V	127	155	189	229	283	344	344	440
1000V	108	108	108	132	132	132	132	509

Note

① At maximum permissible ambient temperature.

AC Ratings—AC-6A Operation

Description	XTCE185L	XTCE225L	XTCE250L	XTCE300M	XTCE400M	XTCE500M	XTCE570M	XTCE580N
Transformer loads	Values are application specific	Values are application specific	Values are application specific	Values are application specific	Values are application specific	Values are application specific	Values are application specific	Values are application specific
	Calculation is I_e AC-3 = X / 6 * I_e transformer where X is the inrush current of the transformer and I_e transformer is the nominal current. ①							

AC Ratings—AC-6B Operation

Description	XTCE185L	XTCE225L	XTCE250L	XTCE300M	XTCE400M	XTCE500M	XTCE570M	XTCE580N
Capacitor loads Individual compensation rated operational current I_e of three-phase capacitors in amperes								
Up to 525V	220	220	220	307	307	307	307	463
690V	133	133	133	177	177	177	177	265
Maximum inrush current peak (x I_e)	30	30	30	30	30	30	30	30
Component lifesaving (operations)	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Maximum operating frequency (ops/hr)	200	200	200	200	200	200	200	200

AC Ratings—AC-1 Operation

Description	XTCE650N	XTCE750N	XTCE820N	XTCEC10N	XTCEC14P	XTCEC16R	XTCEC20R
Conventional free air thermal current, three-pole, 50–60 Hz							
at 40°C (I_{th})	1041	1102	1225	1225	1714 ②	2200	2450 ②
at 50°C (I_{th})	931	986	1095	1095	1533 ②	1970	2190 ②
at 55°C (I_{th})	888	940	1044	1044	1462 ②	1800	2089 ②
at 60°C (I_{th})	850	900	1000	1000	1400 ②	1800	2000 ②
Conventional free air thermal current, single-pole (I_{th})	2125	2250	2500	2500	3500	4500	5000

Notes

① Example—The transformer has a nominal current of 10A with an inrush current of 18 times the nominal current. So, the contactor must have an AC-3 current of 18/6 x 10A = 30A. Using an XTCE032C (32A AC-3) contactor is recommended.

② Up to 690V.

AC Ratings—AC-3 Operation

Description	XTCE650N	XTCE750N	XTCE820N	XTCEC10N	XTCEC14P	XTCEC16R	XTCEC20R
Rated operational current, 50/60 Hz ① (I_e) in amperes							
220/230V	650	750	820	1000	—	1600	—
240V	650	750	820	1000	—	1600	—
380/400V	650	750	820	1000	—	1600	—
415V	650	750	820	1000	—	1600	—
440V	650	750	820	1000	—	1600	—
500V	650	750	820	1000	—	1600	—
660/690V	650	750	820	1000	—	1600	—
1000V	435	580	580	700	—	—	—
Rated power (P) in kilowatts							
220/230V	205	240	260	315	—	500	—
240V	225	260	285	340	—	550	—
380/400V	355	400	450	560	—	900	—
415V	390	455	500	610	—	930	—
440V	420	480	525	650	—	1000	—
500V	470	550	600	730	—	1180	—
660/690V	630	720	750	1000	—	1600	—
1000V	600	800	800	1000	—	—	—

AC Ratings—AC-4 Operation

Description	XTCE650N	XTCE750N	XTCE820N	XTCEC10N	XTCEC14P	XTCEC16R	XTCEC20R
Rated operational current, 50/60 Hz ① (I_e) in amperes							
220/230V	512	576	656	800	—	1280	—
240V	512	576	656	800	—	1280	—
380/400V	512	576	656	800	—	1280	—
415V	512	576	656	800	—	1280	—
440V	512	576	656	800	—	1280	—
500V	512	576	656	800	—	1280	—
660/690V	512	576	656	800	—	1280	—
1000V	348	464	464	700	—	—	—
Rated power (P) in kilowatts							
220/230V	161	181	209	260	—	30	—
240V	176	200	228	280	—	450	—
380/400V	280	315	355	450	—	750	—
415V	307	346	394	490	—	770	—
440V	32	367	41	520	—	830	—
500V	370	417	474	590	—	940	—
660/690V	494	556	633	780	—	1300	—
1000V	509	678	678	1000	—	—	—

Note

① At maximum permissible ambient temperature.

AC Ratings—AC-6A Operation

Description	XTCE650N	XTCE750N	XTCE820N	XTCEC10N	XTCEC14P	XTCEC16R	XTCEC20R
Transformer loads	Values are application specific	Values are application specific	Values are application specific	Values are application specific	Values are application specific	Values are application specific	Values are application specific
	Calculation is I_e AC-3 = X / 6 * I_e transformer where X is the inrush current of the transformer and I_e transformer is the nominal current. ①						

AC Ratings—AC-6B Operation

Description	XTCE650N	XTCE750N	XTCE820N	XTCEC10N	XTCEC14P	XTCEC16R	XTCEC20R
Capacitor loads Individual compensation rated operational current I_e of three-phase capacitors in amperes							
Up to 525V	463	463	463	463	—	—	—
690V	265	265	265	265	—	—	—
Maximum inrush current peak (x I_e)	30	30	30	30	—	—	—
Component lifesaving (operations)	100,000	100,000	100,000	100,000	—	—	—
Maximum operating frequency (ops/hr)	200	200	200	200	—	—	—

AC Ratings—Four-Pole—AC-1 Operation

Description	XTCF020B	XTCF032C	XTCF045C	XTCF063D	XTCF080D	XTCF125G	XTCF160G	XTCF200G
Conventional free air thermal current, three-pole, 50-60 Hz								
Open (amps)								
at 40°C (I_{th})	22	32	45	3	80	125	160	200
at 50°C (I_{th})	21	30	41	60	76	116	15	188
at 60°C (I_{th})	20	28	39	54	69	108	138	172
Enclosed (amps)	18	27	36	50	64	100	128	160
Conventional free air thermal current, single-pole								
Open (amps)	60	84	117	162	207	325	415	516
Enclosed (amps)	54	76	105	146	186	292	373	464

AC Ratings—Four-Pole—AC-3 Operation

Description	XTCF020B	XTCF032C	XTCF045C	XTCF063D	XTCF080D	XTCF125G	XTCF160G	XTCF200G
Rated operational current, 50/60 Hz (I_e) in amperes								
220/230V	12	18	25	40	50	80	95	115
240V	12	18	25	40	50	80	95	115
380/400V	12	18	25	40	50	80	95	115
415V	12	18	25	40	50	80	95	115
440V	12	18	25	40	50	80	95	115
500V	10	18	25	40	50	80	95	115
660/690V	7	12	15	25	32	65	80	93
Rated power, (P) in kilowatts								
220/230V	3.5	5	7.5	2.5	15.5	25	30	37
240V	4	5.5	8.5	13.5	17	27.5	33	40
380/400V	5.5	7.5	11	18.5	22	37	45	55
415V	7	10	14.5	24	30	48	57	70
440V	7.5	10.5	15.5	25	32	51	60	75
500V	47	12	17.5	28	36	58	70	85
660/690V	6.5	11	14	23	30	63	75	90

Note

① Example—The transformer has a nominal current of 10A with an inrush current of 18 times the nominal current. So, the contactor must have an AC-3 current of 18/6 x 10A = 30A. Using an XTCE032C (32A AC-3) contactor is recommended.

DC Ratings—DC-1

Description Rated Operation Current {1} (I_e) in Amperes	XTCE007B	XTCE009B	XTCE012B, XTCF020B	XTCE015B	XTCE018C	XTCE025C	XTCE032C	XTCE040D	XTCE050D	XTCE065D
60V	20	20	20	20	35	40	40	50	60	72
110V	20	20	20	20	35	40	40	50	50	72
220V	15	15	15	15	3	4	40	45	45	65
440V	1	1.3	1.3	1.3	2.9	2.9	2.9	2.9	2.9	2.9

	XTCE080F	XTCE095F	XTCE115G	XTCE150G	XTCE185L	XTCE225L	XTCE250L	XTCE300M	XTCE400M	XTCE500M
60V	110	110	160	160	300	300	300	400	400	400
110V	110	110	16	160	300	300	300	400	400	400
220V	70	70	90	90	300	300	300	400	400	400
440V	4.5	4.5	4.5	4.5	11	11	11	11	11	11

	XTCE580N	XTCE650N	XTCE750N	XTCE820N	XTCEC10N	XTCEC14P	XTCEC20R	XTCEC16R
60V	—	—	—	—	—	—	—	—
110V	—	—	—	—	—	—	—	—
220V	—	—	—	—	—	—	—	—
440V	—	—	—	—	—	—	—	—

DC Ratings—DC-3

Description Rated Operation Current {1} (I_e) in Amperes	XTCE007B	XTCE009B	XTCE012B	XTCE015B	XTCE018C	XTCE025C	XTCE032C	XTCE040D	XTCE050D	XTCE065D
60V	20	20	20	20	35	35	40	50	60	72
110V	20	20	20	20	35	35	40	50	50	72
220V	1.5	1.5	1.5	1.5	10	10	25	25	25	35
440V	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.6	0.6	0.6

	XTCE080F	XTCE095F	XTCE115G	XTCE150G	XTCE185L	XTCE225L	XTCE250L	XTCE300M	XTCE400M	XTCE500M
60V	110	110	160	160	300	300	300	400	400	400
110V	110	110	160	160	300	300	300	400	400	400
220V	35	35	40	40	300	300	300	400	400	400
440V	1	1	1	1	—	—	—	—	—	—

	XTCE580N	XTCE650N	XTCE750N	XTCE820N	XTCEC10N	XTCEC14P	XTCEC20R	XTCEC16R
60V	—	—	—	—	—	—	—	—
110V	—	—	—	—	—	—	—	—
220V	—	—	—	—	—	—	—	—
440V	—	—	—	—	—	—	—	—

DC Ratings—DC-5

Description Rated Operation Current {1} (I_e) in Amperes	XTCE007B	XTCE009B	XTCE012B	XTCE015B	XTCE018C	XTCE025C	XTCE032C	XTCE040D	XTCE050D	XTCE065D
60V	20	20	20	20	35	35	40	50	60	72
110V	20	20	20	20	35	35	40	50	50	72
220V	1.5	1.5	1.5	1.5	10	10	25	25	25	35
440V	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.6	0.6	0.6

	XTCE080F	XTCE095F	XTCE115G	XTCE150G	XTCE185L	XTCE225L	XTCE250L	XTCE300M	XTCE400M	XTCE500M
60V	110	110	160	160	300	300	300	400	400	400
110V	110	110	160	160	300	300	300	400	400	400
220V	35	35	40	40	300	300	300	400	400	400
440V	1	1	1	1	—	—	—	—	—	—

	XTCE580N	XTCE650N	XTCE750N	XTCE820N	XTCEC10N	XTCEC14P	XTCEC20R
60V	—	—	—	—	—	—	—
110V	—	—	—	—	—	—	—
220V	—	—	—	—	—	—	—
440V	—	—	—	—	—	—	—

DC Ratings—Four-Pole—DC-1 Operation

Description Rated Operation Current {1} (I_e) in Amperes	XTCF020B	XTCF032C	XTCF045C	XTCF063D	XTCF080D	XTCF125G	XTCF160G	XTCF200G
60V	22	32	45	63	80	125	160	200
110V	22	32	45	6	80	125	160	200
220V	6	32	45	63	80	125	160	200
440V	1.3	3	3	5	5	100	125	150

DC Ratings—Four-Pole—DC-3 Operation

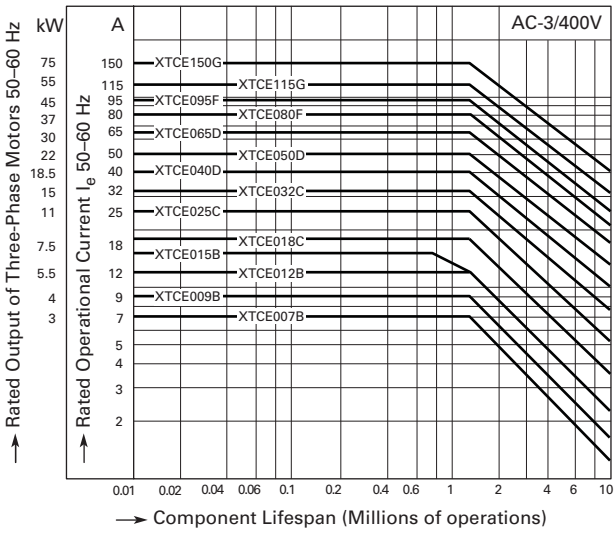
Description Rated Operation Current {1} (I_e) in Amperes	XTCF020B	XTCF032C	XTCF045C	XTCF063D	XTCF080D	XTCF125G	XTCF160G	XTCF200G
60V	20	32	45	63	80	125	160	200
110V	20	32	45	63	80	125	160	200
220V	1.5	32	45	63	80	125	160	200
440V	0.2	6	6	8	8	75	95	115

DC Ratings—Four-Pole—DC-5 Operation

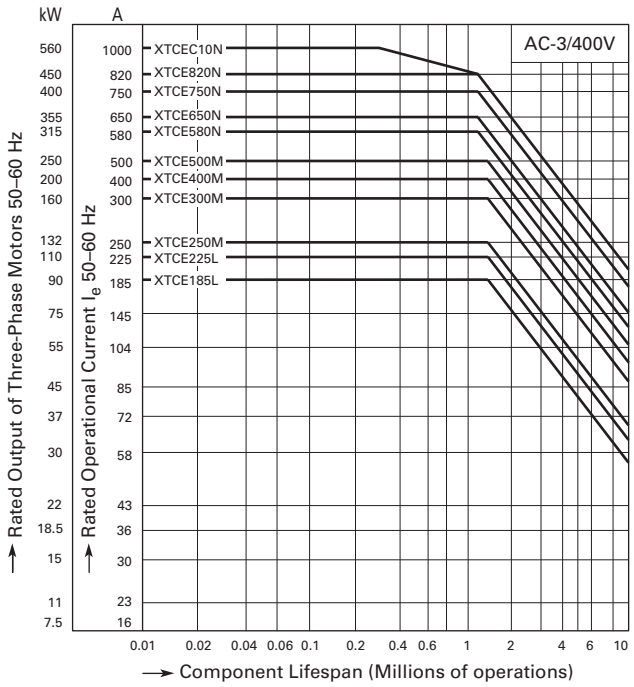
Description Rated Operation Current {1} (I_e) in Amperes	XTCF020B	XTCF032C	XTCF045C	XTCF063D	XTCF080D	XTCF125G	XTCF160G	XTCF200G
60V	20	32	45	63	80	125	160	200
110V	20	25	32	508	80	125	160	200
220V	1.5	15	22	38	70	100	125	150
440V	0.2	4	4	8	8	60	75	90

Life Curves

Normal Switching Duty

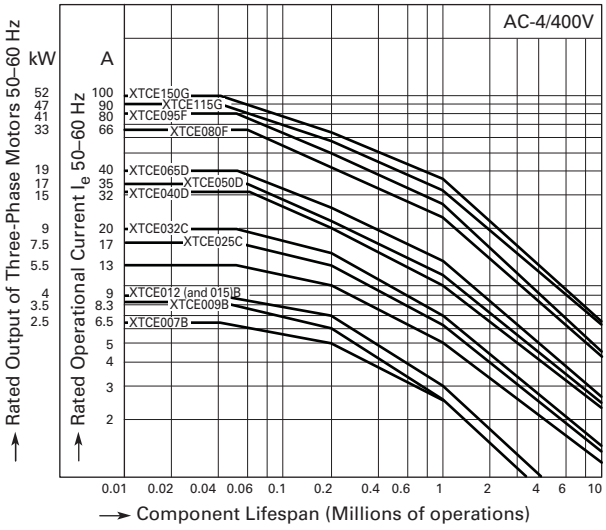


XTCE007B–XTCE150G

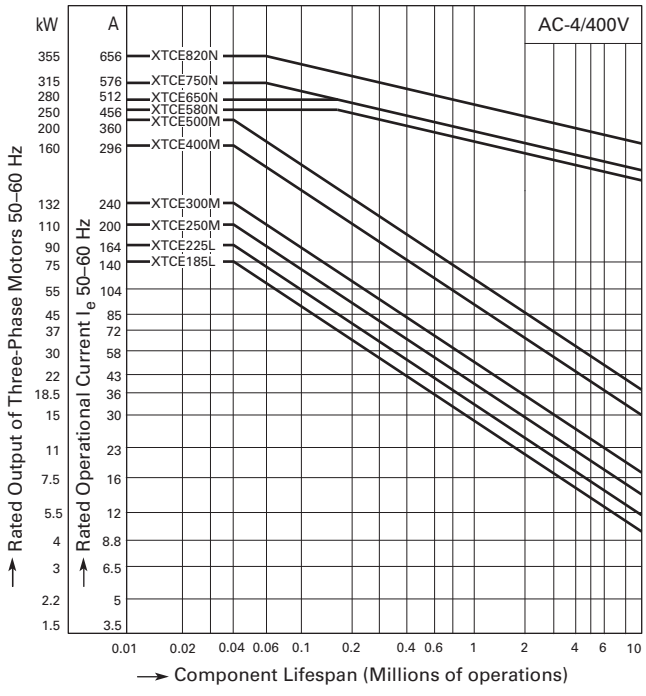


XTCE185L–XTCEC10N

Extreme Switching Duty

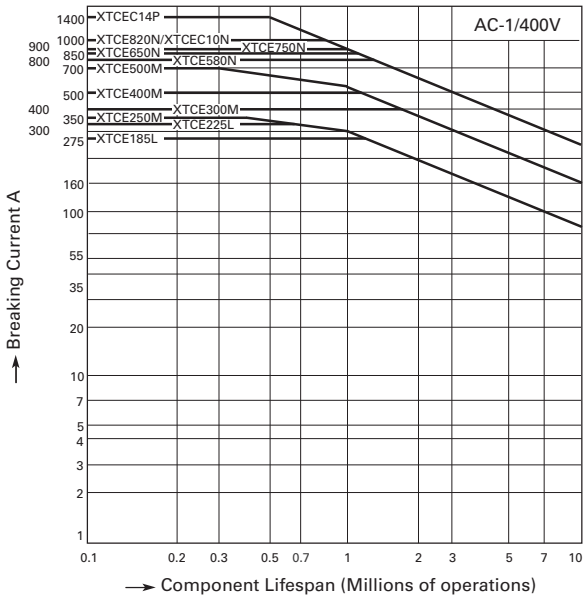


XTCE007B–XTCE150G

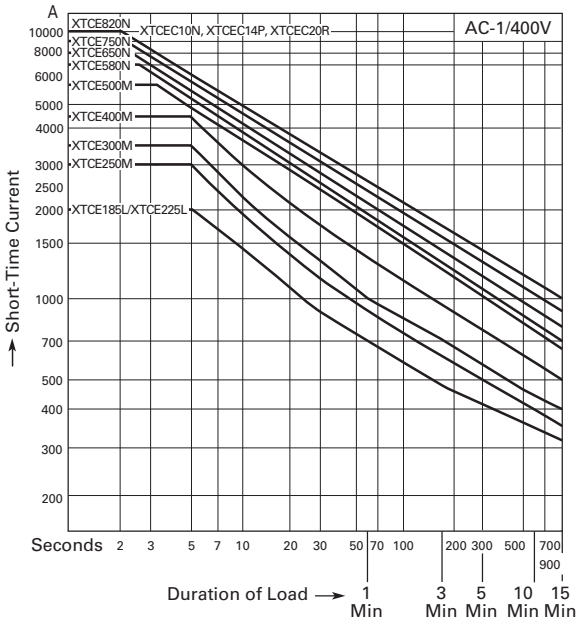


XTCE185L–XTCE820N

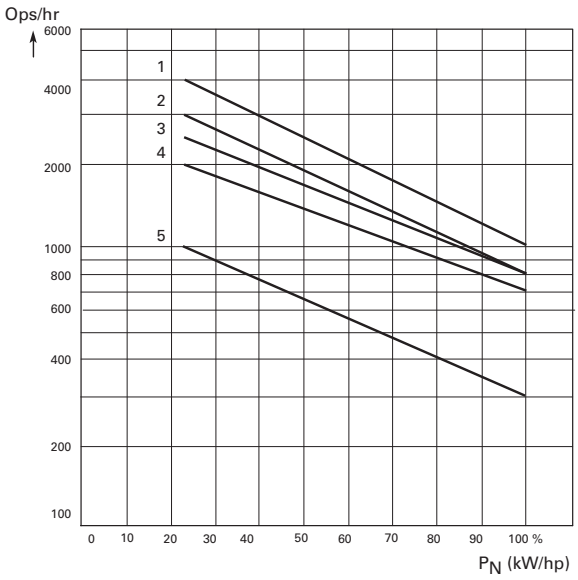
Switching Duty for Non-Motor Loads, Three-Pole, Four-Pole—XTCE185L–XTCEC14P

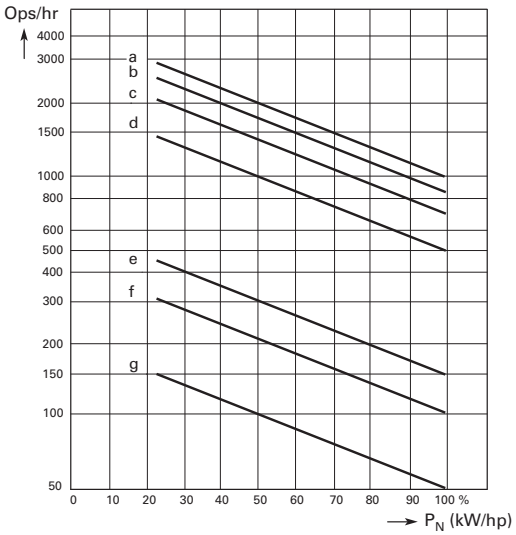


Short-Time Loading, Three-Pole—XTCE185L–XTCEC20R



Maximum Operating Frequency—Related to Rating and Utilization Category (400V)





Utilization Category ①

Type	Characteristic Curve Above AC-1	AC-3	AC-2 AC-4
XTCE007B–XTCE015B	3	1	5
XTCE018C–XTCE032C	3	2	5
XTCE040D–XTCE065D	3	2	5
XTCE080F–XTCE150G	3	4	5

7–150 hp

Utilization Category ①

Type	Characteristic Curve Above AC-1	AC-3	AC-4	Type	Characteristic Curve Above AC-1	AC-3	AC-4
XTCE185L	2	1	6	XTCE500M	3	2	7
XTCE225L	2	1	6	XTCE580N	3	4	5
XTCE250L	2	1	6	XTCE650N	3	4	5
XTCE300M	3	2	7	XTCE750N	3	4	5
XTCE400M	3	2	7	XTCE820N	3	4	5

185–820 hp

Note

① P_N = maximum motor rating (kW/hp) of the relevant contactor.
ops/hr = maximum number of operations per hour.

