

# EDS Series Factory Sealed Manual Motor Starters and Contactors

## Explosionproof, Dust-Ignitionproof

### NEC/CEC:

Class I, Division 1 and 2, Groups C, D  
Class II, Division 1 and 2, Groups E, F, G  
Class III  
NEMA 3, 3R, 7CD, 9EFG

### Applications

- Manual motor starters are available to meet any plant installation requirement.
- They may be used to install a variety of electrical wiring devices and comes complete with covers and dead-end or feed-thru hub arrangements. Available with or without heater.
- Complete units are ideal for manual starting of small Vac or Vdc motors in locations made hazardous by the presence of flammable vapors, gases or combustible dust.

### Features

- Easily readable operator handle with provisions for padlocking in the ON or OFF position.
- Cast in hubs.
- Interchangeable heater units.

### Standard Materials

- Body and cover: malleable iron
- Sealing chamber: copperfree (4/10 of 1% max.) aluminum
- Operating handle: nylon

### Standard Finishes

- Body and cover: gray epoxy powder coat

### Options

- For Aluminum Backbox and Cover add suffix **-A**.
- Starters are furnished with one interchangeable heater. Select heater number from heater selection table and add appropriate suffix to catalog number. For example, a complete catalog number with Allen-Bradley ◀ motor starter and Allen-Bradley ◀ 0-17 amp heater: EDS150-1MSAB-AB1.

### NEC/CEC Certifications and Compliances

- UL Standards: UL 508, UL 698, UL 1203
- CSA Standards: C22.2 No 14-M, C22.2 No. 25, C22.2 No. 30
- cULus Listed: E76550, E81751



1-Gang  
Dead-End



2-Gang  
Feed-Thru

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◀ Allen-Bradley is a registered trademark of Rockwell Automation.

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**Factory Sealed Manual Motor Starters**

| Poles | Hub Size (Inches) | Catalog Number Cover/Chamber/Device |                   | 1-Gang Catalog Number ② |             | 2-Gang Catalog Number ② |             |
|-------|-------------------|-------------------------------------|-------------------|-------------------------|-------------|-------------------------|-------------|
|       |                   | Allen Bradley ◀ ①                   | Cutler-Hammer + ① | Dead-End                | Feed-Thru   | Dead-End                | Feed-Thru   |
| 1     | 1/2               |                                     |                   | EDS150-1MS              | EDSC150-1MS | EDS250-1MS              | EDSC250-1MS |
|       | 3/4               | EDK1MSAB                            | EDK1MSW           | EDS175-1MS              | EDSC175-1MS | EDS275-1MS              | EDSC275-1MS |
|       | 1                 |                                     |                   | EDS110-1MS              | EDSC110-1MS | EDS210-1MS              | EDSC210-1MS |
| 2     | 1/2               |                                     |                   | EDS150-2MS              | EDSC150-2MS | EDS250-2MS              | EDSC250-2MS |
|       | 3/4               | EDK2MSAB                            | EDK2MSW           | EDS175-2MS              | EDSC175-2MS | EDS275-2MS              | EDSC275-2MS |
|       | 1                 |                                     |                   | EDS110-2MS              | EDSC110-2MS | EDS210-2MS              | EDSC210-2MS |

**Manual Motor Starter Horsepower Ratings**

| Poles | 120-240 Vac | 32 Vdc | 120 Vdc | 240 Vdc | Allen-Bradley ◀ Catalog Number | Cutler-Hammer + Catalog Number |
|-------|-------------|--------|---------|---------|--------------------------------|--------------------------------|
| 1     | 1 HP        | —      | —       | —       | Bulletin 600                   | —                              |
| 2     | 1 HP        | —      | 3/4 HP  | 3/4 HP  | Bulletin 600                   | —                              |
| 1     | 1 HP        | 1/4 HP | —       | 1/4 HP  | —                              | MST01                          |
| 2     | 1 HP        | 1/4 HP | 1 HP    | 1 HP    | —                              | MST02                          |