Overload Relays

XTOB Overload Relay—Technical Data and Specifications

Description	XTOB…BC1, XTOB…CC1	XTOB…DC1	XTOB…GC1, XTOB…GC1S	XTOB…LC1
General				
Standards	IEC/EN 60947, VDE 0660, UL, CSA			
Climate proofing	Damp heat, constant, to IEC 60068-2-78; damp heat, cyclic, to IEC 60068-2-30			
Ambient temperature ①	–25° to 55°C (–13° to 131°F)	–25° to 55°C (–13° to 131°F)	–25° to 55°C (–13° to 131°F)	–25° to 50°C (–13° to 122°F)
Temperature compensation	Continuous	Continuous	Continuous	Continuous
Mechanical shock resistance (IEC/EN 60068-2-27) half-sinusoidal shock 10 ms	10g	10g	10g	10g
Degree of protection	IP20	IP20	IP20	P00
Protection against direct contact when actuated from front (IEC 536)	Finger- and back of hand-proof	Finger- and back of hand-proof	Finger- and back of hand-proof	With terminal cover XTOBXTS…L
Insulation voltage (U_i) Vac	690	690	690	1000
Overvoltage category/pollution degree	III/3	III/3	III/3	III/3
Impulse withstand voltage (U_{imp}) Vac	6000	6000	6000	8000
Operational voltage (U_e) Vac	690	690	690	1000
Safe isolation to VDE 0106 Part 101 and Part 101/A1				
Between auxiliary contacts and main contacts (Vac)	440	440	440	440
Between main contacts (Vac)	440	440	440	440
Overload release setting range	0.1–32A	6–75A	25–150A	50–250A
Short-circuit protection maximum fuse	②	②	②	②
Temperature compensation residual error >40°C	<0.25	<0.25	<0.25	<0.25
Current heat loss (three conductors)				
Lower value of setting range, W	2.5	3	16	16
Upper value of setting range	6	7.5	28	28
Terminal capacity				
Solid, mm^2	2 x (1–6)	2 x (1–16)	2 x (4–16)	—
Flexible with ferrule, mm^2	2 x (1–4) 2 x (1–6) ③	1 x 25 2 x (1–10) ④	1 x (4–70) 2 x (4–50)	—
Flexible with cable lug, mm^2	—	—	—	95
Stranded with cable lug, mm^2	—	—	—	120
Solid or stranded, AWG	14–8	14–2	2/0	250 kcmil
Flat conductor— number of segments x width x thickness (mm^2)	—	—	—	6 x 16 x 18
Bus bar—width (mm)	—	—	—	20 x 3
Terminal screw	M4	M6	M10	M8 x 25
Tightening torque				
Nm	1.8	3.5	10	24
Lb-in	16	31	88.5	221.3
Tools				
Pozidriv screwdriver	Size 2	Size 2	—	—
Standard screwdriver	1 x 6	1 x 6	—	—
Hexagon socket head spanner (SW)	—	—	5 mm	13 mm

Notes

① Ambient temperature operating range to IEC/EN 60947, PTB: –5° to 50°C.
② Consult factory.
③ 6 mm^2 flexible with ferrules to DIN 46228.
④ Main contact terminal capacity, solid and stranded conductors with ferrules: When using 2 conductors use identical cross-section.

XTOB Overload Relay—Technical Data and Specifications, continued

Description	XTOB…BC1, XTOB…CC1	XTOB…DC1	XTOB…GC1, XTOB…GC1S	XTOB…LC1
Auxiliary and Control Circuit Connections				
Impulse withstand voltage (U_{imp}) Vac	6000	6000	6000	6000
Overvoltage category/pollution degree	III/3	III/3	III/3	III/3
Terminal capacity				
Solid, mm^2	2 x (0.75–4)	2 x (0.75–4)	2 x (0.75–4)	2 x (0.75–4)
Flexible with ferrule, mm^2	2 x (0.75–2.5)	2 x (0.75–2.5)	2 x (0.75–2.5)	2 x (0.75–2.5)
Solid or stranded (AWG)	2 x (18–12)	2 x (18–12)	2 x (18–12)	2 x (18–12)
Terminal screw	M3.5	M3.5	M3.5	M3.5
Tightening torque				
Nm	0.8–1.2	0.8–1.2	0.8–1.2	0.8–1.2
Lb-in	7–10.6	7–10.6	7–10.6	7–10.6
Tools				
Pozidriv screwdriver	Size 2	Size 2	Size 2	Size 2
Standard screwdriver	1 x 6	1 x 6	1 x 6	1 x 6
Rated insulated voltage (U_i) Vac	500	500	500	500
Rated operational voltage	500	500	500	500
Safe Isolation to VDE 0106 Part 101 and Part 101/A1 between auxiliary contacts	240	240	240	240
Conventional thermal current, I_{th}	6	6	6	—
Rated operational current—AC-15				
Make contact				
120V	1.5	1.5	1.5	1.5
240V	1.5	1.5	1.5	1.5
415V	0.5	0.5	0.5	0.5
500V	0.5	0.5	0.5	0.5
Break contact				
120V	1.5	1.5	1.5	1.5
240V	1.5	1.5	1.5	1.5
415V	0.9	0.9	0.9	0.9
500V	0.8	0.8	0.8	0.8
Rated operational current—DC-13 L/R ≤15 ms ①				
24V	0.9	0.9	0.9	0.9
60V	0.75	0.75	0.75	0.75
110V	0.4	0.4	0.4	0.4
220V	0.2	0.2	0.2	0.2
Short-circuit rating without welding				
Maximum fuse, A gG/gL	6	6	6	6

Note

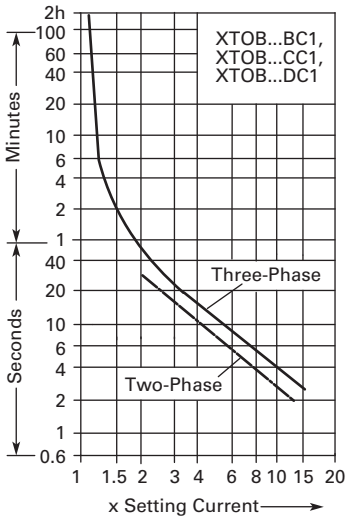
① Rated operational current: Making and breaking conditions to DC-13, L/R constant as stated.

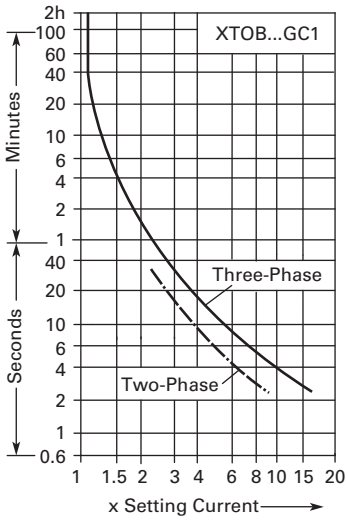
Tripping Characteristics

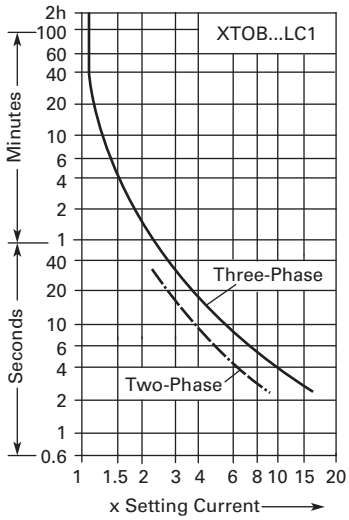
These tripping characteristics are the mean values of the spread at 20°C ambient temperature in a cold state.

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

Tripping Characteristics







Instructional Leaflets

Instructional Leaflets

Publication Number	Description
Pub51221	XTOB, D Frame Overload Relays (inside of packaging)
Pub51222	XTOB, B–C Frame Overload Relays (inside of packaging)

C440/XTOE

Electronic Overload Relays up to 1500A

Description	Specification 45 mm	55 mm	110 mm
Electrical Ratings	**Range**	**Range**	**Range**
Operating voltage (three-phase) and frequency	690 Vac (60/50 Hz)	690 Vac (60/50 Hz)	690 Vac (60/50 Hz)
FLA Range			
	0.33–1.65A 1–5A 4–20A 9–45A	20–100A	28–140A (NEMA) 35–175A (IEC)
Use with Contactors			
XT IEC frames	B, C, D	F, G	G, H
Freedom NEMA sizes	00, 0, 1, 2	3	4
Trip Class			
	10A, 10, 20, 30 Selectable	10A, 10, 20, 30 Selectable	10A, 10, 20, 30 Selectable
Motor Protection			
Thermal overload setting	1.05 x FLA: does not trip 1.15 x FLA: overload trip	1.05 x FLA: does not trip 1.15 x FLA: overload trip	1.05 x FLA: does not trip 1.15 x FLA: overload trip
Feature	**Range**	**Range**	**Range**
Phase loss	Fixed threshold 50%	Fixed threshold 50%	Fixed threshold 50%
Phase unbalance (selectable: enable/disable)	Fixed threshold 50%	Fixed threshold 50%	Fixed threshold 50%
Ground fault (selectable: enable/disable)	50% of FLA dial setting >150% = 2 sec >250% = 1 sec	50% of FLA dial setting >150% = 2 sec >250% = 1 sec	50% of FLA dial setting >150% = 2 sec >250% = 1 sec
Reset	Manual/automatic	Manual/automatic	Manual/automatic
Indicators			
Trip status	Orange flag	Orange flag	Orange flag
Mode LED	One flash: Overload operating properly Two flashes: Current is above FLA dial setting—pending trip	One flash: Overload operating properly Two flashes: Current is above FLA dial setting—pending trip	One flash: Overload operating properly Two flashes: Current is above FLA dial setting—pending trip
Options			
Remote reset	Yes	Yes	Yes
Reset bar	Yes	Yes	Yes
Communication expansion module	Yes	Yes	Yes
Communication adapter	Yes	Yes	Yes
Capacity			
Load terminals			
Terminal capacity	12–10 AWG (4–6 mm^2) 8–6 AWG (6–16 mm^2)	6–1 AWG (16–50 mm^2)	8–4/0 AWG (10–95 mm^2)
Tightening torque	20–25 lb-in (2.3–2.8 Nm) 25–30 lb-in (2.8–3.4 Nm)	25–30 lb-in (2.8–3.4 Nm)	124 lb-in (14 Nm)
Input, auxiliary contact and remote reset terminals			
Terminal capacity	2 x (18–12) AWG	2 x (18–12) AWG	2 x (18–12) AWG
Tightening torque	7–11 lb-in (0.8–1.2 Nm)	7–11 lb-in (0.8–1.2 Nm)	7–11 lb-in (0.8–1.2 Nm)
Voltages			
Insulation voltage U_i (three-phase)	690 Vac	690 Vac	690 Vac
Insulation voltage U_i (control)	500 Vac	500 Vac	500 Vac
Rated impulse withstand voltage	6000 Vac	6000 Vac	6000 Vac
Overvoltage category/pollution degree	III/3	III/3	III/3

Electronic Overload Relays up to 1500A, continued

Description	Specification 45 mm	55 mm	110 mm
Auxiliary and Control Circuit Ratings			
Conventional thermal continuous current	5A	5A	5A
Rated operational current—IEC AC-15			
Make contact (1800 VA)			
120V	15A	15A	15A
240V	15A	15A	15A
415V	0.5A	0.5A	0.5A
500V	0.5A	0.5A	0.5A
Break contact (180 VA)			
120V	1.5A	1.5A	1.5A
240V	1.5A	1.5A	1.5A
415V	0.9A	0.9A	0.9A
500V	0.8A	0.8A	0.8A
IEC DC-13 (L/R F 15 ms1)			
0–250V	1.0A	1.0A	1.0A
Rated operational current—UL B600			
Make contact (3600 VA)			
120V	30A	30A	30A
240V	15A	15A	15A
480V	7.5A	7.5A	7.5A
600V	6A	6A	6A
Break contact (360 VA)			
120V	3A	3A	3A
240V	1.5A	1.5A	1.5A
480V	0.75A	0.75A	0.75A
600V	0.6A	0.6A	0.6A
R300—Vdc ratings (28 VA)			
0–120V	0.22A	0.22A	0.22A
250V	0.11A	0.11A	0.11A
Short-Circuit Rating without Welding			
Maximum fuse	6A gG/gL	6A gG/gL	6A gG/gL
Environmental Ratings			
Ambient temperature (operating)	–13° to 149°F (–25° to 65°C)	–13° to 149°F (–25° to 65°C)	–13° to 149°F (–25° to 65°C)
Ambient temperature (storage)	–40° to 185°F (–40° to 85°C)	–40° to 185°F (–40° to 85°C)	–40° to 185°F (–40° to 85°C)
Operating humidity UL 991 (H3)	5% to 95% non-condensing	5% to 95% non-condensing	5% to 95% non-condensing
Altitude (no derating) NEMA ICS1	2000m	2000m	2000m
Shock (IEC 600068-2-27)	15g any direction	15g any direction	15g any direction
Vibration (IEC 60068-2-6)	3g any direction	3g any direction	3g any direction
Pollution degree per IEC 60947-4-1	3 for product (2 for pcb)	3 for product (2 for pcb)	3 for product (2 for pcb)
Ingress protection	IP20	IP20	IP20
Protection against direct contact when actuated from front (IEC 536)	Finger- and back-of-hand proof	Finger- and back-of-hand proof	Finger- and back-of-hand proof
Mounting position	Any	Any	Any
Climatic proofing	Damp heat, constant to IEC 60068-2-30	Damp heat, constant to IEC 60068-2-30	Damp heat, constant to IEC 60068-2-30

Electronic Overload Relays up to 1500A, continued

Description	Specification 45 mm	55 mm	110 mm
Electrical/EMC			
Radiated emissions IEC 60947-4-1-Table 15 EN 55011 (CISPIR 11) Group 1, Class A, ISM	30 mHz to 1000 mHz	30 mHz to 1000 mHz	30 mHz to 1000 mHz
Conducted emissions IEC 60947-4-1-Table 14 EN 55011 (CISPIR 11) Group 1; Class ISM	0.15 mHz to 30 mHz	0.15 mHz to 30 mHz	0.15 mHz to 30 mHz
ESD immunity IEC 60947-4-1 (Table 13)	±8 kV air, ±6 kV contact	±8 kV air, ±6 kV contact	±8 kV air, ±6 kV contact
Radiated immunity IEC 60947-4-1 IEC 61000-4-3	10 V/m 80 mHz–1000 mHz 3 V/m from 1.4 to 2.7 gHz 80% amplitude modulated 1 kHz sine wave	10 V/m 80 mHz–1000 mHz 3 V/m from 1.4 to 2.7 gHz 80% amplitude modulated 1 kHz sine wave	10 V/m 80 mHz–1000 mHz 3 V/m from 1.4 to 2.7 gHz 80% amplitude modulated 1 kHz sine wave
Conducted immunity IEC 60947-4-1, IEC 61000-4-6	140 dub (10V rms) 150 kHz–100 mHz	140 dub (10V rms) 150 kHz–100 mHz	140 dub (10V rms) 150 kHz–100 mHz
Fast transient immunity IEC 60947-4-1 (Table 13) IEC 61000-4-4	±4 kV using direct method with accessory installed in expansion bay ±2 kV using direct method	±4 kV using direct method with accessory installed in expansion bay ±2 kV using direct method	±4 kV using direct method with accessory installed in expansion bay ±2 kV using direct method
Surge immunity IEC 60947-4-1 (Table 13) IEC 61000-4-5 a Class 4	Three-phase power inputs: ±4 kV line-to-line (DM) ±4 kV line-to-ground (CM)	Three-phase power inputs: ±4 kV line-to-line (DM) ±4 kV line-to-ground (CM)	Three-phase power inputs: ±4 kV line-to-line (DM) ±4 kV line-to-ground (CM)
	With accessory installed in expansion bay: ±2 kV line-to-line (DM) –>1.2/50 us; 2 kV line-to-earth, 1 kV line-to-line ±4 kV line-to-ground (CM)	With accessory installed in expansion bay: ±2 kV line-to-line (DM) –>1.2/50 us; 2 kV line-to-earth, 1 kV line-to-line ±4 kV line-to-ground (CM)	With accessory installed in expansion bay: ±2 kV line-to-line (DM) –>1.2/50 us; 2 kV line-to-earth, 1 kV line-to-line ±4 kV line-to-ground (CM)
Power freq. magnetic field immunity IEC 60947-4-1, IEC 61000-4-8	30 A/m, 50 Hz	30 A/m, 50 Hz	30 A/m, 50 Hz
Electromagnetic field IEC 60947-4-1 Table 13, IEC 61000-4-3	10 V/m	10 V/m	10 V/m
Distortion IEEE 519	5% THD max., 5th harmonic 3% max.	5% THD max., 5th harmonic 3% max.	5% THD max., 5th harmonic 3% max.
Electrostatic discharge (ESD) IEC 61000-4-2, EN 61131-2	4 kV contact 8 kV air discharge	4 kV contact 8 kV air discharge	4 kV contact 8 kV air discharge
Electrical fast transient (EFT) IEC 61000-4-4, EN 61131-2	±2 kV using direct method	±2 kV using direct method	±2 kV using direct method
Surge immunity IEC 61000-4-5, EN 61131-2	±2 kV line-to-ground (CM)	±2 kV line-to-ground (CM)	±2 kV line-to-ground (CM)

C30CN Lighting Contactors

Main Power Poles

Maximum AC Voltage and Amp Ratings

Load Type	Amps Continuous	Poles Single-Phase	Three-Phase
Ballast	30	347 Vac	600 Vac
General use	30	600 Vac	600 Vac
Tungsten	20	277 Vac	480 Vac
AC resistive	30	600 Vac	600 Vac

Maximum Horsepower Rating

Normal Starting Duty Volts	Horsepower
Single-Pole, Single-Phase	
110–120V	1
220–240V	2
Three-Pole, Three-Phase	
200–208V	3
220–240V	5
440–480V	10
550–600V	15

Control Circuit Characteristics

Coil

Description	VA
Inrush	248 VA
Sealed	28 VA

Control Module

Input Voltage	Steady State Current at Rated Voltage (mA)	Maximum VA
12–24 Vdc	42	2
24 Vac	80	5
115–120 Vac	83	12
200–277 Vac	91	30

Other Control Module Characteristics

Description	Specification
Minimum pulse duration (three-wire control module)	250 ms
Maximum allowable leakage current	1.8 mA
EMI	35 V/m
Surge transient peak	6 kV
Frequency range	40–70 Hz

Note

① 8 AWG stranded only.

Auxiliary Contacts Rating

A600, 24 Vdc, 24 VA

Ambient Temperature

–13° to 104°F (–25° to 40°C)

Mounting Position

Vertical three-point mounting only.

Wire Size

Wire Specifications

Component	Number of Cables	Wire Range (Solid or Stranded)	Wire Temperature
Power poles	1	14–8 AWG	75°C Cu
	2	14–8 AWG ①	75°C Cu
Coil	1 or 2	18–14 AWG	60°/75°C Cu
Control module	1	22–12 AWG	60°/75°C Cu
Auxiliary contacts	1 or 2	22–12 AWG	60°/75°C Cu

A202 Lighting Contactors

- Terminals
  - All except 30A devices: Cu/Al
  - 30A devices: Cu only
- Ballast load: 600 AC, breaking all lines
- Tungsten lamp loads, maximum volts
  - Line-to-line: 480 Vac
  - Line-to-neutral: 277 Vac

17

S611 Solid-State Soft Starters

Technical Data and Specifications

Soft Starters—S611

Description		S611 Soft Starter (Partial Catalog Number) S611A052	S611A065	S611A072	S611B099
Max. current capacity	A	52	65	77	99
FLA range	A	26–52	32.5–65	38.5–77	48–99
Dimensions					
Width	inch (mm)	11.58 (294)	11.58 (294)	11.58 (294)	11.58 (294)
Height	inch (mm)	19.45 (494)	19.45 (494)	19.45 (494)	19.45 (494)
Depth	inch (mm)	7.46 (189)	7.46 (189)	7.46 (189)	7.46 (189)
Weight	lb (kg)	24 (11)	24 (11)	24 (11)	24 (11)
General Information					
Bypass mechanical lifespan		10M	10M	10M	10M
Insulating voltage	V	660	660	660	660
Ramp time range	Seconds	0.5–180	0.5–180	0.5–180	0.5–180
Vibration resistance—non-operating	g	3g up to 242A units, 2g on 302A to 414A units	3g up to 242A units, 2g on 302A to 414A units	3g up to 242A units, 2g on 302A to 414A units	3g up to 242A units, 2g on 302A to 414A units
Vibration resistance—operating	g	1	1	1	1
Shock resistance	g	15g up to 242A units, 5g on 302A to 414A units	15g up to 242A units, 5g on 302A to 414A units	15g up to 242A units, 5g on 302A to 414A units	15g up to 242A units, 5g on 302A to 414A units
Electrical Information					
Operating voltage	V	130–600	130–600	130–600	130–600
Operating frequency	Hertz	47–63	47–63	47–63	47–63
Overload setting (frame)	% FLA	50–100	50–100	50–100	50–100
Trip class		5, 10, 20, 30	5, 10, 20, 30	5, 10, 20, 30	5, 10, 20, 30
Cabling Capacity (IEC 947)					
Number of conductors		1	1	1	1
Wire sizes	AWG	14–2/0	14–2/0	14–2/0	14–2/0
Type of connectors		Lug	Lug	Lug	Lug
Control Wiring					
Wire sizes	AWG	22–12	22–12	22–12	22–12
Number of conductors		2 (or one 12–14 AWG)	2 (or one 12–14 AWG)	2 (or one 12–14 AWG)	2 (or one 12–14 AWG)
Torque requirements	lb-in	3.5	3.5	3.5	3.5
Maximum size	AWG	12	12	12	12
Control Power Requirements					
Voltage range (120V ±10%)	V	108–132	108–132	108–132	108–132
Steady state current	A	0.375	0.375	0.375	0.375
Inrush current	A	0.5	0.5	0.5	0.5
Ripple	%	1	1	1	1
Relays (1) Class A and C					
Voltage AC—maximum	V	120	120	120	120
Voltage DC—maximum	V	24	24	24	24
Amps—maximum	A	3	3	3	3
Environment					
Temperature—operating	°C	–20° to 50°C	–20° to 50°C	–20° to 50°C	–20° to 50°C
Temperature—storage	°C	–40° to 85°C	–40° to 85°C	–40° to 85°C	–40° to 85°C
Altitude	Meters	<2000m, derate 0.5% per 100m >2000m	<2000m, derate 0.5% per 100m >2000m	<2000m, derate 0.5% per 100m >2000m	<2000m, derate 0.5% per 100m >2000m
Humidity	%	<95% non-condensing	<95% non-condensing	<95% non-condensing	<95% non-condensing
Operating position		Vertical, line side up	Vertical, line side up	Vertical, line side up	Vertical, line side up
Pollution degree IEC947-1		3	3	3	3
Impulse withstand voltage IEC947-4-1	V	6000	6000	6000	6000