**EFD Non-Factory Sealed Manual Contactors — No Heater Options**

| Poles | Hub Size (Inches) | Catalog Numbers |             | Description                    | Switch Ratings  |
|-------|-------------------|-----------------|-------------|--------------------------------|---|
|       |                   | Dead-End        | Feed-Thru   |                                |   |
| 2     | 1/2               | EFD150-2MS      | EFDC150-2MS | SQUARE D Class 2510, Type KO-1 | 30 Amp, 250 Vac/Vdc; 20 Amp, 600 Vac; 1 HP, 115 Vac; 2 HP, 230 Vac; 3 HP, 460-575 Vac |
|       | 3/4               | EFD175-2MS      | EFDC175-2MS |                                |   |
|       | 1                 | EFD110-2MS      | EFDC110-2MS |                                |   |
| 3     | 1/2               | EFD150-3MS      | EFDC150-3MS | ARROW-HART AH7810-UD           | 30 Amp, 600 Vac; 3 HP, 120 Vac; 7-1/2 HP, 240 Vac; 15 HP, 480 Vac; 15 HP 600 Vac      |
|       | 3/4               | EFD175-3MS      | EFDC175-3MS |                                |   |
|       | 1                 | EFD110-3MS      | EFDC110-3MS |                                |   |

**Non-Factory Sealed Components**

| Poles | Description | Catalog Number |
|-------|-------------|----------------|
| —     | Cover only  | EFKMSQ         |
| 2     | Device only | EFS2MSQ        |
| 3     | Device only | EFS3MSQ        |

+ Cutler-Hammer is a registered trademark of Eaton Corporation.

◀ Allen-Bradley is a registered trademark of Rockwell Automation.

① For heaters, see following page.

② **Ordering Instructions:** Add suffix **-AB** to catalog number for Allen-Bradley motor starter; add suffix **-W** for Cutler-Hammer motor starter. Starters are furnished with one interchangeable heater. Select heater number from heater selection table and add appropriate suffix to catalog number. For example, a complete catalog number with Allen-Bradley motor starter and Allen-Bradley heater: **EDS150-1MSAB-AB1**. For Aluminum Backbox and Cover add suffix **-A**.

# EDS Series Factory Sealed Manual Motor Starter and Contactor Heaters

Allen-Bradley and Cutler-Hammer heaters and starters are not interchangeable with each other.

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The "Full Load Motor Current" listed in the tables below are ratings which determine the proper heat element that should be used with the EDS Series starters. Refer to motor nameplate for its full load motor current. It is our recommendation that for normal conditions the heater element selected should have a capacity of 20 to 25% greater than the full load current of the motor. This applies to standard +40 °C (+104 °F) temperature rise motors. For +50 °C (+122 °F) rise motors, a heater not greater than 115% full load current should be selected.

However, due to the difference between full load motor currents of various motor manufacturers of the same size motors, the above information is approximate.

If selection of heater element is uncertain as might be in the case of a motor subject to frequent starting and intermittent load, it is advisable to contact the starter manufacturer or his local representative giving full particulars, such as motor horsepower, voltage, phase cycles, name or manufacturer or pertinent data that may aid in the selection of the proper heater element.

**Allen-Bradley †**

| Full Load Motor Current (Amp) | Add Suffix EDS |
|-------------------------------|----------------|
| 0.17                          | -AB1           |
| 0.21                          | -AB2           |
| 0.25                          | -AB3           |
| 0.32                          | -AB4           |
| 0.39                          | -AB5           |
| 0.46                          | -AB6           |
| 0.57                          | -AB7           |
| 0.71                          | -AB8           |
| 0.79                          | -AB9           |
| 0.87                          | -AB10          |
| 0.98                          | -AB11          |
| 1.08                          | -AB12          |
| 1.19                          | -AB13          |
| 1.30                          | -AB14          |
| 1.43                          | -AB15          |
| 1.58                          | -AB16          |
| 1.75                          | -AB17          |
| 1.88                          | -AB18          |
| 2.13                          | -AB19          |
| 2.40                          | -AB20          |
| 2.58                          | -AB21          |
| 2.92                          | -AB22          |
| 3.09                          | -AB23          |
| 3.32                          | -AB24          |
| 3.77                          | -AB25          |
| 4.16                          | -AB26          |
| 4.51                          | -AB27          |
| 4.93                          | -AB28          |
| 5.43                          | -AB29          |
| 6.03                          | -AB30          |
| 6.83                          | -AB31          |
| 7.72                          | -AB32          |
| 8.24                          | -AB33          |
| 8.90                          | -AB34          |
| 9.60                          | -AB35          |
| 10.80                         | -AB36          |
| 12.00                         | -AB37          |
| 13.50                         | -AB38          |
| 15.20                         | -AB39          |