Soft Starters—S611, continued

Description		S611 Soft Starter (Partial Catalog Number) S611B125	S611C156	S611C180	S611D242
Max. current capacity	A	125	156	180	242
FLA range	A	62.5–125	78–156	90–180	120–242
Dimensions					
Width	inch (mm)	11.58 (294)	11.58 (294)	11.58 (294)	11.58 (294)
Height	inch (mm)	19.45 (494)	20.83 (529)	20.83 (529)	20.83 (529)
Depth	inch (mm)	7.46 (189)	8.37 (213)	8.37 (213)	8.37 (213)
Weight	lb (kg)	24 (11)	33 (15)	33 (15)	38 (17)
General Information					
Bypass mechanical lifespan		10M	10M	10M	10M
Insulating voltage	V	660	660	660	660
Ramp time range	Seconds	0.5–180	0.5–180	0.5–180	0.5–180
Vibration resistance—non-operating	g	3g up to 242A units, 2g on 302A to 414A units	3g up to 242A units, 2g on 302A to 414A units	3g up to 242A units, 2g on 302A to 414A units	3g up to 242A units, 2g on 302A to 414A units
Vibration resistance—operating	g	1	1	1	1
Shock resistance	g	15g up to 242A units, 5g on 302A to 414A units	15g up to 242A units, 5g on 302A to 414A units	15g up to 242A units, 5g on 302A to 414A units	15g up to 242A units, 5g on 302A to 414A units
Electrical Information					
Operating voltage	V	130–600	130–600	130–600	130–600
Operating frequency	Hertz	47–63	47–63	47–63	47–63
Overload setting (frame)	% FLA	50–100	50–100	50–100	50–100
Trip class		5, 10, 20, 30	5, 10, 20, 30	5, 10, 20, 30	5, 10, 20, 30
Cabling Capacity (IEC 947)					
Number of conductors		1	1	1	1
Wire sizes	AWG	2–600 kcmil	2–600 kcmil	2–600 kcmil	2–600 kcmil
Type of connectors		Lug	Lug	Lug	Lug
Control Wiring					
Wire sizes	AWG	22–12	22–12	22–12	22–12
Number of conductors		2 (or one 12–14 AWG)	2 (or one 12–14 AWG)	2 (or one 12–14 AWG)	2 (or one 12–14 AWG)
Torque requirements	lb-in	3.5	3.5	3.5	3.5
Maximum size	AWG	12	12	12	12
Control Power Requirements					
Voltage range (120V ±10%)	V	108–132	108–132	108–132	108–132
Steady state current	A	0.375	0.375	0.375	0.375
Inrush current	A	0.5	0.5	0.5	0.5
Ripple	%	1	1	1	1
Relays (1) Class A and C					
Voltage AC—maximum	V	120	120	120	120
Voltage DC—maximum	V	24	24	24	24
Amps—maximum	A	3	3	3	3
Environment					
Temperature—operating	°C	–20° to 50°C	–20° to 50°C	–20° to 50°C	–20° to 50°C
Temperature—storage	°C	–40° to 85°C	–40° to 85°C	–40° to 85°C	–40° to 85°C
Altitude	Meters	<2000m, derate 0.5% per 100m >2000m	<2000m, derate 0.5% per 100m >2000m	<2000m, derate 0.5% per 100m >2000m	<2000m, derate 0.5% per 100m >2000m
Humidity	%	<95% non-condensing	<95% non-condensing	<95% non-condensing	<95% non-condensing
Operating position		Vertical, line side up	Vertical, line side up	Vertical, line side up	Vertical, line side up
Pollution degree IEC947-1		3	3	3	3
Impulse withstand voltage IEC947-4-1	V	6000	6000	6000	6000

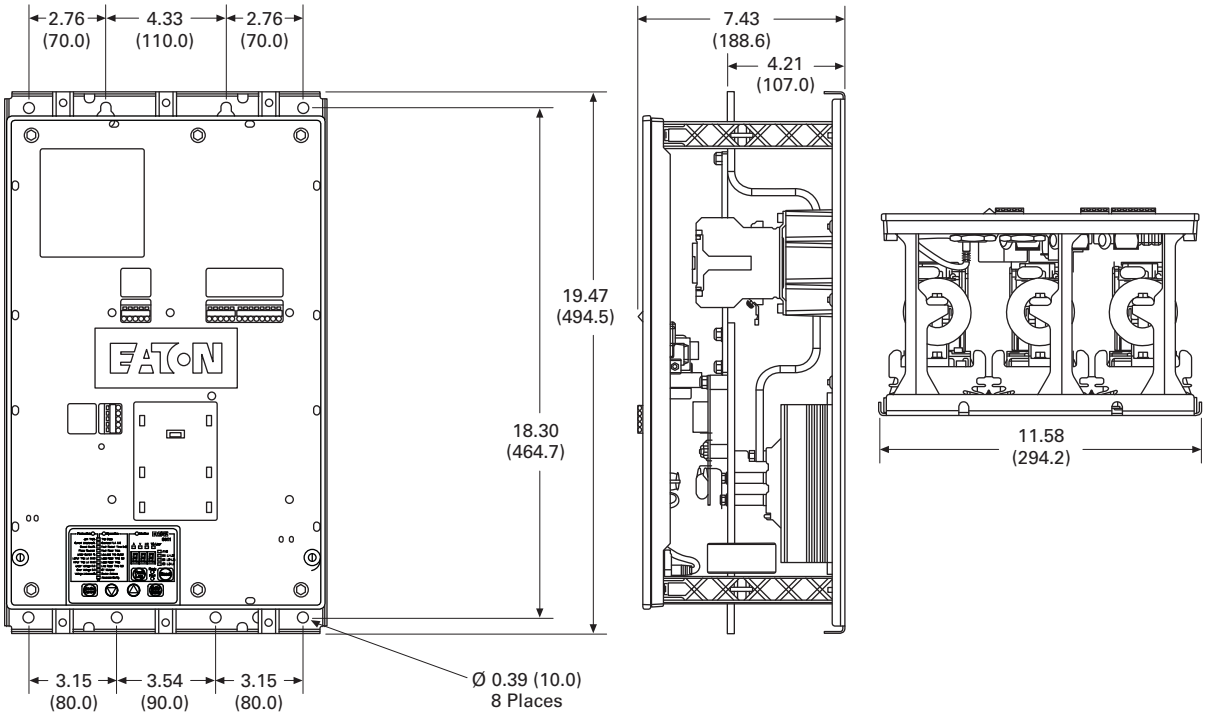
Soft Starters—S611, continued

Description		S611 Soft Starter (Partial Catalog Number) S611E302	S611E361	S611F414
Max. current capacity	A	302	361	414
FLA range	A	151–302	180.5–361	207–414
Dimensions				
Width	inch (mm)	17.56 (446)	17.56 (446)	17.56 (446)
Height	inch (mm)	31.15 (791)	31.15 (791)	31.15 (791)
Depth	inch (mm)	9.54 (242)	9.54 (242)	9.54 (242)
Weight	lb (kg)	86 (39)	86 (39)	102 (46)
General Information				
Bypass mechanical lifespan		10M	10M	10M
Insulating voltage	V	660	660	660
Ramp time range	Seconds	0.5–180	0.5–180	0.5–180
Vibration resistance—non-operating	g	3g up to 242A units, 2g on 302A to 414A units	3g up to 242A units, 2g on 302A to 414A units	3g up to 242A units, 2g on 302A to 414A units
Vibration resistance—operating	g	1	1	1
Shock resistance	g	15g up to 242A units, 5g on 302A to 414A units	15g up to 242A units, 5g on 302A to 414A units	15g up to 242A units, 5g on 302A to 414A units
Electrical Information				
Operating voltage	V	130–600	130–600	130–600
Operating frequency	Hertz	47–63	47–63	47–63
Overload setting (frame)	% FLA	50–100	50–100	50–100
Trip class		5, 10, 20, 30	5, 10, 20, 30	5, 10, 20, 30
Cabling Capacity (IEC 947)				
Number of conductors		2	2	2
Wire sizes	AWG	2–600 kcmil	2–600 kcmil	2–600 kcmil
Type of connectors		Lug	Lug	Lug
Control Wiring				
Wire sizes	AWG	22–12	22–12	22–12
Number of conductors		2 (or one 12–14 AWG)	2 (or one 12–14 AWG)	2 (or one 12–14 AWG)
Torque requirements	lb-in	3.5	3.5	3.5
Maximum size	AWG	12	12	12
Control Power Requirements				
Voltage range (120V ±10%)	V	108–132	108–132	108–132
Steady state current	A	0.75	0.75	0.75
Inrush current	A	1	1	1
Ripple	%	1	1	1
Relays (1) Class A and C				
Voltage AC—maximum	V	120	120	120
Voltage DC—maximum	V	24	24	24
Amps—maximum	A	3	3	3
Environment				
Temperature—operating	°C	–20° to 50°C	–20° to 50°C	–20° to 50°C
Temperature—storage	°C	–40° to 85°C	–40° to 85°C	–40° to 85°C
Altitude	Meters	<2000m, derate 0.5% per 100m >2000m	<2000m, derate 0.5% per 100m >2000m	<2000m, derate 0.5% per 100m >2000m
Humidity	%	<95% non-condensing	<95% non-condensing	<95% non-condensing
Operating position		Vertical, line side up	Vertical, line side up	Vertical, line side up
Pollution degree IEC947-1		3	3	3
Impulse withstand voltage IEC947-4-1	V	6000	6000	6000

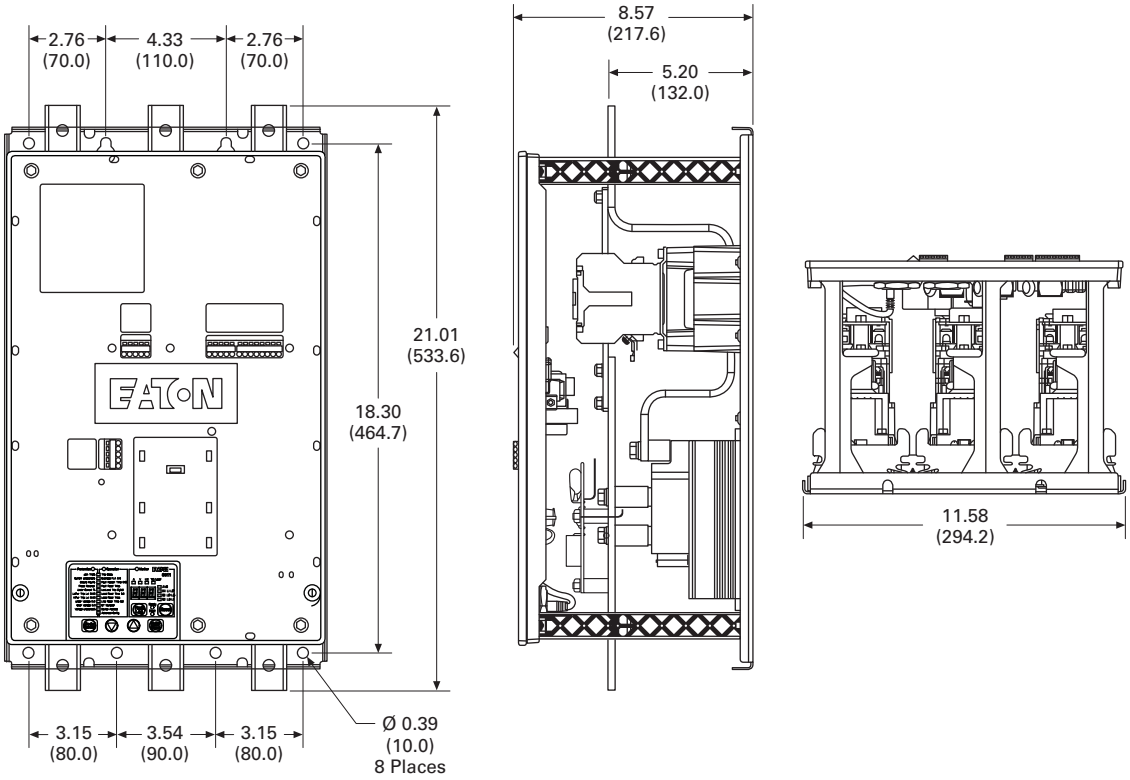
Dimensions

Approximate Dimensions in inches (mm)

A and B Frame



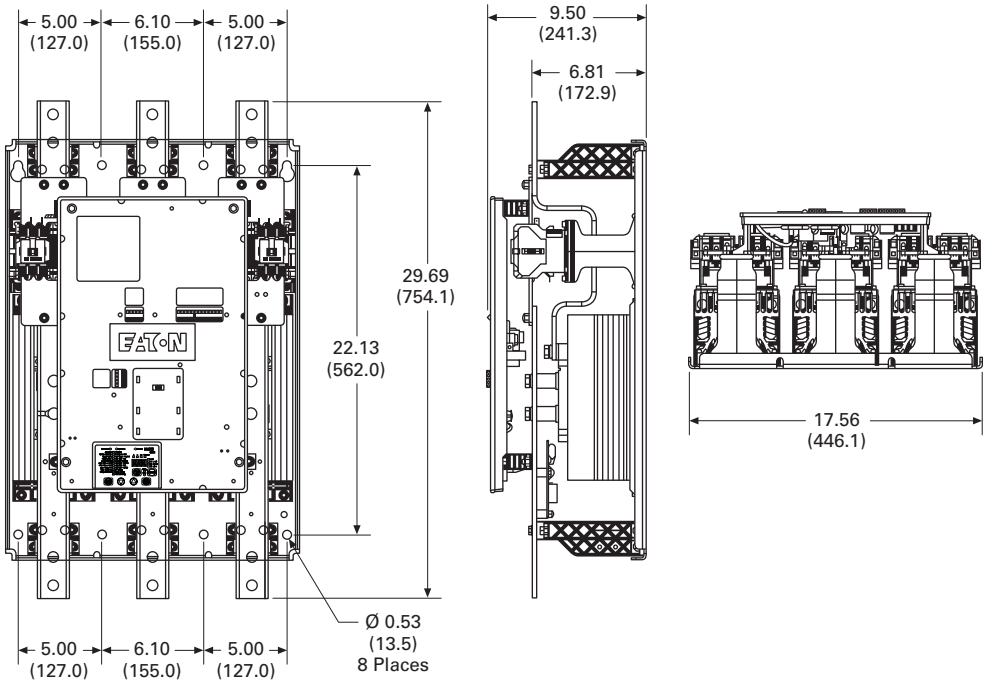
C and D Frame



17

Approximate Dimensions in inches (mm)

E and F Frame



Operation

Starting and Stopping Modes

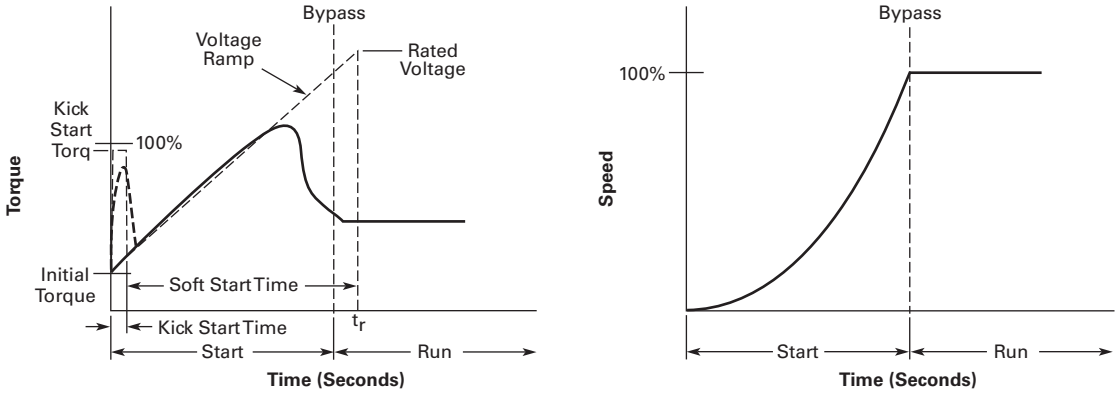
The S611 has a variety of starting and stopping methods to provide superior performance in the most demanding applications. The motor can be started in either Voltage Ramp Start or Current Limit Start mode. Kick Start and Soft Stop are available within both starting modes.

Voltage Ramp Start

Provides a voltage ramp to the motor resulting in a constant torque increase. The most commonly used form of soft start, this start mode allows you to set the initial torque value and the duration of the ramp to full voltage conditions. Bypass contactors close after ramp time.

- Adjustable initial torque 0–85% of locked rotor torque
- Adjustable ramp time 0.5–180 seconds (can be extended with factory modification)

Starting Characteristics—Ramp Start

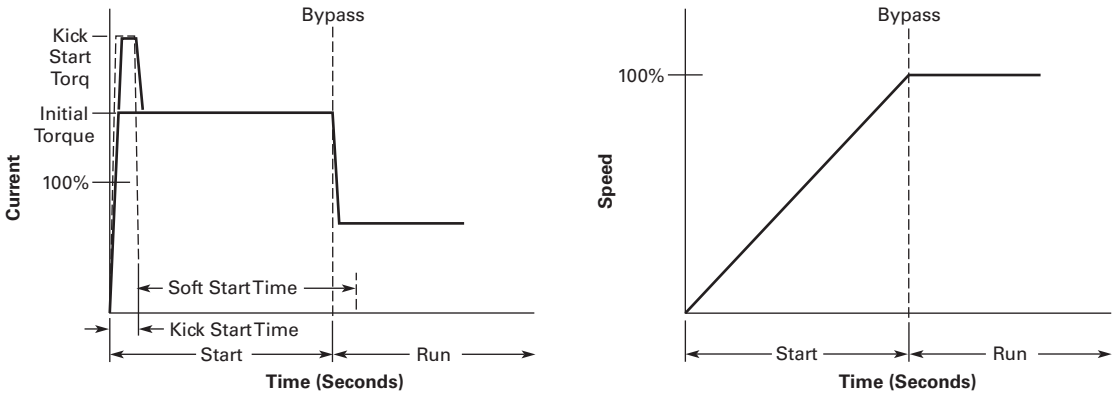


Current Limit Start

Limits the maximum current available to the motor during the start phase. This mode of soft starting is used when it becomes necessary to limit the maximum starting current due to long start times or to protect the motor. This start mode allows you to set the maximum starting current as a percentage of locked rotor current and the duration of the current limit. Bypass contactors close after current limit time.

- Maximum current of 0–85% locked rotor current
- Adjustable ramp time 0.5–180 seconds (can be extended with factory modification)

Starting Characteristics—Current Limit Start

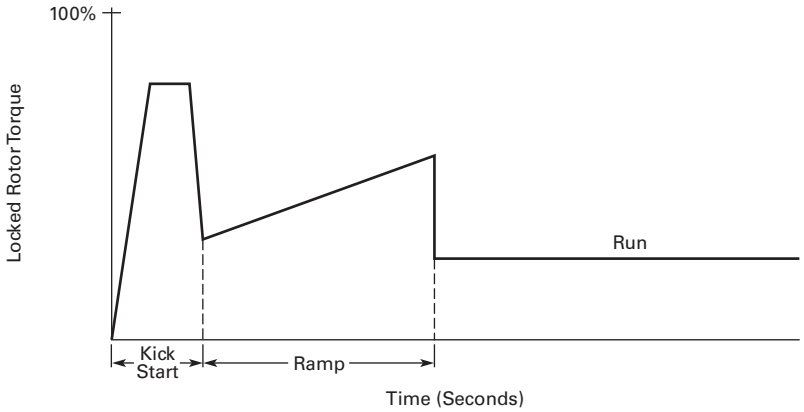


Kick Start

Selectable feature in both Voltage Ramp Start and Current Limit Start modes. Provides a current and torque "kick" for 0 to 2.0 seconds. This provides greater initial current to develop additional torque to breakaway a high friction load.

- 0–85% of locked rotor torque
- 0–2.0 seconds duration

Starting Characteristics—Kick Start

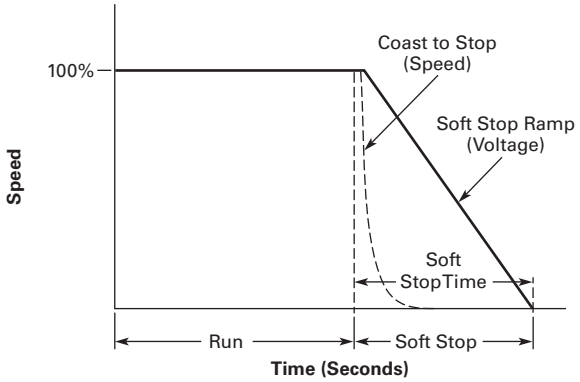


Soft Stop

Allows for a controlled stopping of a load. Used when a stop-time that is greater than the coast-to-stop time is desired. Often used with high friction loads where a sudden stop may cause system or load damage.

- Stop time = 0–60 seconds

Starting Characteristics—Soft Stop

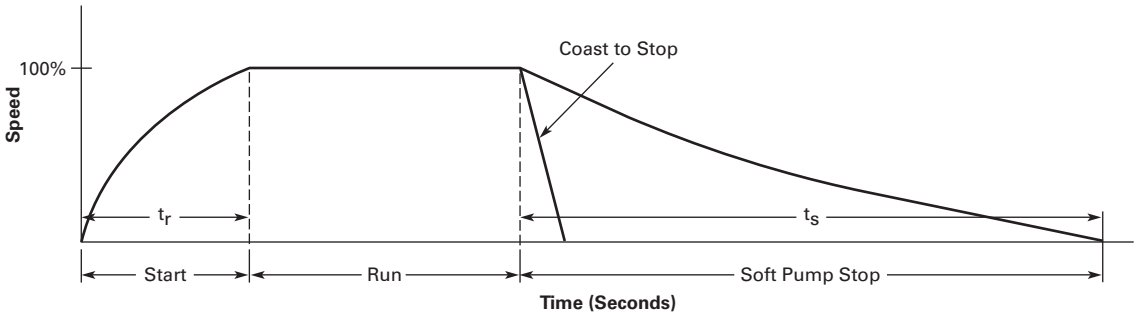


Pump Control Option

This option is intended to reduce the potential for water hammer in a centrifugal pump system by using a starting and stopping algorithm developed for pump control. Upon a start command, the speed of the motor is increased, under the control of the S611 soft starter microprocessor, to achieve a gentle start. After the speed has reached its nominal value, the bypass contactors close and the pump operates as with any other starter.

Upon a stop command, the bypass contactors are opened and the motor speed is decreased in a tapered manner, to gradually slow the flow until the motor is brought to a stop.

Pump Control Option



Edge and Level Sensing Control

Edge or Level Sensing is selected with the Start Control parameter in the Advanced Configuration Menu. Factory default is Level Sensing.

Edge Sensing

Edge sensing requires 120 Vac power be momentarily applied to the Start terminal (with the Permissive terminal 120 Vac) to initiate a start under all conditions. After a stop or fault occurs, the 120 Vac must be reapplied to the start terminal before another start can occur. This control configuration should be used when restarting of the motor after a fault or stop must be supervised manually or as a part of a control scheme. The cycling of 120 Vac power to the Permissive terminal before starting is required regardless of the position of the auto reset parameter.

Level Sensing

Level sensing will enable a motor to restart after a fault is cleared without cycling 120V AC to the Permissive terminal as long as:

- Permissive terminal is supplied with 120 Vac
- The auto reset parameter is set to enabled
- All faults have cleared or have been reset

This control configuration should be used where it is desirable to restart a motor after a fault without additional manual or automatic control. An example of this condition would be on a remote pumping station where it is desirable to automatically restart a pump after a power outage without operator intervention.

Note: If the auto reset feature is used, CAUTION must be exercised to assure that any restart occurs in a safe manner.

Features and Benefits

- The User Interface Module (UI) provides an intuitive, easy-to-use human interface with powerful configuration capabilities to maximize system performance
- Door or device mounted UI enables users to safely configure, commission, monitor and troubleshoot the system at the electrical panel without opening the enclosure door, eliminating the possibility of an arc flash incident
- System operating parameters can be monitored enterprise-wide through a communications network. Increase uptime by providing data for process management and preventive diagnostics
- Run bypass mode greatly reduces internal heating created by the greater power dissipation in the SCRs. Bypass contactors directly connect the motor to the line and improves system efficiency by reducing internal power losses
- Internal solid-state overload protection provides accurate current measurement and trip settings. Sophisticated algorithms solve a series of differential equations that model true motor heating and cooling, resulting in superior motor overload protection while minimizing nuisance trips. Advanced selectable protective features safeguard the motor and system against a variety of system faults
- Internal run bypass contactors and overload protection eliminate the need for additional devices, reducing enclosure sizes minimizing installation and wiring time and reducing overall assembly size and cost
- Wide range of overload FLA settings (50–100% of rated frame current) and a selectable trip class (5–30) offers users the flexibility to fine tune the starter to match specific application requirements
- Variable ramp times and torque control settings provide unlimited starting configurations, allowing for maximum application flexibility
- Kick-start feature enables soft starting of high friction loads
- Soft stop control for applications where an abrupt stop of the load is not acceptable
- Pump control option with sophisticated pump algorithms on both starting and stopping that minimize the pressure surges that cause water hammer. The pump control option will maximize the life of the pump and piping systems while minimizing the downtime caused by system failure
- Six SCRs control all three motor phases, providing smooth acceleration and deceleration performance
- Soft acceleration and deceleration reduces wear on belts, gears, chains, clutches, shafts and bearings
- Reduce the peak inrush current's stress on the power system
- Minimize peak starting torque to diminish mechanical system wear and damage
- 120 Vac control voltage enhances ease of connections
- The S611 lends itself to serviceability. The PCBs and contactors can be replaced in the field

Protective Features

All protective features can be configured, enabled or disabled with the UI or through the communications network.

Motor Overload

The S611 includes electronic overload protection as standard. The overload meets applicable requirements for a motor overload protective device. The overload protects the motor from over heat conditions with the use of sophisticated algorithms that model true motor heating, resulting in superior motor protection and fewer nuisance trips.

The S611 calculates a thermal memory value. A 100% value represents the maximum safe temperature of the motor. When the thermal memory value reaches 100%, an overload trip will occur removing power to the motor. Upon trip, the S611 stores the calculated motor heating value and will not allow a motor re-start until the motor has cooled. This feature ensures the motor will not be damaged by repeated overload trip, reset and re-start cycles.

The thermal memory value can be monitored through the UI or the communications network. The thermal memory value can be of great use in determining an impending overload trip condition. Alarms can be implemented in the process monitoring system warning of an impending trip before a trip occurs halting the process. Costly system downtime can be avoided.

The trip current is adjusted to match the specific application requirements by entering the motor nameplate full load current rating and trip class. The FLA adjustment includes a 2 to 1 adjustment range. The overload trip class is adjustable from class 5 through class 30. The overload is ambient temperature compensated - meaning its trip characteristics will not vary with changes in ambient temperature. The overload protection can be enabled, disabled, or disabled on start.

Short Circuit

The use of a short circuit protective device in coordination with the S611 is required in branch motor circuits by most electrical codes. Short circuit coordination ratings with both fuses and Eaton molded case circuit breakers are available providing customers with design flexibility. The S611 has short circuit coordination ratings as an open component, an enclosed starter, and in a motor control center. The short circuit ratings can go up to 100KA.

Jam

Excessive current and torque up to locked rotor levels can occur in a jam condition. The condition can result in stress and damage to the motor, load, mechanical system, and the electrical distribution system. Jam protection prevents the stress and damage from a jam during normal run. After the motor is started, a current greater than 300% FLA setting will cause the starter to trip on a jam fault.

Stall

Excessive current and torque up to locked rotor levels can occur in a stall condition. The condition can lead to an overload trip and result in stress and damage to the motor, load, mechanical system, and the electrical distribution system. Stall protection prevents stress and damage to a motor that has not come up to speed, or stalled after the soft start time. The S611 will trip to protect the system in the event that the motor did not get to the rated speed in the defined soft start period. A current greater than 200% FLA at the end of the soft start period will cause the starter to trip on a stall fault.

Pole Over Temperature

High ambient temperatures, extended ramp times and high duty cycle conditions may cause the S611 power pole conductors to reach a temperature that exceeds their thermal rating. The S611 is equipped with sensors that monitor the temperature of the power poles. Over temperature protection occurs if the device's thermal capacity is exceeded. The soft starter will trip in over temperature conditions, preventing device failure.

The device pole temperature value can be monitored through the UI or the communications network. This feature can be of use in determining an impending over temperature trip condition. Alarms can be implemented in the process monitoring system warning of an impending trip before a trip occurs, halting the process. Costly system shutdown can be avoided.

Phase Loss

Loss of a phase can cause a significant increase in the current drawn in the remaining two phases. Phase loss can lead to motor damage before an eventual overload trip occurs. Phase loss is typically an indication of a failure in the electrical distribution system. The S611 will detect a phase loss and trip if any phase current drops below a preset value. The phase loss trip level is adjustable from 0% to 100% of the average of the other two phase levels with an adjustable trip delay of 0.1 to 60 seconds.

Phase Imbalance

Phase current or voltage imbalance can cause a significant increase in the current drawn in the remaining two phases. Phase imbalance can lead to motor damage before an eventual overload trip. Phase imbalance is typically an indication of a failure in the electrical distribution system or the motor. The S611 will detect both current and voltage phase imbalances and trip if any phase becomes imbalanced as compared to the average of the other two phases.

The phase current imbalance trip level is adjustable from 0% to 100% of the average of the current in the other two phases with an adjustable trip delay of 0.1 to 60 seconds.

The phase voltage imbalance trip level is adjustable from 0% to 100% of the average of the voltage in the other two phases with an adjustable trip delay of 0.1 to 60 seconds.

Reset Mode

The S611 can be set up for automatic or manual reset on trip. The manual reset mode requires the operator to physically press the RESET button located on the soft starter. The overload can be manually reset through the UI or through the communications network.

The automatic reset mode allows the soft starter to be automatically reset as soon as the trip condition is no longer present. With the automatic reset mode, after the fault is no longer present, the motor will be restarted as soon as a valid start signal is present.

Phase Reversal

The S611 can determine if the proper line phase sequence is present by default. The device will trip if the line phase sequence is something other than A-B-C. The S611 can be configured to operate under reversed phase conditions (A-C-B).

Shorted SCR Detection

The S611 monitors the operation of the power poles and will trip under a shorted SCR condition.

Open SCR Detection

The S611 monitors the operation of the power poles and will trip under an open SCR condition.

Low Current

Low current conditions can be a result of a loss of load or a failure in the mechanical system. The S611 has low current protection that will trip if the average RMS current falls below a preset value. The low current protection can be programmed as a percent of motor FLA from 0% to 100%.

Low Voltage

Low voltage conditions can result from disturbances in the electrical power distribution system. Low voltage conditions can cause a malfunction and damage to electrical equipment. The S611 has low voltage protection that will trip if the average RMS voltage falls below a preset value. The low voltage protection can be programmed as a percent of nominal voltage from 1% to 99% with a trip delay of 0.1 to 60 seconds.

High Voltage

High voltage conditions can result from disturbances in the electrical power distribution system. High voltage conditions can cause malfunctions or failures of electrical equipment. The S611 has high voltage protection that will trip if the average RMS voltage is greater than a preset value. The high voltage protection can be programmed as a percent of nominal voltage from 101% to 120% with a trip delay of 0.1 to 60 seconds.

Monitoring Capabilities

The S611 has an impressive array of system monitoring capabilities that allow users to access real time process and diagnostic data. This data can be viewed at the device with the UI or through a communications network. Data over a communications network can provide valuable insight into the condition of the equipment and processes. Maintenance and production personnel can monitor critical operational and maintenance data from a central control station that can be located far away from the production facility. Process data can be monitored to determine system anomalies that may indicate a need for preventive maintenance or an Impeding failure.

Adjustments made through the communications network can reduce costs by minimizing the time traveling to the location where the motor controls are located. When faults do occur, real time fault data can assist maintenance in troubleshooting and planning repair resources. Remote reset signals can be given to tripped devices without the need for manual intervention by maintenance personnel.

Average Line Current

Provides the average of the three phase RMS line currents in amps, accurate to within 2%. Current data can be used to indicate a need for maintenance. Increased currents in a fixed load application can indicate a reduction in system efficiencies and performance, signifying system maintenance is due.

Average Pole Current

Provides the average of the three phase RMS pole currents in amps, accurate to within 2%. The pole current is the current through the soft starter. The line and pole current will be identical in in-line applications, and will differ in inside-the-delta applications.

Average Line Current as a % FLA

Provides the average RMS line current as a percentage of the S611 FLA setting.

Three-Phase Line Currents

Provides three RMS phase line currents in amps, accurate to within 2%. Imbalances or changes in the relative phase current to one another can indicate anomalies in the motor or electrical distribution system.

Three-Phase Pole Currents

Provides three RMS phase pole currents in amps, accurate to within 2%. The pole current is the current through the soft starter. The line and pole current will be identical in in-line applications.

Three-Phase Line Voltages

Provides the individual RMS three phase line voltages. Imbalances or changes in the relative phase voltage to one another can indicate anomalies in the motor or electrical distribution system. Voltage can be used to monitor electrical distribution system performance. Warnings, alarms and system actions to low or high voltage conditions can be implemented.

Percent Thermal Memory

Provides the real time calculated thermal memory value. The S611 calculates thermal memory value. A 100% value represents the maximum safe temperature of the motor. When the thermal memory value reaches 100%, an overload trip will occur, removing power to the motor.

The thermal memory value can be of great use in determining an impending overload trip Condition. Alarms can be implemented in the process monitoring system warning of an Impending trip before a trip occurs, halting the process. Costly system downtime can be avoided.

Pole Temperature

Increases in pole temperature are caused by increases in ambient temperature, start/stop times and start duty cycles. Changes in pole temperatures represent a change in system operating conditions. Identifying unexpected operating conditions or changes can prompt maintenance and aid in process evaluation activities.

Power Monitoring

S611 can monitor power and it can be displayed on the UI.

Start Count

Number of starts are stored in the device and can be displayed using field bus.

Diagnostics

Fault Queue

Current fault and a fault queue containing the last nine system faults can be read through the UI or communications network. Fault identification can minimize troubleshooting time and cost and prevent arc flash incidents. The fault queue can be remotely accessed through a communications network to assist in planning maintenance resources. 30 different faults can be identified by the S611.

Control Status

The S611 provides data that represents system conditions that can be read through the UI or the communications network. This data identifies the status of the system and the control commands the system is requesting of the S611. This can be used for advanced Troubleshooting and system integration activities.

Field Serviceability

In the case of maintenance, the S611 provides easy access and replacement of key components including control board and internal bypass contactors—significantly increasing its service life. If a component ever needs to be replaced, this straightforward operation can be completed by an end-user without the need to call in an outside service technician or engineer. These components are stocked and available for order and quick fulfillment—ensuring your operation continues with minimal downtime.

Standards and Certifications

- IEC 60947-4-2
- UL listed
- CSA certified (3211 06)

Instructional Leaflets

- Instruction Manual: MN03902011E
- Quick Start Guide: MN03901003E

S801+/S811+ Solid-State Soft Starters

Furnish as indicated Eaton Class ECS combination starters manufactured by Eaton's electrical sector or approved equal. All starters shall be UL listed and conform to the latest IEC and NEMA Standards and the National Electric Code.

S801+ Soft Starter

Description	Catalog Number
Non-combination	**ECS90**
Disconnect switch	**ECS91**
Circuit breaker	**ECS92**

S811+ Soft Starter

Description	Catalog Number
Non-combination	**ECS93**
Disconnect switch	**ECS94**
Circuit breaker	**ECS95**

General

- All motor starters shall be fully rated SCR devices up to 1000 amperes, with an adjustable ramp time up to 360 seconds as either current limit or torque, an initial torque kick start adjustable from 0–85% and soft stop adjustable up to 60 seconds
- Overload relays shall be solid-state and provide motor protection accuracy to 2%. Phase loss and phase unbalance protection shall be included as standard. The overload relay shall be heaterless and capable of selecting Class 10, 20 or 30 protection. Full-load current settings shall be set with dial settings or control interface module
- 24 Vdc power supplies are supplied as standard and are available with primary ratings from 480–120 Vac and have ratings available from 10–160 watts. Power supplies are equipped with a built-in short-circuit protection
- Control circuit transformers, where specified, shall be encapsulated. Primary and secondary fusing shall be provided. Unless otherwise specified, the secondary shall be 120 Vac. 100 VA is minimum
- Pilot devices, where specified, shall be oiltight and mounted in the flange. Pilot lights shall be transformer type for longer lamp life. Pilot device legend plates shall be engraved aluminum
- Running bypass contactor shall be supplied integral to the soft starter and capable of handling full load amperage
- Option available for full-voltage emergency bypass contactor
- S801+/S811+ shall have built-in communication port to enable control network connectivity
- S811+ shall have a removable digital interface module allowing access to monitor and adjust all parameters. DIM shall be an LCD display
- S801+ shall have a removable control interface module allowing adjustments to Class, FLA, ramp time, stop time, initial torque and protective features

Enclosure

- Enclosures shall be Type 1, 3R, 4, 4X, 7/9 or 12, as scheduled
- The operating mechanism shall be mounted on the flange and shall have positive, non-teasing ON/OFF action. The handle shall be color-coded: red for ON and black for OFF
- The operating handle shall have a means to lock the handle in the OFF position with a minimum of three standard padlocks having 1/4 in diameter shackles
- The enclosure sub-panel shall be easily removed without disturbing the operating mechanism
- Enclosures shall have means for locking the cover

Short-Circuit Protective Device

Disconnect Switch

- Where specified, a disconnect switch with double break, rotary blades and quick make/quick break action shall be provided
- A line shield with test probe holes for inspection shall be provided. The shield shall be removable
- The switch shall have readily visible blades in the open (OFF) position
- The fusible disconnect switch (through 100A) shall have built-in fuse pullers to make it easier to remove fuses

Circuit Breaker

- Where specified, an adjustable instantaneous trip, magnetic only circuit breaker shall be provided
- A manual push-to-trip button shall be provided to exercise the trip unit

Short-Circuit Rating

- Fusible disconnect switches shall be UL listed for 100,000 amperes available when Class R fuses are used
- Combination starters with adjustable instantaneous trip, magnetic only circuit breakers shall be UL listed for 100,000 amperes available through 480 Vac

Technical Data and Specifications

Soft Starters—S801+

Description	S801+N37N3S	S801+N66N3S	S801+R10N3S	S801+R13N3S
Max. current capacity	37	66	105	135
General Information				
Bypass mechanical lifespan	10M	10M	10M	10M
Insulating voltage Ui	660V	660V	660V	660V
Ramp time range	0.5–180 seconds	0.5–180 seconds	0.5–180 seconds	0.5–180 seconds
Resistance to vibration	3g	3g	3g	3g
Resistance to shock	15g	15g	15g	15g
Electrical Information				
Operating voltage	200–600V	200–600V	200–600V	200–600V
Operating frequency	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz
Overload setting	30–100%	30–100%	30–100%	30–100%
Trip class	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30
Cabling Capacity (IEC 947)				
Number of conductors	1	1	1	1
Wire sizes	14–2	14–2	14–4/0	14–4/0
Type of connectors	Box lug	Box lug	Box lug	Box lug
Control Wiring (12-Pin)				
Wire sizes in AWG	22–14	22–14	22–14	22–14
Number of conductors (stranded)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)
Torque requirements in lb-in	3.5	3.5	3.5	3.5
Solid, stranded or flexible max. size in mm^2	3.31	3.31	3.31	3.31
Control Power Requirements				
Voltage range (24V ±10%)	21.6–26.4	21.6–26.4	21.6–26.4	21.6–26.4
Steady-state current amps	1.0	1.0	1.0	1.0
Inrush current amps	10	10	10	10
Ripple	1%	1%	1%	1%
Relays (1) Class A and C				
Voltage AC—maximum	240	240	240	240
Voltage DC—maximum	120	120	120	120
Amps—maximum	3	3	3	3
Environment				
Temperature—operating	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C
Temperature—storage	–50 to 70°C	–50 to 70°C	–50 to 70°C	–50 to 70°C
Altitude	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m
Humidity	<95% noncondensing	<95% noncondensing	<95% noncondensing	<95% noncondensing
Operating position	Any	Any	Any	Any
Pollution degree IEC947-1	3	3	3	3
Impulse withstand voltage IEC947-4-1	6000V	6000V	6000V	6000V

Soft Starters—S801+, continued

Description	S801+T18N3S	S801+T24N3S	S801+T30N3S	S801+U36N3S ①②
Max. current capacity	180	240	304	360
General Information				
Bypass mechanical lifespan	10M	10M	10M	10M
Insulating voltage Ui	660V	660V	660V	660V
Ramp time range	0.5–180 seconds	0.5–180 seconds	0.5–180 seconds	0.5–180 seconds
Resistance to vibration	3g	3g	3g	3g
Resistance to shock	15g	15g	15g	15g
Electrical Information				
Operating voltage	200–600V	200–600V	200–600V	200–600V
Operating frequency	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz
Overload setting	30–100%	30–100%	30–100%	30–100%
Trip class	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30
Cabling Capacity (IEC 947)				
Number of conductors	1 or 2	1 or 2	1 or 2	1 or 2
Wire sizes	4 AWG to 500 kcmil	4 AWG to 500 kcmil	4 AWG to 500 kcmil	4 AWG to 500 kcmil
Type of connectors	Add-on lug kit	Add-on lug kit	Add-on lug kit	Add-on lug kit
Control Wiring (12-Pin)				
Wire sizes in AWG	22–14	22–14	22–14	22–14
Number of conductors (stranded)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)
Torque requirements in lb-in	3.5	3.5	3.5	3.5
Solid, stranded or flexible max. size in mm^2	3.31	3.31	3.31	3.31
Control Power Requirements				
Voltage range (24V ±10%)	21.6–26.4	21.6–26.4	21.6–26.4	21.6–26.4
Steady-state current amps	1.0	1.0	1.0	1.0
Inrush current amps	10	10	10	10
Ripple	1%	1%	1%	1%
Relays (1) Class A and C				
Voltage AC—maximum	240	240	240	240
Voltage DC—maximum	120	120	120	120
Amps—maximum	3	3	3	3
Environment				
Temperature—operating	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C
Temperature—storage	–50 to 70°C	–50 to 70°C	–50 to 70°C	–50 to 70°C
Altitude	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m
Humidity	<95% noncondensing	<95% noncondensing	<95% noncondensing	<95% noncondensing
Operating position	Any	Any	Any	Any
Pollution degree IEC947-1	3	3	3	3
Impulse withstand voltage IEC947-4-1	6000V	6000V	6000V	6000V

Notes

① 801+U50N3S unit does not have IEC certification.

② UL recognized component.

Soft Starters—S801+, continued

Description	S801+U42N3S	S801+U50N3S ①	S801+V36N3S	S801+V42N3S
Max. current capacity	420	500	360	420
General Information				
Bypass mechanical lifespan	10M	10M	10M	10M
Insulating voltage Ui	660V	660V	660V	660V
Ramp time range	0.5–180 seconds	0.5–180 seconds	0.5–180 seconds	0.5–180 seconds
Resistance to vibration	3g	3g	3g	3g
Resistance to shock	15g	15g	15g	15g
Electrical Information				
Operating voltage	200–600V	200–600V	200–600V	200–600V
Operating frequency	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz
Overload setting	30–100%	30–100%	30–100%	30–100%
Trip class	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30
Cabling Capacity (IEC 947)				
Number of conductors	1 or 2	1 or 2	2, 4 or 6	2, 4 or 6
Wire sizes	4 AWG to 500 kcmil	4 AWG to 500 kcmil	2/0 to 500 kcmil	2/0 to 500 kcmil
Type of connectors	Add-on lug kit	Add-on lug kit	Add-on lug kit	Add-on lug kit
Control Wiring (12-Pin)				
Wire sizes in AWG	22–14	22–14	22–14	22–14
Number of conductors (stranded)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)
Torque requirements in lb-in	3.5	3.5	3.5	3.5
Solid, stranded or flexible max. size in mm^2	3.31	3.31	3.31	3.31
Control Power Requirements				
Voltage range (24V ±10%)	21.6–26.4	21.6–26.4	21.6–26.4	21.6–26.4
Steady-state current amps	1.0	1.0	1.4	1.4
Inrush current amps	10	10	10	10
Ripple	1%	1%	1%	1%
Relays (1) Class A and C				
Voltage AC—maximum	240	240	240	240
Voltage DC—maximum	120	120	120	120
Amps—maximum	3	3	3	3
Environment				
Temperature—operating	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C
Temperature—storage	–50 to 70°C	–50 to 70°C	–50 to 70°C	–50 to 70°C
Altitude	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m
Humidity	<95% noncondensing	<95% noncondensing	<95% noncondensing	<95% noncondensing
Operating position	Any	Any	Any	Any
Pollution degree IEC947-1	3	3	3	3
Impulse withstand voltage IEC947-4-1	6000V	6000V	6000V	6000V

Note

① 801+U50N3S unit does not have IEC certification.