**Cutler-Hammer ‡**

| Full Load Motor Current (Amp) | Heater Rating (Amp) | Add Suffix EDS |
|-------------------------------|---------------------|----------------|
| 0.40-0.43                     | 0.50                | -WH1           |
| 0.44-0.48                     | 0.55                | -WH2           |
| 0.49-0.53                     | 0.61                | -WH3           |
| 0.54-0.58                     | 0.67                | -WH4           |
| 0.59-0.64                     | 0.74                | -WH5           |
| 0.65-0.71                     | 0.81                | -WH6           |
| 0.72-0.78                     | 0.89                | -WH7           |
| 0.79-0.87                     | 0.98                | -WH8           |
| 0.88-0.95                     | 1.10                | -WH9           |
| 0.96-1.03                     | 1.20                | -WH10          |
| 1.04-1.15                     | 1.30                | -WH11          |
| 1.16-1.27                     | 1.45                | -WH12          |
| 1.28-1.35                     | 1.60                | -WH13          |
| 1.36-1.51                     | 1.70                | -WH14          |
| 1.52-1.67                     | 1.90                | -WH15          |
| 1.68-1.83                     | 2.10                | -WH16          |
| 1.84-1.99                     | 2.30                | -WH17          |
| 2.00-2.23                     | 2.50                | -WH18          |
| 2.24-2.47                     | 2.80                | -WH19          |
| 2.48-2.71                     | 3.10                | -WH20          |
| 2.72-2.95                     | 3.40                | -WH21          |
| 2.96-3.27                     | 3.70                | -WH22          |
| 3.28-3.59                     | 4.10                | -WH23          |
| 3.60-3.99                     | 4.50                | -WH24          |
| 4.00-4.39                     | 5.00                | -WH25          |
| 4.40-4.79                     | 5.50                | -WH26          |
| 4.80-5.26                     | 6.00                | -WH27          |
| 5.27-5.83                     | 6.60                | -WH28          |
| 5.84-6.39                     | 7.30                | -WH29          |
| 6.40-7.03                     | 8.00                | -WH30          |
| 7.07-7.74                     | 8.80                | -WH31          |
| 7.75-8.46                     | 9.70                | -WH32          |
| 8.47-9.35                     | 10.60               | -WH33          |
| 9.36-10.30                    | 11.70               | -WH34          |
| 10.31-11.35                   | 12.90               | -WH35          |
| 11.36-12.47                   | 14.20               | -WH36          |
| 12.48-13.67                   | 15.60               | -WH37          |
| 13.68-15.12                   | 17.10               | -WH38          |
| 15.13-16.00                   | 18.60               | -WH39          |

‡ Cutler-Hammer is a registered trademark of Eaton Corporation.  
 † Allen-Bradley is a registered trademark of Rockwell Automation.

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# EFD Mounting Bodies for EDS Series Factory Sealed Motor Starters

## Explosionproof, Dust-Ignitionproof




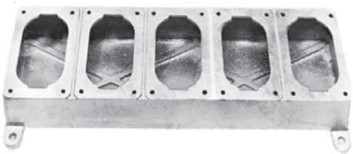
Furnished with Internal Ground Screw.