Soft Starters—S801+, continued

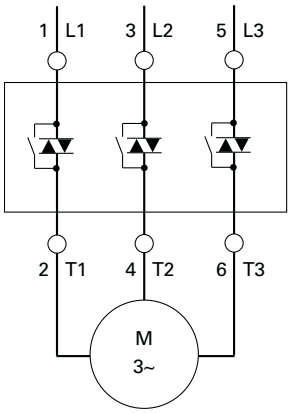
Description	S801+V50N3S	S801+V65N3S	S801+V72N3S	S801+V85N3S	S801+V10N3S ①
Max. current capacity	500	650	720	850	1000
Dimensions					
Width in inches (mm)	11.03 (280.2)	11.03 (280.2)	11.03 (280.2)	11.03 (280.2)	11.03 (280.2)
Height in inches (mm)	16.57 (420.8)	16.57 (420.8)	16.57 (420.8)	16.57 (420.8)	16.57 (420.8)
Depth in inches (mm)	7.23 (183.7)	7.23 (183.7)	7.23 (183.7)	7.23 (183.7)	7.23 (183.7)
Weight in lbs (kg)	103 (46.8) with lugs 91 (41.4) without lugs	103 (46.8) with lugs 91 (41.4) without lugs	103 (46.8) with lugs 91 (41.4) without lugs	103 (46.8) with lugs 91 (41.4) without lugs	103 (46.8) with lugs 91 (41.4) without lugs
General Information					
Bypass mechanical lifespan	10M	10M	10M	10M	10M
Insulating voltage Ui	660V	660V	660V	660V	660V
Ramp time range	0.5–180 seconds	0.5–180 seconds	0.5–180 seconds	0.5–180 seconds	0.5–180 seconds
Resistance to vibration	3g	3g	3g	3g	3g
Resistance to shock	15g	15g	15g	15g	15g
Electrical Information					
Operating voltage	200–600V	200–600V	200–600V	200–600V	200–600V
Operating frequency	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz
Overload setting	30–100%	30–100%	30–100%	30–100%	30–100%
Trip class	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30
Cabling Capacity (IEC 947)					
Number of conductors	2, 4 or 6	2, 4 or 6	2, 4 or 6	2, 4 or 6	2, 4 or 6
Wire sizes	2/0 to 500 kcmil	2/0 to 500 kcmil	2/0 to 500 kcmil	2/0 to 500 kcmil	2/0 to 500 kcmil
Type of connectors	Add-on lug kit	Add-on lug kit	Add-on lug kit	Add-on lug kit	Add-on lug kit
Control Wiring (12-Pin)					
Wire sizes in AWG	22–14	22–14	22–14	22–14	22–14
Number of conductors (stranded)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)
Torque requirements in lb-in	3.5	3.5	3.5	3.5	3.5
Solid, stranded or flexible max. size in mm^2	3.31	3.31	3.31	3.31	3.31
Control Power Requirements					
Voltage range (24V ±10%)	21.6–26.4	21.6–26.4	21.6–26.4	21.6–26.4	21.6–26.4
Steady-state current amps	1.4	1.4	1.4	1.4	1.4
Inrush current amps	10	10	10	10	10
Ripple	1%	1%	1%	1%	1%
Relays (1) Class A and C					
Voltage AC—maximum	240	240	240	240	240
Voltage DC—maximum	120	120	120	120	120
Amps—maximum	3	3	3	3	3
Environment					
Temperature—operating	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C
Temperature—storage	–50 to 70°C	–50 to 70°C	–50 to 70°C	–50 to 70°C	–50 to 70°C
Altitude	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m
Humidity	<95% noncondensing	<95% noncondensing	<95% noncondensing	<95% noncondensing	<95% noncondensing
Operating position	Any	Any	Any	Any	Any
Pollution degree IEC947-1	3	3	3	3	3
Impulse withstand voltage IEC947-4-1	6000V	6000V	6000V	6000V	6000V

Note

① UL recognized component.

Wiring Diagrams

Line Connected Soft Starter



Dimensions

Approximate Dimensions in Inches (mm)

Soft Starters—S801+

Catalog Number	W	H	D	Weight in Lbs (kg)
S801+N37N3S	2.66 (67.6)	7.37 (187.2)	6.45 (163.9)	5.8 (2.6)
S801+N66N3S	2.66 (67.6)	7.37 (187.2)	6.45 (163.9)	5.8 (2.6)
S801+R10N3S	4.38 (111.3)	7.92 (201.1)	6.64 (168.6)	10.5 (4.8)
S801+R13N3S	4.38 (111.3)	7.92 (201.1)	6.64 (168.6)	10.5 (4.8)
S801+T18N3S	7.65 (194.4)	12.71 (322.9)	6.47 (164.4)	48 (21.8) with lugs 41 (18.6) without lugs
S801+T24N3S	7.65 (194.4)	12.71 (322.9)	6.47 (164.4)	48 (21.8) with lugs 41 (18.6) without lugs
S801+T30N3S	7.65 (194.4)	12.71 (322.9)	6.47 (164.4)	48 (21.8) with lugs 41 (18.6) without lugs
S801+U36N3S	7.73 (196.3)	12.72 (323.1)	7.16 (181.8)	48 (21.8) with lugs 41 (18.6) without lugs
S801+U42N3S	7.73 (196.3)	12.72 (323.1)	7.16 (181.8)	48 (21.8) with lugs 41 (18.6) without lugs
S801+U50N3S	7.73 (196.3)	12.72 (323.1)	7.16 (181.8)	48 (21.8) with lugs 41 (18.6) without lugs
S801+V36N3S	11.05 (280.6)	16.57 (420.8)	7.39 (187.8)	103 (46.8) with lugs 91 (41.4) without lugs
S801+V42N3S	11.05 (280.6)	16.57 (420.8)	7.39 (187.8)	103 (46.8) with lugs 91 (41.4) without lugs
S801+V50N3S	11.05 (280.6)	16.57 (420.8)	7.39 (187.8)	103 (46.8) with lugs 91 (41.4) without lugs
S801+V65N3S	11.05 (280.6)	16.57 (420.8)	7.39 (187.8)	103 (46.8) with lugs 91 (41.4) without lugs
S801+V72N3S	11.05 (280.6)	16.57 (420.8)	7.39 (187.8)	103 (46.8) with lugs 91 (41.4) without lugs
S801+V85N3S	11.05 (280.6)	16.57 (420.8)	7.39 (187.8)	103 (46.8) with lugs 91 (41.4) without lugs
S801+V10N3S	11.05 (280.6)	16.57 (420.8)	7.39 (187.8)	103 (46.8) with lugs 91 (41.4) without lugs

Operation

Overload Functionality

Overtemperature
Protects the device from overheating. Starter will shut down at 100°C.

Stall
Selectable protective feature, unit trips to protect system in event motor can not get to rated speed in the defined ramp period.

Jam
Selectable protective feature, unit trips to prevent damage to motor during normal run.

Phase Loss
Selectable protective feature, trips under voltage loss condition to any phase.

Phase Reversal
Selectable protective feature, trips when phase rotation is something other than A-B-C.

Kick Start
Selectable feature that provides a current "kick" of up to 550% of full load current for 0 to 2.0 seconds. This provides the additional torque required at startup to break free a motor.

Ramp Start
Provides a constant increase in torque to the motor.

Current Limit Start
Limits the maximum current available to the motor during the startup phase.

Soft Stop
Allows for a controlled stopping of a frictional load.

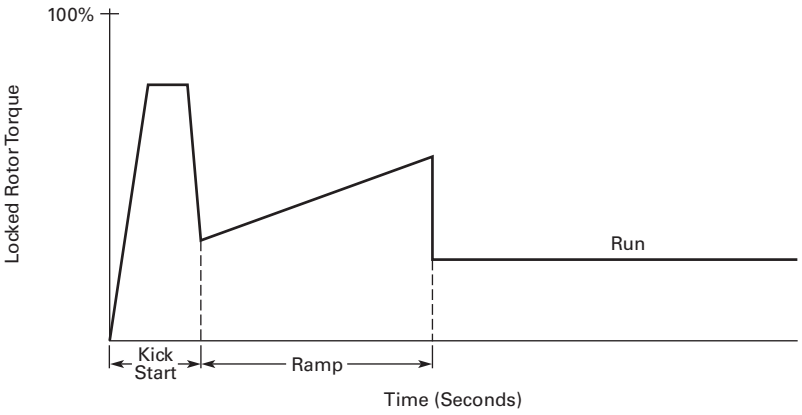
Shorted SCR Detection
Monitors for shorted SCR in the power poles.

Starting Characteristics

Kick Start
Provides an initial boost of current to the motor to help overcome motor inertia and begin motor rotation.

- 0–85% of locked rotor torque
- 0–2.0 seconds duration

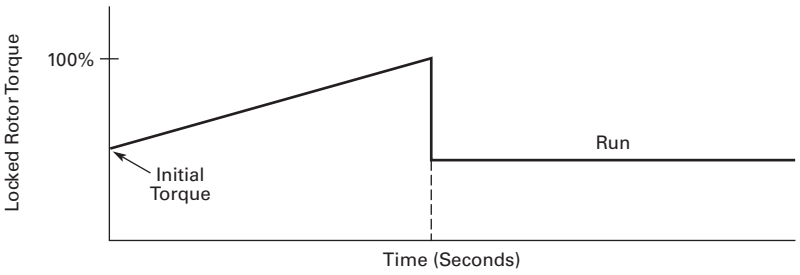
Starting Characteristics—Kick Start



Ramp Start
The most commonly used form of soft start. This allows you to set the initial torque value (of the ramp) and then raises it to full voltage conditions.

- Adjustable initial torque = 0–85% of locked rotor torque
- Adjustable ramp time = 0.5–180 seconds

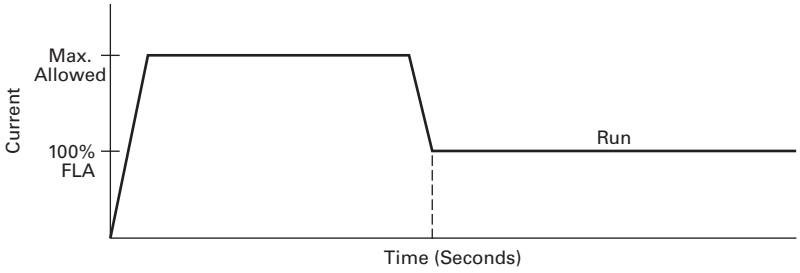
Starting Characteristics—Ramp Start



Current Limit
This mode of soft starting is used when it becomes necessary to limit the maximum starting current due to long start times or to protect the motor.

- Maximum current of 0–85% locked rotor current
- Adjustable ramp time = 0.5–180 seconds

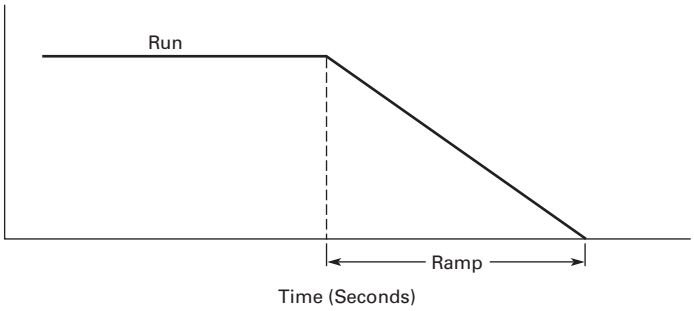
Starting Characteristics—Current Limit



Soft Stop
Used when an extended coast-to-rest period is desired. Often used with high friction loads where a sudden stop may cause system or product damage.

- Stop time = 0–60 seconds

Starting Characteristics—Soft Stop



Technical Data and Specifications

Soft Starters—S811+

Description	S811+N37_	S811+N66_	S811+R10+	S811+R13_
Max. current capacity	37	66	105	135
FLA range	11–37	20–66	32–105	42–135
General Information				
Bypass mechanical lifespan	10M	10M	10M	10M
Insulating voltage Ui	660V	660V	660V	660V
Ramp time range	0.5–180 seconds (0.5–360 seconds S811+ Premium)	0.5–180 seconds (0.5–360 seconds S811+ Premium)	0.5–180 seconds (0.5–360 seconds S811+ Premium)	0.5–180 seconds (0.5–360 seconds S811+ Premium)
Resistance to vibration	3g	3g	3g	3g
Resistance to shock	15g	15g	15g	15g
Electrical Information				
Operating voltage	200–600V	200–600V	200–600V	200–600V
Operating frequency	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz
Overload setting	30–100%	30–100%	30–100%	30–100%
Trip class	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30
Cabling Capacity (IEC 947)				
Number of conductors	1	1	1	1
Wire sizes	14–2	14–2	14–4/0	14–4/0
Type of connectors	Box lug	Box lug	Box lug	Box lug
Control Wiring (12-Pin)				
Wire sizes in AWG	22–14	22–14	22–14	22–14
Number of conductors (stranded)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)
Torque requirements in lb-in	3.5	3.5	3.5	3.5
Solid, stranded or flexible max. size in mm^2	3.31	3.31	3.31	3.31
Control Power Requirements				
Voltage range (24V ±10%)	21.6–26.4	21.6–26.4	21.6–26.4	21.6–26.4
Steady-state current amps	1.0	1.0	1.0	1.0
Inrush current amps	10	10	10	10
Ripple	1%	1%	1%	1%
Relays (1) Class A and C				
Voltage AC—maximum	240	240	240	240
Voltage DC—maximum	120	120	120	120
Amps—maximum	3	3	3	3
Environment				
Temperature—operating	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C
Temperature—storage	–50 to 70°C	–50 to 70°C	–50 to 70°C	–50 to 70°C
Altitude	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m
Humidity	<95% noncondensing	<95% noncondensing	<95% noncondensing	<95% noncondensing
Operating position	Any	Any	Any	Any
Pollution degree IEC947-1	3	3	3	3
Impulse withstand voltage IEC947-4-1	6000V	6000V	6000V	6000V

Soft Starters—S811+, continued

Description	S811+T18_	S811+T24_	S811+T30_	S811+U36_
Max. current capacity	180	240	304	360
FLA range	56–180	75–240	95–304	112–360
General Information				
Bypass mechanical lifespan	10M	10M	10M	10M
Insulating voltage Ui	660V	660V	660V	660V
Ramp time range	0.5–180 seconds (0.5–360 seconds S811+ Premium)	0.5–180 seconds (0.5–360 seconds S811+ Premium)	0.5–180 seconds (0.5–360 seconds S811+ Premium)	0.5–180 seconds (0.5–360 seconds S811+ Premium)
Resistance to vibration	3g	3g	3g	3g
Resistance to shock	15g	15g	15g	15g
Electrical Information				
Operating voltage	200–600V	200–600V	200–600V	200–600V
Operating frequency	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz
Overload setting	30–100%	30–100%	30–100%	30–100%
Trip class	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30
Cabling Capacity (IEC 947)				
Number of conductors	1 or 2	1 or 2	1 or 2	1 or 2
Wire sizes	4 AWG to 500 kcmil	4 AWG to 500 kcmil	4 AWG to 500 kcmil	4 AWG to 500 kcmil
Type of connectors	Add-on lug kit	Add-on lug kit	Add-on lug kit	Add-on lug kit
Control Wiring (12-Pin)				
Wire sizes in AWG	22–14	22–14	22–14	22–14
Number of conductors (stranded)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)
Torque requirements in lb-in	3.5	3.5	3.5	3.5
Solid, stranded or flexible max. size in mm^2	3.31	3.31	3.31	3.31
Control Power Requirements				
Voltage range (24V ±10%)	21.6–26.4	21.6–26.4	21.6–26.4	21.6–26.4
Steady-state current amps	1.0	1.0	1.0	1.0
Inrush current amps	10	10	10	10
Ripple	1%	1%	1%	1%
Relays (1) Class A and C				
Voltage AC—maximum	240	240	240	240
Voltage DC—maximum	120	120	120	120
Amps—maximum	3	3	3	3
Environment				
Temperature—operating	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C
Temperature—storage	–50 to 70°C	–50 to 70°C	–50 to 70°C	–50 to 70°C
Altitude	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m
Humidity	<95% noncondensing	<95% noncondensing	<95% noncondensing	<95% noncondensing
Operating position	Any	Any	Any	Any
Pollution degree IEC947-1	3	3	3	3
Impulse withstand voltage IEC947-4-1	6000V	6000V	6000V	6000V

Soft Starters—S811+, continued

Description	S811+U42_	S811+U50_ [1]	S811+V36_	S811+V42_
Max. current capacity	420	500	360	420
FLA range	131–420	156–500	112–360	131–420
General Information				
Bypass mechanical lifespan	10M	10M	10M	10M
Insulating voltage Ui	660V	660V	660V	660V
Ramp time range	0.5–180 seconds (0.5–360 seconds S811+ Premium)	0.5–180 seconds (0.5–360 seconds S811+ Premium)	0.5–180 seconds (0.5–360 seconds S811+ Premium)	0.5–180 seconds (0.5–360 seconds S811+ Premium)
Resistance to vibration	3g	3g	3g	3g
Resistance to shock	15g	15g	15g	15g
Electrical Information				
Operating voltage	200–600V	200–600V	200–600V	200–600V
Operating frequency	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz
Overload setting	30–100%	30–100%	30–100%	30–100%
Trip class	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30
Cabling Capacity (IEC 947)				
Number of conductors	1 or 2	1 or 2	2, 4 or 6	2, 4 or 6
Wire sizes	4 AWG to 500 kcmil	4 AWG to 500 kcmil	4 AWG to 500 kcmil	4 AWG to 500 kcmil
Type of connectors	Add-on lug kit	Add-on lug kit	Add-on lug kit	Add-on lug kit
Control Wiring (12-Pin)				
Wire sizes in AWG	22–14	22–14	22–14	22–14
Number of conductors (stranded)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)
Torque requirements in lb-in	3.5	3.5	3.5	3.5
Solid, stranded or flexible max. size in mm^2	3.31	3.31	3.31	3.31
Control Power Requirements				
Voltage range (24V ±10%)	21.6–26.4	21.6–26.4	21.6–26.4	21.6–26.4
Steady-state current amps	1.0	1.0	1.4	1.4
Inrush current amps	10	10	10	10
Ripple	1%	1%	1%	1%
Relays (1) Class A and C				
Voltage AC—maximum	240	240	240	240
Voltage DC—maximum	120	120	120	120
Amps—maximum	3	3	3	3
Environment				
Temperature—operating	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C
Temperature—storage	–50 to 70°C	–50 to 70°C	–50 to 70°C	–50 to 70°C
Altitude	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m
Humidity	<95% noncondensing	<95% noncondensing	<95% noncondensing	<95% noncondensing
Operating position	Any	Any	Any	Any
Pollution degree IEC947-1	3	3	3	3
Impulse withstand voltage IEC947-4-1	6000V	6000V	6000V	6000V

Note

[1] S811+U50_ unit does not have IEC certification.

Soft Starters—S811+, continued

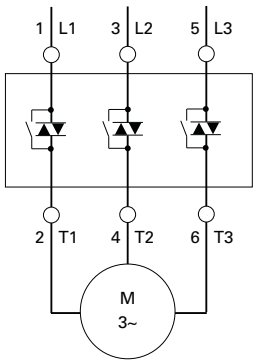
Description	S811+V50_	S811+V65_	S811+V72_	S811+V85_	S811+V10_ ①
Max. current capacity	500	650	720	850	1000
FLA range	156–500	203–650	225–720	265–580	320–1000
General Information					
Bypass mechanical lifespan	10M	10M	10M	10M	10M
Insulating voltage Ui	660V	660V	660V	660V	660V
Ramp time range	0.5–180 seconds (0.5–360 seconds S811+ Premium)	0.5–180 seconds (0.5–360 seconds S811+ Premium)	0.5–180 seconds (0.5–360 seconds S811+ Premium)	0.5–180 seconds (0.5–360 seconds S811+ Premium)	0.5–180 seconds (0.5–360 seconds S811+ Premium)
Resistance to vibration	3g	3g	3g	3g	3g
Resistance to shock	15g	15g	15g	15g	15g
Electrical Information					
Operating voltage	200–600V	200–600V	200–600V	200–600V	200–600V
Operating frequency	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz
Overload setting	30–100%	30–100%	30–100%	30–100%	30–100%
Trip class	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30	5, 10, 20 and 30
Cabling Capacity (IEC 947)					
Number of conductors	2, 4 or 6	2, 4 or 6	2, 4 or 6	2, 4 or 6	2, 4 or 6
Wire sizes	2/0 to 500 kcmil	2/0 to 500 kcmil	2/0 to 500 kcmil	2/0 to 500 kcmil	2/0 to 500 kcmil
Type of connectors	Add-on lug kit	Add-on lug kit	Add-on lug kit	Add-on lug kit	Add-on lug kit
Control Wiring (12-Pin)					
Wire sizes in AWG	22–14	22–14	22–14	22–14	22–14
Number of conductors (stranded)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)	2 (or one AWG 12)
Torque requirements in lb-in	3.5	3.5	3.5	3.5	3.5
Solid, stranded or flexible max. size in mm^2	3.31	3.31	3.31	3.31	3.31
Control Power Requirements					
Voltage range (24V ±10%)	21.6–26.4	21.6–26.4	21.6–26.4	21.6–26.4	21.6–26.4
Steady-state current amps	1.4	1.4	1.4	1.4	1.4
Inrush current amps	10	10	10	10	10
Ripple	1%	1%	1%	1%	1%
Relays (1) Class A and C					
Voltage AC—maximum	240	240	240	240	240
Voltage DC—maximum	120	120	120	120	120
Amps—maximum	3	3	3	3	3
Environment					
Temperature—operating	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C	–30 to 50°C (no derating) consult factory for operation >50°C
Temperature—storage	–50 to 70°C	–50 to 70°C	–50 to 70°C	–50 to 70°C	–50 to 70°C
Altitude	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m	<2000m—consult factory for operation >2000m
Humidity	<95% noncondensing	<95% noncondensing	<95% noncondensing	<95% noncondensing	<95% noncondensing
Operating position	Any	Any	Any	Any	Any
Pollution degree IEC947-1	3	3	3	3	3
Impulse withstand voltage IEC947-4-1	6000V	6000V	6000V	6000V	6000V

Note

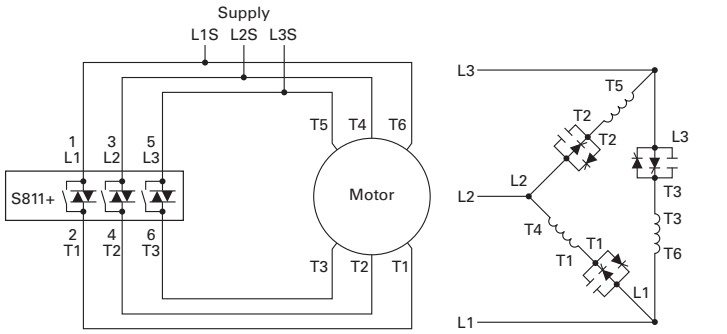
① UR recognized product.

Wiring Diagrams

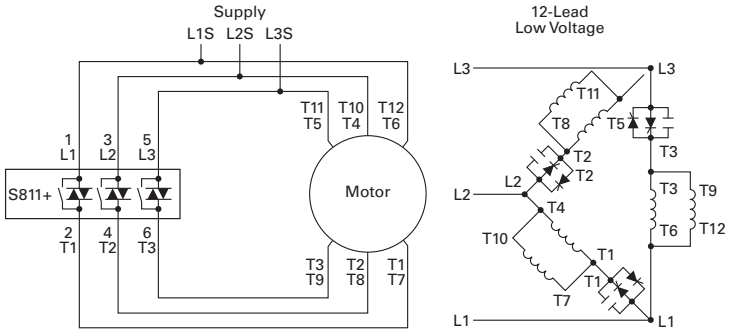
Line Connected Soft Starter



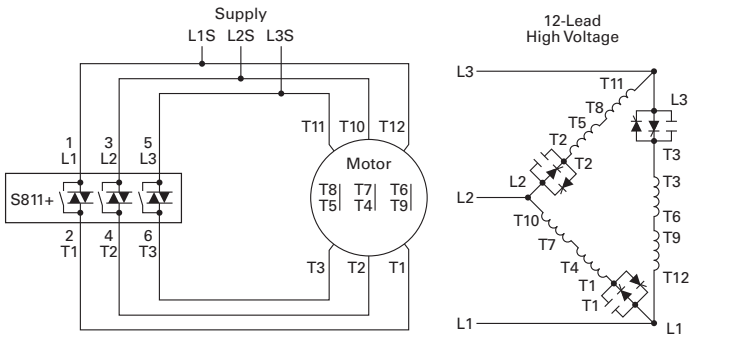
Inside-the-Delta Connected Soft Starter for a 6-Lead Motor



Inside-the-Delta Connected Soft Starter for a 12-Lead Low Voltage Motor



Inside-the-Delta Connected Soft Starter for a 12-Lead High Voltage Motor



Dimensions

Approximate Dimensions in Inches (mm)

Soft Starters—S811+

Catalog Number	W	H	D	Weight in Lbs (kg)
S811+N37N3S	2.66 (67.6)	7.37 (187.2)	6.45 (163.9)	5.8 (2.6)
S811+N66N3S	2.66 (67.6)	7.37 (187.2)	6.45 (163.9)	5.8 (2.6)
S811+R10N3S	4.38 (111.3)	7.92 (201.1)	6.64 (168.6)	10.5 (4.8)
S811+R13N3S	4.38 (111.3)	7.92 (201.1)	6.64 (168.6)	10.5 (4.8)
S811+T18N3S	7.65 (194.4)	12.71 (322.9)	6.47 (164.4)	48 (21.8) with lugs 41 (18.6) without lugs
S811+T24N3S	7.65 (194.4)	12.71 (322.9)	6.47 (164.4)	48 (21.8) with lugs 41 (18.6) without lugs
S811+T30N3S	7.65 (194.4)	12.71 (322.9)	6.47 (164.4)	48 (21.8) with lugs 41 (18.6) without lugs
S811+U36N3S	7.73 (196.3)	12.72 (323.1)	7.16 (181.8)	48 (21.8) with lugs 41 (18.6) without lugs
S811+U42N3S	7.73 (196.3)	12.72 (323.1)	7.16 (181.8)	48 (21.8) with lugs 41 (18.6) without lugs
S811+U50N3S	7.73 (196.3)	12.72 (323.1)	7.16 (181.8)	48 (21.8) with lugs 41 (18.6) without lugs
S811+V36N3S	11.05 (280.6)	16.57 (420.8)	7.39 (187.8)	103 (46.8) with lugs 91 (41.4) without lugs
S811+V42N3S	11.05 (280.6)	16.57 (420.8)	7.39 (187.8)	103 (46.8) with lugs 91 (41.4) without lugs
S811+V50N3S	11.05 (280.6)	16.57 (420.8)	7.39 (187.8)	103 (46.8) with lugs 91 (41.4) without lugs
S811+V65N3S	11.05 (280.6)	16.57 (420.8)	7.39 (187.8)	103 (46.8) with lugs 91 (41.4) without lugs
S811+V72N3S	11.05 (280.6)	16.57 (420.8)	7.39 (187.8)	103 (46.8) with lugs 91 (41.4) without lugs
S811+V85N3S	11.05 (280.6)	16.57 (420.8)	7.39 (187.8)	103 (46.8) with lugs 91 (41.4) without lugs
S811+V10N3S	11.05 (280.6)	16.57 (420.8)	7.39 (187.8)	103 (46.8) with lugs 91 (41.4) without lugs

Communications

The S811+ has native Modbus RTU communication capabilities. The S811+ may be connected to a variety of networks, including DeviceNet™, Modbus TCP, EtherNet/IP and PROFIBUS.

The S811+ communication parameters can be configured with the DIM or through the Fieldbus using CH Studio Component Manager. Advanced communication configuration settings provide the system integrator with powerful tools to facilitate system optimization

Communications Reference

Description	Part Number
Modbus TCP Communication Adapter with 120 Vac I/O	**C441U**
Modbus TCP Communication Adapter with 24 Vdc I/O	**C441V**
EtherNet/IP Communication Adapter with 120 Vac I/O	**C441U**
EtherNet/IP Communication Adapter with 24 Vdc I/O	**C441V**
85–264 Vac input, 24 Vdc output	**PSG240E**
360–575 Vac input, 24 Vdc output	**PSG240F**

Operation

Starting and Stopping Modes

The S811+ has a variety of starting and stopping methods to provide superior performance in the most demanding applications. The motor can be started in either voltage ramp start or current limit start mode. Kick start and soft stop are available within both starting modes. The user has the option to configure two independent start ramp profiles to accommodate variations in starting requirements.

Voltage Ramp Start

Provides a voltage ramp to the motor resulting in a constant torque increase. The most commonly used form of soft start, this start mode allows you to set the initial torque value and the duration of the ramp to full voltage conditions. Bypass contactors close after ramp time.

- Adjustable initial torque 0–85% of locked rotor torque
- Adjustable ramp time 0.5–180 seconds (0.5–360 seconds with the S811+ Premium)

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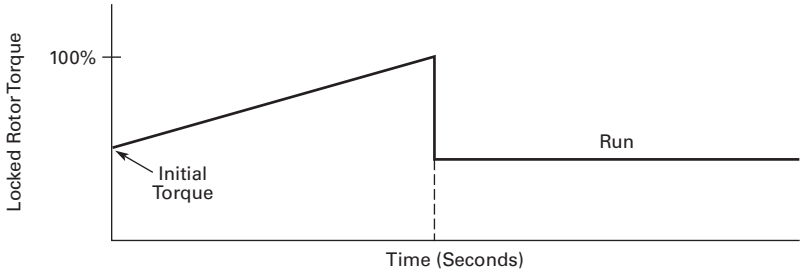
Starting Characteristics—Ramp Start

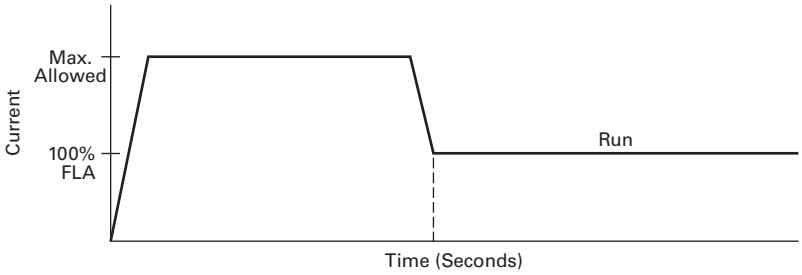


Current Limit Start

Limits the maximum current available to the motor during the start phase. This mode of soft starting is used when it becomes necessary to limit the maximum starting current due to long start times or to protect the motor. This start mode allows you to set the maximum starting current as a percentage of locked rotor current and the duration of the current limit. Bypass contactors close after current limit time.

- Maximum current of 0–85% locked rotor current
- Adjustable ramp time 0.5–180 seconds (0.5–360 seconds with the S811+ Premium)

Starting Characteristics—Current Limit Start

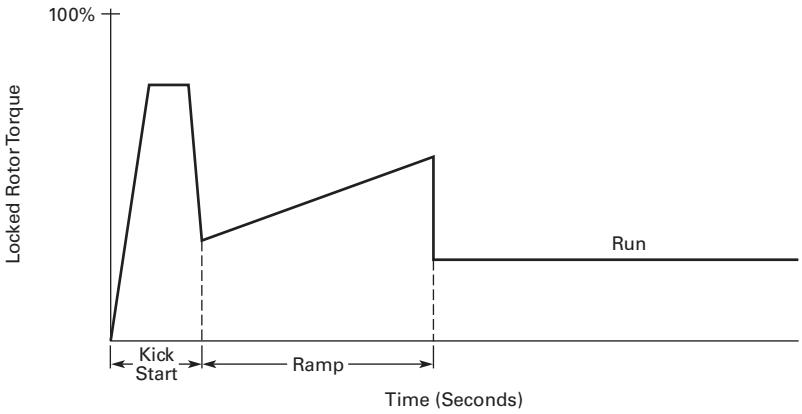


Kick Start

Selectable feature in both voltage ramp start and current limit start modes. Provides a current and torque "kick" for 0 to 2.0 seconds. This provides greater initial current to develop additional torque to breakaway a high friction load.

- 0–85% of locked rotor torque
- 0–2.0 seconds duration

Starting Characteristics—Kick Start

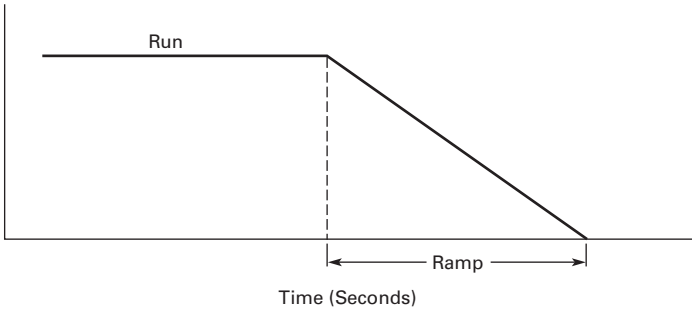


Soft Stop

Allows for a controlled stopping of a load. Used when a stop-time that is greater than the coast-to-stop time is desired. Often used with high friction loads where a sudden stop may cause system or load damage.

- Stop time = 0–60 seconds

Starting Characteristics—Soft Stop



Edge and Level Sensing Control

Edge Sensing

Edge sensing requires +24 Vdc power be momentarily applied to Control Terminal Block Pin 1 (with Terminal P at +24 Vdc) to initiate a start under all conditions. After a stop or fault occurs, the +24 Vdc must be removed, then reapplied to Terminal Pin 1 before another start can occur. This control configuration should be used when restarting of the motor after a fault or stop must be supervised manually or as a part of a control scheme. The cycling of +24 Vdc power to Terminal 1 Pin before starting is required regardless of the position of the auto reset switch on the DIM.

Level Sensing

Level sensing will enable a motor to restart after a fault is cleared without cycling +24 Vdc power to Terminal Pin 1 as long as:

- Terminal Pin P is supplied with +24 Vdc (to start from Control Terminal Block, Terminal Pin 3 must also be enabled)
- The auto reset switch on the DIM is set to enabled
- All faults have been reset

This control configuration should be used where it is desirable to restart a motor after a fault without additional manual or automatic control. An example of this condition would be on a remote pumping station where it is desirable to automatically restart a pump after a power outage without operator intervention.

Note: If the auto reset feature is used, CAUTION must be exercised to ensure that any restart occurs in a safe manner.

Features and Benefits

- Communication capabilities with various protocols
- The Digital Interface Module (DIM) provides an intuitive, easy-to-use human interface with powerful configuration capabilities to maximize system performance
- Door or device mounted DIM enables users to safely configure, commission, monitor and troubleshoot the system at the electrical panel without opening the enclosure door, eliminating the possibility of an arc flash incident
- System operating parameters can be monitored enterprise-wide through a communications network. Increase uptime by providing data for process management and preventive diagnostics
- Run internal bypass mode greatly reduces internal heating created by the greater power dissipation in the SCRs. Bypass contactor directly connects the motor to the line and improves system efficiency by reducing internal power losses
- Internal solid-state overload protection provides accurate current measurement and trip settings. Sophisticated algorithms solve a series of differential equations that model true motor heating and cooling, resulting in superior motor overload protection while minimizing nuisance trips. Advanced selectable protective features safeguard the motor and system against a variety of system faults
- Internal run bypass contactors and overload protection eliminate the need for additional devices, reducing enclosure sizes, minimizing installation and wiring time, and reducing overall assembly size and cost
- Wide range of overload FLA settings (31–100% of rated current) and a selectable trip class (5–30) offers users the flexibility to fine tune the starter to match specific application requirements
- Variable ramp times and torque control settings provide unlimited starting configurations, allowing for maximum application flexibility
- Kick-start feature enables soft starting of high friction loads
- Soft stop control for applications where an abrupt stop of the load is not acceptable
- The S811+ Premium with sophisticated pump control algorithms on both starting and stopping that minimize the pressure surges that cause water hammer. The pump control feature will maximize the life of the pump and piping systems while minimizing the downtime caused by system failure
- Six SCRs control all three motor phases, providing smooth acceleration and deceleration performance
- Soft acceleration and deceleration reduces wear on belts, gears, chains, clutches, shafts and bearings
- Reduce the peak inrush current's stress on the power system
- Manage peak starting torque to diminish mechanical system wear and damage
- 24 Vdc control voltage enhances personnel and equipment safety
- Removable, lockable control terminal block reduces maintenance costs. Also provides the opportunity for OEMs to reduce assembly and test costs by utilizing pre-assembled wire harnesses

Motor Wiring Configuration User Selectable Inline or Inside-the-Delta

Mains Motor Wiring Configuration is accomplished by simply selecting the required configuration from a menu. This feature allows adaptability from one configuration to another without any additional programming operations and reduces inventory levels by not having to stock both configurations.

Modbus Native Communications Protocol

Modbus RTU communications in now standard on all S811+ units. This allows users to quickly configure the unit for network communications using a common protocol. Adapters are available for users who prefer to use EtherNet/IP or Modbus TCP protocols.

Programmable Control Terminal Block Functionality

Four programmable terminals on the S811+ enable the user to expand functionality with options such as a second start ramp profile, externally triggered trip or warning functions, analog inputs, and others, in addition to the normal start, stop, reset, and so on, functions.

Second Start Ramp Profile Capability

A second start ramp profile may be configured for the soft starter. This profile is independent of the primary profile and retains all the parameter options such as start time and initial torques. With a signal at a terminal programmed for this feature, the second profile may be selected by a pushbutton station or a network.

Alarm-No-Trip Functionality

Some applications require the ability to effectively disable most protections with the intent of enabling the RVSS unit to control a motor under the most severe operating conditions characterized by current or voltage imbalances, high or low value deviations, or other fault conditions. This function causes the S811+ to ignore most fault trip conditions and continue operation of the application.

Digital Interface Module (DIM) Cloning

For OEMs or other users that desire to load identical parameter settings into multiple RVSS units, the DIM may be used to extract and duplicate parameter settings from one RVSS and loaded into other units, saving time, effort, and reducing chances for errors while programming.

Protective Features

All protective features can be configured, enabled or disabled with the DIM or through the communications network.

Motor Overload

The S811+ includes electronic overload protection as standard. The overload meets applicable requirements for a motor overload protective device. The overload protects the motor from over heat conditions with the use of sophisticated algorithms that model true motor heating, resulting in superior motor protection and fewer nuisance trips.

The S811+ calculates a thermal memory value based on the heat energy introduced into the motor during the start process. A 100% value represents the maximum safe internal temperature of the motor.

When the thermal memory value reaches 100%, an overload trip will occur removing power to the motor. Upon trip, the S811+ stores the calculated motor heating value and will not allow a motor re-start until the motor has a thermal memory value of less than 100%. This feature ensures the motor will not be damaged by repeated overload trip, reset and re-start cycles.

The thermal memory value can be monitored through the DIM or the communications network. The thermal memory value can be of great use in determining an impending overload trip condition.Alarms can be implemented in the process monitoring system warning of an impending trip before a trip occurs halting the process. Costly system downtime can be avoided.

The trip current is adjusted to match the specific application requirements by entering the motor nameplate full load current rating and trip class. The FLA parameter is adjustable from 32% to 100% of the unit's rated current. The overload trip class is adjustable from class 5 through class 30. The overload is ambient temperature compensated—meaning its trip characteristics will not vary with changes in ambient temperature. The overload protection can be enabled, disabled, or disabled on start.

Short Circuit

The use of a short-circuit protective device in coordination with the S811+ is required in branch motor circuits by most electrical codes. Short-circuit coordination ratings with both fuses and Eaton molded case circuit breakers are available providing customers with design flexibility. The S811+ has short-circuit coordination ratings as an open component, an enclosed starter, and in a motor control center.

External E-Stop

Emergency Stop functionality may be triggered from an external source. Removal of the 24 Vdc signal from a terminal configured for E-Stop will initiate an E-Stop action. The External E-Stop option is useful in applications where it is desirable to accomplish a motor shutdown in the event that an external condition(s) exist that will damage system components and/or product flows or operations.

External Trip

External Trip functionality may be triggered from an external source. Removal of the 24 Vdc signal from a terminal configured for External Trip will initiate an External Trip action. The External Trip option is useful in applications where it is desirable to accomplish a motor stop in the event that an external condition(s) exist that will damage system components and/or product flows or operations.

Fault Warning Functionality

Selected protection parameters may be assigned to provide a Fault Warning instead of a Fault Trip with user adjustable set points. When a Fault Warning condition is detected, the fault condition is reported via the DIM, network connection, or an auxiliary relay configured for this function. The soft starter remains in operation. At such time the fault condition no longer exists, the Fault Warning message will be extinguished.

External Warning

The S811+ will accept a Warning signal from an external source or device. In a fashion similar to the Fault Warning, the fault condition is reported via the DIM, network connection, or an auxiliary relay configured for this function. The soft starter remains in operation. At such time the fault condition no longer exists, the Fault Warning message will be extinguished.

Custom Fault/Warning Auxiliary Relays

Up to three fault and/or warning codes may be selected to operate an auxiliary relay configured to operate when any of these codes are detected. This option enables the user to provide external warnings or fault indications to increase monitoring effectiveness and to provide additional system control.

Motor Power

Motor Power can be not only be monitored, but trip levels can be adjusted to provide indications of system malfunctions or operating discrepancies. Both High and Low Power thresholds can be set to provide Fault Warning or Fault Trip functions. Additionally, fault delays times may be set to up to 60 seconds.

Analog Input

An input control terminal may be configured to accept a 0–20 mA DC signal with range scaling. This feature enables the S811+ to respond to an external device that may be monitoring a critical component or process and provides Fault Trip or Fault Warning capability to protect operating systems and processes.

Start Delay

Three start delay timers are available to enhance motor protection or to provide simple logic functions to coordinate motor control with other devices in the system. The timers will allow delays from 24 Vdc power up, receipt of a valid START command, or a delay in switch from one start ramp profile to another.

Jam

Excessive current and torque up to locked rotor levels can occur in a jam condition. The condition can result in stress and damage to the motor, load, mechanical system, and the electrical distribution system. Jam protection prevents the stress and damage from a jam during normal run. After the motor is in bypass, a current greater than 300% FLA setting will cause the starter to trip on a jam fault.

Stall

Excessive current and torque up to locked rotor levels can occur in a stall condition. The condition can lead to an overload trip and result in stress and damage to the motor, load, mechanical system, and the electrical distribution system. Stall protection prevents stress and damage to a motor that has not come up to speed during the soft start time. The S811+ will trip to protect the system in the event that the motor did not get to the rated speed in the defined soft start period. A current greater than 200% FLA at the end of the soft start period will cause the starter to trip on a stall fault.

Pole Over Temperature

High ambient temperatures, extended ramp times and high duty cycle conditions may cause the S811+ power pole conductors to reach a temperature that exceeds their thermal rating. The S811+ is equipped with sensors that monitor the temperature of the power poles. Over temperature protection occurs if the power pole's thermal capacity is exceeded. The soft starter will trip in over temperature conditions, preventing device failure.

Each power pole temperature value can be monitored through the DIM or the communications network. This feature can be of use in determining an impending over temperature trip condition.

When using a communications network, alarms can be implemented in the process monitoring system warning of an impending trip before the trip occurs, halting the process.

Phase Loss

Loss of a phase can cause a significant increase in the current drawn in the remaining two phases. Phase loss can lead to motor damage before an eventual overload trip occurs. Phase loss is typically an indication of a failure in the electrical distribution system. The S811+ will detect a phase loss and trip if any phase current drops below a preset value. The phase loss trip level is adjustable from 0% to 100% of the average of the other two phase levels with an adjustable trip delay of 0.1 to 60 seconds.

Phase Imbalance

Phase current or voltage imbalance can cause a significant increase in the current drawn in the remaining two phases. Phase imbalance can lead to motor damage before an eventual overload trip. Phase imbalance is typically an indication of a failure in the electrical distribution system or the motor. The S811+ will detect both current and voltage phase imbalances and trip if any phase becomes imbalanced as compared to the average of the other two phases.

The phase current imbalance trip level is adjustable from 0% to 100% of the average of the current in the other two phases with an adjustable trip delay of 0.1 to 60 seconds.

The phase voltage imbalance trip level is adjustable from 0% to 100% of the average of the voltage in the other two phases with an adjustable trip delay of 0.1 to 60 seconds.

Reset Mode

The S811+ can be set up for automatic or manual reset on trip. The manual reset mode requires the operator to physically press the RESET button located on the soft starter. The trip can be manually reset through the DIM or through the communications network. The trip can also be electrically reset by energizing a 24 Vdc input on the control terminal block.

The automatic reset mode allows the soft starter to be automatically reset as soon as the trip condition is no longer present. With the automatic reset mode, after the fault is no longer present, the motor will be restarted as soon as a valid start signal is present.

Phase Reversal

The S811+ can determine if the proper line phase sequence is present by default. The device will trip if the line phase sequence is something other than A-B-C. The S811+ can be configured to operate under reversed phase conditions (A-C-B).

Shorted SCR Detection

The S811+ monitors the operation of the power poles and will trip under a shorted SCR condition.

Open SCR Detection

The S811+ monitors the operation of the power poles and will trip under an open SCR condition.

Low Current

Low current conditions can be a result of a loss of load or a failure in the mechanical system. The S811+ has low current protection that will trip if the average rms current falls below a preset value. The low current protection can be programmed as a percent of motor FLA from 0% to 100%.

Low Voltage

Low voltage conditions can result from disturbances in the electrical power distribution system. Low voltage conditions can cause a malfunction and damage to electrical equipment. The S811+ has low voltage protection that will trip if the average rms voltage falls below a preset value. The low voltage protection can be programmed as a percent of nominal voltage from 1% to 99% with a trip delay of 0.1 to 60 seconds to accommodate short temporary voltage drops during the start process.

High Voltage

High voltage conditions can result from disturbances in the electrical power distribution system. High voltage conditions can cause malfunctions or failures of electrical equipment. The S811+ has high voltage protection that will trip if the average rms voltage is greater than a preset value. The high voltage protection can be programmed as a percent of nominal voltage from 101% to 120% with a trip delay of 0.1 to 60 seconds.

Monitoring Capabilities

The S811+ has an impressive array of system monitoring capabilities that allows users to access real time process and diagnostic data. This data can be viewed at the device with the DIM or through a communications network. Data over a communications network can provide valuable insight into the condition of the equipment and processes. Maintenance and production personnel can monitor critical operational and maintenance data from a central control station that can be located far away from the production facility. Process data can be monitored to determine system anomalies that may indicate a need for preventive maintenance or an impeding failure. Adjustments made through the communications network can reduce costs by minimizing the time traveling to the location where the motor controls are located. When faults do occur, real time fault data can assist maintenance in trouble-shooting and planning repair resources. Remote reset signals can be given to tripped devices without the need for manual intervention by maintenance personnel.

Average Line Current

Provides the average of the three-phase rms line currents in amps, accurate to within 2%. Current data can be used to indicate a need for maintenance. Increased currents in a fixed load application can indicate a reduction in system efficiencies and performance, signifying system maintenance is due.

Average Pole Current

Provides the average of the three-phase rms pole currents in amps, accurate to within 2%. The pole current is the current through the soft starter. The line and pole current will be identical in inline applications, and will differ in inside-the-delta applications.

Average Line Current as a % FLA

Provides the average rms line current as a percentage of the S811+ FLA setting.

Three-Phase Line Currents

Provides three rms phase line currents in amps, accurate to within 2%. Imbalances or changes in the relative phase current to one another can indicate anomalies in the motor or electrical distribution system.

Three-Phase Pole Currents

Provides three rms phase pole currents in amps, accurate to within 2%. The pole current is the current through the soft starter. The line and pole current will be identical in in-line applications, and will differ in inside-the-delta applications.

Three-Phase Line Voltages

Provides the individual rms three-phase line voltages. Imbalances or changes in the relative phase voltage to one another can indicate anomalies in the motor or electrical distribution system. Voltage can be used to monitor electrical distribution system performance. Warnings, alarms and system actions to low or high voltage conditions can be implemented.

Percent Thermal Memory

Provides the real time calculated thermal memory value. The S811+ calculates thermal memory value. A 100% value represents the maximum safe internal temperature of the motor. When the thermal memory value reaches 100%, an overload trip will occur, removing power to the motor.

The thermal memory value can be of great use in determining an impending overload trip condition. When using a communications network, alarms can be implemented in the process monitoring system warning of an impending trip before the trip occurs, halting the process. Costly system downtime can be avoided.

DC Control Voltage

Monitors level of the 24 Vdc control voltage. Fluctuations in control voltage can cause component malfunction and failure. System control voltage data can be used to implement warnings, alarms and system actions to low or high voltage conditions.

Pole Temperature

Increases in power pole temperature are caused by increases in ambient temperature, start/stop times and start duty cycles. Changes in pole temperatures represent a change in system operating conditions. Identifying unexpected operating conditions or changes can prompt maintenance and aid in process evaluation activities.

PCB Device Temperature

An increase in printed circuit board (PCB) device temperature is a strong indication of an increase in ambient temperature. High ambient temperature operation can be identified with the device temperature data. Device temperature increases can be due to undersized enclosures, failure of cooling fans or blocked venting. High operating temperatures will reduce the life of all electrical equipment in the enclosure.

Start Count

Start count data can be used to monitor system output, schedule preventative maintenance, identify system anomalies and identify changes in system operation.

Average Line Power

Provides the average of the three-phase line power in kilowatts, accurate to 5%. Power data may be used to monitor power transmitted to the load. Increased power demand may indicate degraded system components or connections. Additionally, such data is useful in determine power utilization in branch circuits consisting of multiple loads.

Power Factor

Provides the three-phase power factor value, accurate to 5%. The power factor of the circuit may be used to identify circuit conditions that may need to be corrected due to low power factor indications. Low circuit power factor can indicate improper or degraded components.

Specifications

	NEMA			Special Purpose			
	Size 4	Size 5	Size 6	160A	320A	540A	610A
Description	**V201K4_**	**V201K5_**	**V201K6_**	**V201KR_**	**V201KT_**	**V201KV_**	**V201KZ_**
Poles	3	3	3	3	3	3	3
Maximum voltage rating	600V	600V	600V	1500V	1500V	1500V	1500V
Ampere rating	135A	270A	540A	160A	320A	540A	610A
Frequency, Hz	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Maximum closing current	1600A	3000A	6000A	1600A	3000A	6000A	6000A
Maximum interrupting current	1600A	3000A	6000A	1600A	3000A	6000A	6000A
Short time current							
1 second	2400A rms	4500A rms	9000A rms	2400A rms	4500A rms	9000A rms	9000A rms
2 seconds	1600A rms	3000A rms	6000A rms	1600A rms	3000A rms	6000A rms	6000A rms
Dielectric strength	2200 Vac	5375 Vac	5375 Vac	2200 Vac	5375 Vac	5375 Vac	5375 Vac
Maximum allowable interrupting	1200/hr.	—	—	1200/hr.	—	—	—
Impulse voltage (1 x 40 ms)	15 kV	15 kV	15 kV	15 kV	15 kV	15 kV	15 kV
Maximum motor horsepower at							
200V	40 hp	75 hp	150 hp	50 hp	100 hp	150 hp	200 hp
230V	50 hp	100 hp	200 hp	60 hp	125 hp	200 hp	200 hp
380V	75 hp	150 hp	300 hp	100 hp	200 hp	300 hp	300 hp
460V	100 hp	200 hp	400 hp	125 hp	250 hp	400 hp	450 hp
575V	100 hp	200 hp	400 hp	150 hp	300 hp	400 hp	500 hp
800V	—	—	—	200 hp	400 hp	—	800 hp
1000V	—	—	—	250 hp	—	—	1000 hp
1500V	—	—	—	400 hp	800 hp	1300 hp	1600 hp
Three-phase capacitive switching (kVAR)							
230V	40 kVAR	80 kVAR	160 kVAR	50 kVAR	80 kVAR	160 kVAR	176 kVAR
460V	80 kVAR	160 kVAR	320 kVAR	100 kVAR	160 kVAR	320 kVAR	356 kVAR
600V	100 kVAR	200 kVAR	400 kVAR	125 kVAR	200 kVAR	400 kVAR	400 kVAR
1500V	—	—	—	205 kVAR	500 kVAR	—	1000 kVAR
Transformer switching (kVA) ①							
Single-phase, two-pole							
120V	6.8 kVA	14 kVA	27 kVA	8 kVA	14 kVA	27 kVA	27 kVA
240V	14 kVA	27 kVA	54 kVA	16 kVA	27 kVA	54 kVA	54 kVA
480V	27 kVA	54 kVA	108 kVA	32 kVA	54 kVA	108 kVA	108 kVA
600V	34 kVA	68 kVA	135 kVA	40 kVA	68 kVA	135 kVA	135 kVA
Three-phase, three-pole							
240V	23 kVA	47 kVA	94 kVA	27 kVA	47 kVA	94 kVA	94 kVA
480V	47 kVA	94 kVA	188 kVA	55 kVA	94 kVA	188 kVA	188 kVA
600V	59 kVA	117 kVA	234 kVA	70 kVA	117 kVA	234 kVA	234 kVA

Note

① For transformers having inrush currents of not more than 20 times the rated full load current.

Electrical Characteristics—Apply to Both NEMA and Special Purpose Types

Description	Size 4 (160A)	Size 5 (320A)	Size 6 (540A and 610A)
DC coil data—burden (AC supply rectified)			
Open VA	300 VA	500 VA	1450 VA
Closed VA	30 VA	25 VA	32 VA
Closed watts	6W	20W	30W
Pickup volts	70% of rated coil volts		
Dropout volts	50% of rated coil volts		
Pickup time in Hz	1.5–2 Hz		
Dropout time in Hz	6–6.15 Hz		
Max. voltage rating	600V	600V	600V
Max. closing current	1600A	3000A	6000A
Max. interrupting current	1600A	3000A	6000A
Short time current			
1 second	2400A rms	4500A rms	9000A rms
2 seconds	1600A rms	3000A rms	6000A rms

Electrical Characteristics Coil Data (AC Supply Rectified)

Burden	Size 4 (160A)	Size 5 (320A)	Size 6 (540A and 610A)
Inrush VA	300	600	1700
Sealed VA	30	20	28
Sealed watts	6	20	28
Pickup volts	70% of rated coil volts		
Dropout volts	50% of rated coil volts		
Pickup time in Hz	1.5–2	1.5–2	1.5–2
Dropout time in Hz	6–7.5	6–6.15	6–6.15

Control Power Transformer Selection Procedure

The following steps will assure that the secondary voltage delivered by your transformer will be either 85%, 90% or 95% of the nameplate secondary voltage under maximum inrush conditions, at rated input voltage. A typical selection example based on these steps follows.

Step 1

Calculate the total SEALED (steady state) VA load of your control circuit. This is done by adding the continuous VA requirements of the maximum number of components that will be energized at any given time, including non-inductive as well as inductive components. For Sealed VA data see **Page V10-T17-76**.

Step 2

Calculate the PEAK INRUSH VA of your control circuit. First, analyze the sequence of operation of all components. Then add together the inrush VA ratings of the components that will be energized simultaneously. Next, determine the peak—or maximum simultaneous—inrush VA load that the transformer will "see." The VA requirements for indicating lights, timers and other non-inductive components which do not have an inrush VA also should be included since they will present a load to the transformer at the time of maximum inrush.

Step 3

Calculate the TRANSFORMER SELECTION INRUSH VA. Use the following formula:

$$\text{Selection Inrush} = \sqrt{(\text{VA Sealed})^2 + (\text{VA Inrush})^2}$$

Note: Transformer selection inrush VA also can be determined by adding the inrush VA and sealed VA arithmetically, but this usually results in an oversized transformer.

Step 4

Determine the correct transformer NAMEPLATE VA RATING. Refer to the Inrush/Regulation Data table: If the line supply to the transformer is fairly stable (does not vary more than 5%), use the 90% secondary voltage column—the 90% column is most commonly used. If the line supply voltage varies up to 10%, use the 95% voltage regulation column. To determine the correct VA transformer rating, go down the column until you arrive at the inrush VA rating closest to, but not less than, the Transformer Selection Inrush VA calculated in Step 3. The left hand column of the table will give the corresponding transformer NAMEPLATE VA RATING.

Inrush/Regulation Data

Transformer VA Rating 55°C	Inrush VA—40% Power Factor At 95% Secondary Voltage	At 90% Secondary Voltage	At 85% Secondary Voltage
60	137	185	227
95	242	329	409
105	294	407	512
180	592	842	1071
225	929	1312	1663
275	1271	1801	2288
320	1581	2224	2816
380	2124	3048	3895
550	3196	4604	5896
850	5500	7914	10,141
1100	8382	12,067	15,477
1500	11,100	16,066	21,032
2000	21,820	24,356	41,100
3000	29,123	32,770	59,997
5000	74,595	111,000	145,000
7500	104,000	162,000	219,000
10,000	111,000	166,000	237,000

Note: When evaluating supply-line stability, remember that supply-line voltage drop frequently is associated with motor-starting inrush current. When motors and motor controls are connected to a common feeder, the controls will experience a momentary voltage dip when the motor starts. This reduces the control transformer voltage supplied to the motor starting contactor and may cause the contactor to chatter or drop out.

Selection Example

Steps 1 and 2

By following Steps 1 and 2 described in column one at left, analysis of the control circuits shows the following sealed VA and inrush VA data:

Example Data

Qty.	Description	Sealed VA	Inrush VA
3	Three-pole Size 1 contactors	60	309
2	Three-pole Size 3 contactors	99	780
4	Relays	88	620
2	Electronic timers	36	36
4	Indicating lights	28	28
Totals		311	1773

Step 3

Following Step 3 in column two at left, the Transformer Selection Inrush VA is calculated at 1773 VA.

Transformer Selection VA

$$= \sqrt{(\text{VA Sealed})^2 + (\text{VA Inrush})^2}$$

$$= \sqrt{(311)^2 + (1773)^2}$$

$$= \sqrt{3{,}240{,}250}$$

$$= 1800$$

Steps 4 and 5

Following Steps 3 and 4 at left, the Inrush/Regulation Data Chart is then consulted to find the correction nameplate VA size of the transformer. Under the 90% Secondary Voltage column, we find that a 320 VA transformer will deliver 2224 VA, amply covering circuit demands of 1800 Inrush VA. Checking this selection against the requirements of 311 VA sealed, we confirm that a 320 VA transformer will be sufficient.

Component VA Table

	Inrush			Sealed		
	VAR	Watts	VA	VAR	Watts	VA
Relays						
Type AA (single- and two-pole)	18	8.5	20	8	6.6	11
Type D15	64	49	80	7.1	2.4	7.5
Type M (two- to 12-pole)	122	95	155	20	9	22
Type M latch coil	36.5	18.5	41	13	11	17
Type MRD	—	168	—	—	13.2	13.2
Type MRD latch coil ①	—	21.6	—	—	21.6	—
Type R	—	6	6	—	6	6
Type RM						
Set	—	—	—	—	3.5	3.5
Release	—	—	—	—	3.1	3.1
Type TF	3	3	4	3	3	4
Type TH	4	4	5	4	4	5
Timers						
Type D80	60	67	90	18	6	19
Type D80 with inst. contacts	89	95	130	20	7	21
Freedom Series Starters and Contactors						
IEC						
Frames A–C	64	49	80	7.1	2.4	7.5
Frames D–F	78	65	100	9.2	3.1	10
Frames G–K	210	95	230	27	7.8	28
Frames L–N	374	112	390	48	13	49.8
Frames P–S	1132	216	1040	96	17	116
Frames T–U	—	798	950	—	10	11
Frame V	—	1345	1600	—	22	25
Frames W–X	—	—	1000	—	—	23
Frame Z	—	—	2400	—	—	70
NEMA						
Size 00	64	49	80	7.1	2.4	7.5
Size 0	78	65	100	9.2	3.1	10
Sizes 1–2	210	95	230	27	7.8	28
Size 3	374	112	390	48	13	49.8
Sizes 4–5	1132	240	1158	96	27.2	100
Sizes 6–7	868	1345	1600	11	22	25
Size 8	—	2060	2450	—	60	75

Note

① Intermittent duty coil.

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

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

Ampere Ratings of Three-Phase, 60 Hz, AC Induction Motor

hp ①	Syn. Speed RPM	Current in Amperes 200V	230V	380V ②	460V	575V	2200V
1/4	1800	1.09	0.95	0.55	0.48	0.38	—
	1200	1.61	1.40	0.81	0.70	0.56	—
	900	1.84	1.60	0.93	0.80	0.64	—
1/3	1800	1.37	1.19	0.69	0.60	0.48	—
	1200	1.83	1.59	0.92	0.80	0.64	—
	900	2.07	1.80	1.04	0.90	0.72	—
1/2	1800	1.98	1.72	0.99	0.86	0.69	—
	1200	2.47	2.15	1.24	1.08	0.86	—
	900	2.74	2.38	1.38	1.19	0.95	—
3/4	1800	2.83	2.46	1.42	1.23	0.98	—
	1200	3.36	2.92	1.69	1.46	1.17	—
	900	3.75	3.26	1.88	1.63	1.30	—
1	3600	3.22	2.80	1.70	1.40	1.12	—
	1800	4.09	3.56	2.06	1.78	1.42	—
	1200	4.32	3.76	2.28	1.88	1.50	—
	900	4.95	4.30	2.60	2.15	1.72	—
1-1/2	3600	5.01	4.36	2.64	2.18	1.74	—
	1800	5.59	4.86	2.94	2.43	1.94	—
	1200	6.07	5.28	3.20	2.64	2.11	—
	900	6.44	5.60	3.39	2.80	2.24	—
2	3600	6.44	5.60	3.39	2.80	2.24	—
	1800	7.36	6.40	3.87	3.20	2.56	—
	1200	7.87	6.84	4.14	3.42	2.74	—
	900	9.09	7.90	4.77	3.95	3.16	—
3	3600	9.59	8.34	5.02	4.17	3.34	—
	1800	10.8	9.40	5.70	4.70	3.76	—
	1200	11.7	10.2	6.20	5.12	4.10	—
	900	13.1	11.4	6.90	5.70	4.55	—
5	3600	15.5	13.5	8.20	6.76	5.41	—
	1800	16.6	14.4	8.74	7.21	5.78	—
	1200	18.2	15.8	9.59	7.91	6.32	—
	900	18.3	15.9	9.60	7.92	6.33	—
7-1/2	3600	22.4	19.5	11.8	9.79	7.81	—
	1800	24.7	21.5	13.0	10.7	8.55	—
	1200	25.1	21.8	13.2	10.9	8.70	—
	900	26.5	23.0	13.9	11.5	9.19	—
10	3600	29.2	25.4	15.4	12.7	10.1	—
	1800	30.8	26.8	16.3	13.4	10.7	—
	1200	32.2	28.0	16.9	14.0	11.2	—
	900	35.1	30.5	18.5	15.2	12.2	—
15	3600	41.9	36.4	22.0	18.2	14.5	—
	1800	45.1	39.2	23.7	19.6	15.7	—
	1200	47.6	41.4	25.0	20.7	16.5	—
	900	51.2	44.5	26.9	22.2	17.8	—
20	3600	58.0	50.4	30.5	25.2	20.1	—
	1800	58.9	51.2	31.0	25.6	20.5	—
	1200	60.7	52.8	31.9	26.4	21.1	—
	900	63.1	54.9	33.2	27.4	21.9	—
25	3600	69.9	60.8	36.8	30.4	24.3	—
	1800	74.5	64.8	39.2	32.4	25.9	—
	1200	75.4	65.6	39.6	32.8	26.2	—
	900	77.4	67.3	40.7	33.7	27.0	—
30	3600	84.8	73.7	44.4	36.8	29.4	—
	1800	86.9	75.6	45.7	37.8	30.2	—
	1200	90.6	78.8	47.6	39.4	31.5	—
	900	94.1	81.8	49.5	40.9	32.7	—
40	3600	111	96.4	58.2	48.2	38.5	—
	1800	116	101	61.0	50.4	40.3	—
	1200	117	102	61.2	50.6	40.4	—
	900	121	105	63.2	52.2	41.7	—
50	3600	138	120	72.9	60.1	48.2	—
	1800	143	124	75.2	62.2	49.7	—
	1200	145	126	76.2	63.0	50.4	—
	900	150	130	78.5	65.0	52.0	—
60	3600	164	143	86.8	71.7	57.3	—
	1800	171	140	90.0	74.5	59.4	—
	1200	173	150	91.0	75.0	60.0	—
	900	177	154	93.1	77.0	61.5	—
75	3600	206	179	108	89.6	71.7	—
	1800	210	183	111	91.6	73.2	—
	1200	212	184	112	92.0	73.5	—
	900	222	193	117	96.5	77.5	—
100	3600	—	231	140	115	92.2	—
	1800	—	236	144	118	94.8	23.6
	1200	—	239	145	120	95.6	24.2
	900	—	252	153	126	101	24.8
125	3600	—	292	176	146	116	—
	1800	—	293	177	147	117	29.2
	1200	—	298	180	149	119	29.9
	900	—	305	186	153	122	30.9
150	3600	—	343	208	171	137	—
	1800	—	348	210	174	139	34.8
	1200	—	350	210	174	139	35.5
	900	—	365	211	183	146	37.0
200	3600	—	452	257	226	181	—
	1800	—	458	265	229	184	46.7
	1200	—	460	266	230	184	47.0
	900	—	482	279	241	193	49.4
250	3600	—	559	338	279	223	—
	1800	—	568	343	284	227	57.5
	1200	—	573	345	287	229	58.5
	900	—	600	347	300	240	60.5
300	1800	—	678	392	339	271	69.0
	1200	—	684	395	342	274	70.0
400	1800	—	896	518	448	358	91.8
500	1800	—	1110	642	555	444	116

Notes

① To convert horsepower to kW, multiply horsepower by 0.7457.

② 380V 50 Hz.

Product Codes—By Description

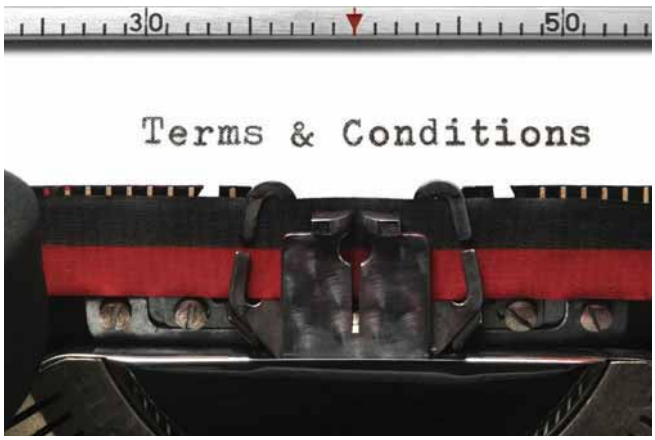
Description	Code
Accessories, Fuse Clips and Cover Control	AF40
C361 Flange Mounted Switch	AN20
C371 Circuit Breaker Operator	AN50
Combination Enclosed Starters, Specials	AM60
Combination Full Voltage NEMA Freedom Starter	AE61
Combination Full Voltage Type 4X and 7/9 NEMA Starter	AE65
Combination Full Voltage Vacuum Starter	AE64
Combination NEMA HVAC	EH61
Combination Reduced Voltage ***IT.*** Soft Starters	NS22
Duplex Pump Panels, Freedom	AJ65
Ghisalba Coils and Feeder Groups	HD70A1
Lighting, Electrically Held Enclosed A202 Contactor	AB76
Lighting, Electrically Held Enclosed CN35 Contactor	AB66
Lighting, Magnetically Latched Enclosed A202 Contactor	AB72
Lighting, Mechanically Held Enclosed A202 Contactor	AB67
Lighting, Mechanically Held Enclosed C30 Contactor	AB79
Manual Starters Type B100	2916
Manual Starters Type MS	2915
Multispeed Combination, NEMA Freedom	AI65
Multispeed, NEMA Freedom	AI61
Multispeed, Vacuum	AI64
Non-Combination Enclosed Starters, Specials	AM50
Non-Combination Full Voltage NEMA Freedom Contactor	AB61
Non-Combination Full Voltage NEMA Freedom Starter	AA61
Non-Combination Full Voltage Type 4X Starter	AA65
Non-Combination Full Voltage Type 7/9 Explosion Proof Starter	AA66
Non-Combination Full Voltage Type 7/9 NEMA Starter	AE66
Non-Combination Full Voltage Vacuum Contactor	AB64
Non-Combination Full Voltage Vacuum Starter	AA64
Non-Combination Reduced Voltage ***IT.*** Soft Starter	NS12
Oil Pump Panel, NEMA Freedom	AJ71
Pump Panel, NEMA Freedom	AJ61
Pump Panel, Vacuum	AJ64
Reduced Voltage IEC Starter	AG62
Reduced Voltage NEMA Starter	AG61
Reduced Voltage Vacuum Starter	AG64
Reduced Voltage, ***IT.***	AG68
Renewal Parts for Enclosed Control, C361, C371, C400	HD70H4

Product Codes—By Code

Code	Description
2915	Manual Starters Type MS
2916	Manual Starters Type B100
AA61	Non-Combination Full Voltage NEMA Freedom Starter
AA64	Non-Combination Full Voltage Vacuum Starter
AA65	Non-Combination Full Voltage Type 4X Starter
AA66	Non-Combination Full Voltage Type 7/9 Explosion Proof Starter
AB61	Non-Combination Full Voltage NEMA Freedom Contactor
AB64	Non-Combination Full Voltage Vacuum Contactor
AB66	Lighting, Electrically Held Enclosed CN35 Contactor
AB67	Lighting, Mechanically Held Enclosed A202 Contactor
AB72	Lighting, Magnetically Latched Enclosed A202 Contactor
AB76	Lighting, Electrically Held Enclosed A202 Contactor
AB79	Lighting, Mechanically Held Enclosed C30 Contactor
AE61	Combination Full Voltage NEMA Freedom Starter
AE64	Combination Full Voltage Vacuum Starter
AE65	Combination Full Voltage Type 4X and 7/9 NEMA Starter
AE66	Non-Combination Full Voltage Type 7/9 NEMA Starter
AF40	Accessories, Fuse Clips and Cover Control
AG61	Reduced Voltage NEMA Starter
AG62	Reduced Voltage IEC Starter
AG64	Reduced Voltage Vacuum Starter
AG68	Reduced Voltage, ***IT.***
AI61	Multispeed, NEMA Freedom
AI64	Multispeed, Vacuum
AI65	Multispeed Combination, NEMA Freedom
AJ61	Pump Panel, NEMA Freedom
AJ64	Pump Panel, Vacuum
AJ65	Duplex Pump Panels, Freedom
AJ71	Oil Pump Panel, NEMA Freedom
AM50	Non-Combination Enclosed Starters, Specials
AM60	Combination Enclosed Starters, Specials
AN20	C361 Flange Mounted Switch
AN50	C371 Circuit Breaker Operator
EH61	Combination NEMA HVAC
HD70A1	Ghisalba Coils and Feeder Groups
HD70H4	Renewal Parts for Enclosed Control, C361, C371, C400
NS12	Non-Combination Reduced Voltage ***IT.*** Soft Starter
NS22	Combination Reduced Voltage ***IT.*** Soft Starters

Effective Date: November 1, 2008

Eaton Terms & Conditions



Contents

Selling Policy (Supersedes Selling Policy 25-000, dated February 20, 2006)

Terms and Conditions of Sale

The Terms and Conditions of Sale set forth herein, and any supplements which may be attached hereto, constitute the full and final expression of the contract for the sale of products or services (hereinafter referred to as Product(s) or Services by Eaton Corporation (hereinafter referred to as Seller) to the Buyer, and supersedes all prior quotations, purchase orders, correspondence or communications whether written or oral between the Seller and the Buyer. Notwithstanding any contrary language in the Buyer's purchase order, correspondence or other form of acknowledgment, Buyer shall be bound by these Terms and Conditions of Sale when it sends a purchase order or otherwise indicates acceptance of this contract, or when it accepts delivery from Seller of the Products or Services.

THE CONTRACT FOR SALE OF THE PRODUCTS OR SERVICES IS EXPRESSLY LIMITED TO THE TERMS AND CONDITIONS OF SALE STATED HEREIN. ANY ADDITIONAL OR DIFFERENT TERMS PROPOSED BY BUYER ARE REJECTED UNLESS EXPRESSLY AGREED TO IN WRITING BY SELLER. No contract shall exist except as herein provided.

Complete Agreement

No amendment or modification hereto nor any statement, representation or warranty not contained herein shall be binding on the Seller unless made in writing by an authorized representative of the Seller. Prior dealings, usage of the trade or a course of performance shall not be relevant to determine the meaning of this contract even though the accepting or acquiescing party had knowledge of the nature of the performance and opportunity for objection.

Quotations

Written quotations are valid for 30 days from its date unless otherwise stated in the quotation or terminated sooner by notice.

Verbal quotations, unless accepted, expire the same day they are made.

A complete signed order must be received by Seller within 20 calendar days of notification of award, otherwise the price and shipment will be subject to re-negotiation.

Termination and Cancellation

Any order may be terminated by the Buyer only by written notice and upon payment of reasonable termination charges, including all costs plus profit.

Seller shall have the right to cancel any order at any time by written notice if Buyer breaches any of the terms hereof, becomes the subject of any proceeding under state or federal law for the relief of debtors, or otherwise becomes insolvent or bankrupt, generally does not pay its debts as they become due or makes an assignment for the benefit of creditors.

Effective Date: November 1, 2008

Prices

All prices are subject to change without notice. In the event of a price change, the effective date of the change will be the date of the new price or discount sheet, letter or telegram. All quotations made or orders accepted after the effective date will be on the new basis. For existing orders, the price of the unshipped portion of an order will be the price in effect at time of shipment.

Price Policy—Products and Services

When prices are quoted as firm for quoted shipment, they are firm provided the following conditions are met:

1. The order is released with complete engineering details.
2. Shipment of Products are made, and Services purchased are provided within the quoted lead time.
3. When drawings for approval are required for any Products, the drawings applicable to those Products must be returned within 30* calendar days from the date of the original mailing of the drawings by Seller. The return drawings must be released for manufacture and shipment and must be marked "APPROVED" or "APPROVED AS NOTED." Drawing re-submittals which are required for any other reason than to correct Seller errors will not extend the 30-day period.

   * 60 days for orders through contractors to allow time for their review and approval before and after transmitting them to their customers.

If the Buyer initiates or in any way causes delays in shipment, provision of Services or return of approval drawings beyond the periods stated above, the price of the Products or Services will be increased 1% per month or fraction thereof up to a maximum of 18 months from the date of the Buyer's order. For delays resulting in shipment or provision of Services beyond 18 months from the date of the Buyer's order, the price must be renegotiated.

Price Policy—BLS

Refer to Price Policy 25-050.

Minimum Billing

Orders less than $1,000 will be assessed a shipping and handling charge of 5% of the price of the order, with a minimum charge of $25.00 unless noted differently on Product discount sheets.

Taxes

The price does not include any taxes. Buyer shall be responsible for the payment of all taxes applicable to, or arising from the transaction, the Products, its sale, value, or use, or any Services performed in connection therewith regardless of the person or entity actually taxed.

Terms of Payment

Products

Acceptance of all orders is subject to the Buyer meeting Seller's credit requirements. Terms of payment are subject to change for failure to meet such requirements. Seller reserves the right at any time to demand full or partial payment before proceeding with a contract of sale as a result of changes in the financial condition of the Buyer. Terms of Payment are either Net 30 days from the date of invoice of each shipment or carry a cash discount based on Product type. Specific payment terms for Products are outlined in the applicable Product discount schedules.

Services

Terms of payment are net within 30 days from date of invoice for orders amounting to less than $50,000.00.

Terms of payment for orders exceeding $50,000.00 shall be made according to the following:

1. Twenty percent (20%) of order value with the purchase order payable 30 days from date of invoice.
2. Eighty percent (80%) of order value in equal monthly payments over the performance period payable 30 days from date of invoice.

Except for work performed (i) under a firm fixed price basis or (ii) pursuant to terms of a previously priced existing contract between Seller and Buyer, invoices for work performed by Seller shall have added and noted on each invoice a charge of 3% (over and above the price of the work) which is related to Seller compliance with present and proposed environmental, health, and safety regulations associated with prescribed requirements covering hazardous materials management and employee training, communications, personal protective equipment, documentation and record keeping associated therewith.

Adequate Assurances

If, in the judgment of Seller, the financial condition of the Buyer, at any time during the period of the contract, does not justify the terms of payment specified, Seller may require full or partial payment in advance.

Delayed Payment

If payments are not made in accordance with these terms, a service charge will, without prejudice to the right of Seller to immediate payment, be added in an amount equal to the lower of 1.5% per month or fraction thereof or the highest legal rate on the unpaid balance.

Freight

Freight policy will be listed on the Product discount sheets, or at option of Seller one of the following freight terms will be quoted.

F.O.B.—P/S—Frt./Ppd. and Invoiced

Products are sold F.O.B. point of shipment freight prepaid and invoiced to the Buyer.

F.O.B.—P/S—Frt./Ppd. and Allowed

Products sold are delivered F.O.B. point of shipment, freight prepaid and included in the price.

F.O.B. Destination—Frt./Ppd. and Allowed

At Buyer's option, Seller will deliver the Products F.O.B. destination freight prepaid and 2% will be added to the net price.

The term "freight prepaid" means that freight charges will be prepaid to the accessible common carrier delivery point nearest the destination for shipments within the United States and Puerto Rico unless noted differently on the Product discount sheets. For any other destination contact Seller's representative.

Shipment and Routing

Seller shall select the point of origin of shipment, the method of transportation, the type of carrier equipment and the routing of the shipment.

If the Buyer specifies a special method of transportation, type of carrier equipment, routing, or delivery requirement, Buyer shall pay all special freight and handling charges.

When freight is included in the price, no allowance will be made in lieu of transportation if the Buyer accepts shipment at factory, warehouse, or freight station or otherwise supplies its own transportation.

Risk of Loss

Risk of loss or damage to the Products shall pass to Buyer at the F.O.B. point.

Concealed Damage

Except in the event of F.O.B. destination shipments, Seller will not participate in any settlement of claims for concealed damage.

When shipment has been made on an F.O.B. destination basis, the Buyer must unpack immediately and, if damage is discovered must:

1. Not move the Products from the point of examination.
2. Retain shipping container and packing material.
3. Notify the carrier in writing of any apparent damage.
4. Notify Seller representative within 72 hours of delivery.
5. Send Seller a copy of the carrier's inspection report.

Witness Tests/Customer Inspection

Standard factory tests may be witnessed by the Buyer at Seller's factory for an additional charge calculated at the rate of $2,500 per day (not to exceed eight (8) hours) per Product type. Buyer may final inspect Products at the Seller's factory for $500 per day per Product type.

Witness tests will add one (1) week to the scheduled shipping date. Seller will notify Buyer fourteen (14) calendar days prior to scheduled witness testing or inspection. In the event Buyer is unable to attend, the Parties shall mutually agree on a rescheduled date. However, Seller reserves the right to deem the witness tests waived with the right to ship and invoice Products.

Held Orders

For any order held, delayed or rescheduled at the request of the Buyer, Seller may, at its sole option (1) require payment to be based on any reasonable basis, including but not limited to the contract price, and any additional expenses, or cost resulting from such a delay; (2) store Products at the sole cost and risk of loss of the Buyer; and/or (3) charge to the Buyer those prices under the applicable price policy. Payment for such price, expenses and costs, in any such event, shall be due by Buyer within thirty (30) days from date of Seller's invoice. Any order so held delayed or rescheduled beyond six (6) months will be treated as a Buyer termination.

Drawing Approval

Seller will design the Products in line with, in Seller's judgment, good commercial practice. If at drawing approval Buyer makes changes outside of the design as covered in their specifications, Seller will then be paid reasonable charges and allowed a commensurate delay in shipping date based on the changes made.

Drawing Re-Submittal

When Seller agrees to do so in its quotation, Seller shall provide Buyer with the first set of factory customer approval drawing(s) at Seller's expense. The customer approval drawing(s) will be delivered at the quoted delivery date. If Buyer requests drawing changes or additions after the initial factory customer approval drawing(s) have been submitted by Seller, the Seller, at its option, may assess Buyer drawing charges. Factory customer approval drawing changes required due to misinterpretation by Seller will be at Seller's expense. Approval drawings generated by Bid Manager are excluded from this provision.

Warranty

Warranty for Products

Seller warrants that the Products manufactured by it will conform to Seller's applicable specifications and be free from failure due to defects in workmanship and material for one (1) year from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.

In the event any Product fails to comply with the foregoing warranty Seller will, at its option, either (a) repair or replace the defective Product, or defective part or component thereof, F.O.B. Seller's facility freight prepaid, or (b) credit Buyer for the purchase price of the Product. All warranty claims shall be made in writing.

Seller requires all non-conforming Products be returned at Seller's expense for evaluation unless specifically stated otherwise in writing by Seller.

This warranty does not cover failure or damage due to storage, installation, operation or maintenance not in conformance with Seller's recommendations and industry standard practice or due to accident, misuse, abuse or negligence. This warranty does not cover reimbursement for labor, gaining access, removal, installation, temporary power or any other expenses, which may be incurred in connection with repair or replacement.

This warranty does not apply to equipment not manufactured by Seller. Seller limits itself to extending the same warranty it receives from the supplier.

Effective Date: November 1, 2008

Extended Warranty for Products

If requested by the Buyer and specifically accepted in writing by Seller, the foregoing standard warranty for Products will be extended from the date of shipment for the period and price indicated below:

- 24 months—2% of Contract Price
- 30 months—3% of Contract Price
- 36 months—4% of Contract Price

Special Warranty (In and Out) for Products

If requested by the Buyer and specifically accepted in writing by Seller, Seller will, during the warranty period for Products, at an additional cost of 2% of the contract price, be responsible for the direct cost of:

1. Removing the Product from the installed location.
2. Transportation to the repair facility and return to the site.
3. Reinstallation on site.

The total liability of Seller for this Special Warranty for Products is limited to 50% of the contract price of the particular Product being repaired and excludes expenses for removing adjacent apparatus, walls, piping, structures, temporary service, etc.

Warranty for Services

Seller warrants that the Services performed by it hereunder will be performed in accordance with generally accepted professional standards.

The Services, which do not so conform, shall be corrected by Seller upon notification in writing by the Buyer within one (1) year after completion of the Services.

Unless otherwise agreed to in writing by Seller, Seller assumes no responsibility with respect to the suitability of the Buyer's, or its customer's, equipment or with respect to any latent defects in equipment not supplied by Seller. This warranty does not cover damage to Buyer's, or its customer's, equipment, components or parts resulting in whole or in part from improper maintenance or operation or from their deteriorated condition. Buyer will, at its cost, provide Seller with unobstructed access to the defective Services, as well as adequate free working space in the immediate vicinity of the defective Services and such facilities and systems, including, without limitation, docks, cranes and utility disconnects and connects, as may be necessary in order that Seller may perform its warranty obligations. The conducting of any tests shall be mutually agreed upon and Seller shall be notified of, and may be present at, all tests that may be made.

Warranty for Power Systems Studies

Seller warrants that any power systems studies performed by it will conform to generally accepted professional standards. Any portion of the study, which does not so conform, shall be corrected by Seller upon notification in writing by the Buyer within six (6) months after completion of the study. All warranty work shall be performed in a single shift straight time basis Monday through Friday. In the event that the study requires correction of warranty items on an overtime schedule, the premium portion of such overtime shall be for the Buyer's account.

Limitation on Warranties for Products, Services and Power Systems Studies

THE FOREGOING WARRANTIES ARE EXCLUSIVE EXCEPT FOR WARRANTY OF TITLE. SELLER DISCLAIMS ALL OTHER WARRANTIES INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

CORRECTION OF NON-CONFORMITIES IN THE MANNER AND FOR THE PERIOD OF TIME PROVIDED ABOVE SHALL CONSTITUTE SELLER'S SOLE LIABILITY AND BUYER'S EXCLUSIVE REMEDY FOR FAILURE OF SELLER TO MEET ITS WARRANTY OBLIGATIONS, WHETHER CLAIMS OF THE BUYER ARE BASED IN CONTRACT, IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY), OR OTHERWISE.

Asbestos

Federal Law requires that building or facility owners identify the presence, location and quantity of asbestos containing material (hereinafter "ACM") at work sites. Seller is not licensed to abate ACM. Accordingly, for any contract which includes the provision of Services, prior to (i) commencement of work at any site under a specific Purchase Order, (ii) a change in the work scope of any Purchase Order, the Buyer will certify that the work area associated with the Seller's scope of work includes the handling of Class II ACM, including but not limited to generator wedges and high temperature gaskets which include asbestos materials. The Buyer shall, at its expense, conduct abatement should the removal, handling, modification or reinstallation, or some or all of them, of said Class II ACM be likely to generate airborne asbestos fibers; and should such abatement affect the cost of or time of performance of the work then Seller shall be entitled to an equitable adjustment in the schedule, price and other pertinent affected provisions of the contract.

Compliance with Nuclear Regulation

Seller's Products are sold as commercial grade Products not intended for application in facilities or activities licensed by the United States Nuclear Regulatory Commission for atomic purposes. Further certification will be required for use of the Products in any safety-related application in any nuclear facility licensed by the U.S. Nuclear Regulatory Commission.

Returning Products

Authorization and shipping instructions for the return of any Products must be obtained from Seller before returning the Products.

When return is occasioned due to Seller error, full credit including all transportation charges will be allowed.

Product Notices

Buyer shall provide the user (including its employees) of the Products with all Seller supplied Product notices, warnings, instructions, recommendations, and similar materials.

Force Majeure

Seller shall not be liable for failure to perform or delay in performance due to fire, flood, strike or other labor difficulty, act of God, act of any governmental authority or of the Buyer, riot, embargo, fuel or energy shortage, car shortage, wrecks or delays in transportation, or due to any other cause beyond Seller's reasonable control. In the event of delay in performance due to any such cause, the date of delivery or time for completion will be extended by a period of time reasonably necessary to overcome the effect of such delay.

Liquidated Damages

Contracts which include liquidated damage clauses for failure to meet shipping or job completion promises are not acceptable or binding on Seller, unless such clauses are specifically accepted in writing by an authorized representative of the Seller at its headquarters office.

Patent Infringement

Seller will defend or, at its option, settle any suit or proceeding brought against Buyer, or Buyer's customers, to the extent it is based upon a claim that any Product or part thereof, manufactured by Seller or its subsidiaries and furnished hereunder, infringes any United States patent, other than a claim of infringement based upon use of a Product or part thereof in a process, provided Seller is notified in reasonable time and given authority, information and assistance (at Seller's expense) for the defense of same. Seller shall pay all legal and court costs and expenses and court-assessed damages awarded therein against Buyer resulting from or incident to such suit or proceeding. In addition to the foregoing, if at any time Seller determines there is a substantial question of infringement of any United States patent, and the use of such Product is or may be enjoined, Seller may, at its option and expense: either (a) procure for Buyer the right to continue using and selling the Product; (b) replace the Product with non-infringing apparatus; (c) modify the Product so it becomes non-infringing; or (d) as a last resort, remove the Product and refund the purchase price, equitably adjusted for use and obsolescence. In no case does Seller agree to pay any recovery based upon its Buyer's savings or profit through use of Seller's Products whether the use be special or ordinary. The foregoing states the entire liability of Seller for patent infringement.

The preceding paragraph does not apply to any claim of infringement based upon: (a) any modification made to a Product other than by Seller; (b) any design and/or specifications of Buyer to which a Product was manufactured; or (c) the use or combination of Product with other products where the Product does not itself infringe. As to the above-identified claim situations where the preceding paragraph does not apply, Buyer shall defend and hold Seller harmless in the same manner and to the extent as Seller's obligations described in the preceding paragraph. Buyer shall be responsible for obtaining (at Buyer's expense) all license rights required for Seller to be able to use software products in the possession of Buyer where such use is required in order to perform any Service for Buyer.

With respect to a Product or part thereof not manufactured by Seller or its subsidiaries, Seller will attempt to obtain for Buyer, from the supplier(s), the patent indemnification protection normally provided by the supplier(s) to customers.

Compliance with OSHA

Seller offers no warranty and makes no representation that its Products comply with the provisions or standards of the Occupational Safety and Health Act of 1970, or any regulation issued thereunder. In no event shall Seller be liable for any loss, damage, fines, penalty or expenses arising under said Act.

Limitation of Liability

THE REMEDIES OF THE BUYER SET FORTH IN THIS CONTRACT ARE EXCLUSIVE AND ARE ITS SOLE REMEDIES FOR ANY FAILURE OF SELLER TO COMPLY WITH ITS OBLIGATIONS HEREUNDER.

NOTWITHSTANDING ANY PROVISION IN THIS CONTRACT TO THE CONTRARY, IN NO EVENT SHALL SELLER BE LIABLE IN CONTRACT, IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY) OR OTHERWISE FOR DAMAGE TO PROPERTY OR EQUIPMENT OTHER THAN PRODUCTS SOLD HEREUNDER, LOSS OF PROFITS OR REVENUE, LOSS OF USE OF PRODUCTS, COST OF

CAPITAL, CLAIMS OF CUSTOMERS OF THE BUYER OR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, REGARDLESS OF WHETHER SUCH POTENTIAL DAMAGES ARE FORESEEABLE OR IF SELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

THE TOTAL CUMULATIVE LIABILITY OF SELLER ARISING FROM OR RELATED TO THIS CONTRACT WHETHER THE CLAIMS ARE BASED IN CONTRACT, IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY) OR OTHERWISE, SHALL NOT EXCEED THE PRICE OF THE PRODUCT OR SERVICES ON WHICH SUCH LIABILITY IS BASED.

Numerics