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|   | Type      | Hub Size (Inches) | Catalog Number |             |
|---|-----------|-------------------|----------------|-------------|
|   |           |                   | Malleable Iron | Aluminum    |
| <b>1-Gang</b>   |           |                   |                |             |
|    | Dead-End  | 1/2               | EFD150NLQ      | EFD150ANLQ  |
|   |           | 3/4               | EFD175NLQ      | EFD175ANLQ  |
|   |           | 1                 | EFD110NLQ      | EFD110ANLQ  |
|   | Feed-Thru | 1/2               | EFDC150NLQ     | EFDC150ANLQ |
|   |           | 3/4               | EFDC175NLQ     | EFDC175ANLQ |
|   |           | 1                 | EFDC110NLQ     | EFDC110ANLQ |
| <b>2-Gang</b>   |           |                   |                |             |
|    | Dead-End  | 1/2               | EFD250NLQ      | EFD250ANLQ  |
|   |           | 3/4               | EFD275NLQ      | EFD275ANLQ  |
|   |           | 1                 | EFD210NLQ      | EFD210ANLQ  |
|   | Feed-Thru | 1/2               | EFDC250NLQ     | EFDC250ANLQ |
|   |           | 3/4               | EFDC275NLQ     | EFDC275ANLQ |
|   |           | 1                 | EFDC210NLQ     | EFDC210ANLQ |
| <b>Tandem ①</b>   |           |                   |                |             |
|  | Dead-End  | 1/2               | EFDT50NLQ      | —           |
|   |           | 3/4               | EFDT75NLQ      | —           |
|   |           | 1                 | EFDT10NLQ      | —           |
|   | Feed-Thru | 1/2               | EFDCT50NLQ     | —           |
|   |           | 3/4               | EFDCT75NLQ     | —           |
|   |           | 1                 | EFDCT10NLQ     | —           |
| <b>Blank Bodies for Brazed Hubs</b>   |           |                   |                |             |
|  | 1-Gang    |                   | EFD1NL         |             |
|   | 2-Gang    |                   | EFD2NL         |             |
|   | 3-Gang    |                   | EFD3NL         |             |
|   | 4-Gang    |                   | EFD4NL         |             |
|   | 5-Gang    |                   | EFD5NL         |             |

① For tandem bodies, external seals must be installed within 1.5 meters (5 feet) of each conduit entrance for Class I, Groups C and D.

# EFD Cast Device Boxes; Blank Bodies for Brazed Threaded Hubs

## Ordering Information

1-, 2-, 3-, 4- and 5-Gang Boxes. Brazed Threaded Hubs for Rigid Conduit, 1/2" thru 1"; Brazed Union Hubs, 1/2" thru 1".

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### Determine catalog number as follows:

- (1) Select EFD device box catalog number;
- (2) Select "Standard Hub Arrangement Diagram" number; and
- (3) Select symbols that represent hub sizes from "Symbol Table." (Use "0" where no hub is required, and separate the various divisions of the complete catalog number by dashes.)

### Example

The blank body device box selected is EFD3NL and the hub arrangement is diagram #8. Hub "a" is to be 3/4" brazed threaded; hub "b", 1" brazed threaded; hub "c", 3/4" brazed threaded; hub "d", no hub is required; and hub "e", 1" brazed union.

The complete catalog number will be:  
**EFD-3NL-8-23203E**

If a "Standard Hub Arrangement" is not suitable for the application, or when hubs are to be more accurately spaced, submit sketch locating hubs (1) from centerlines of walls and (2) from outside back of box (or from mounting lug surface if lugs are supplied).

**All hubs will be located in centerlines of walls and evenly spaced unless otherwise specified.**

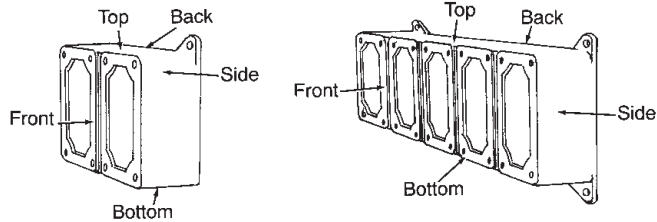
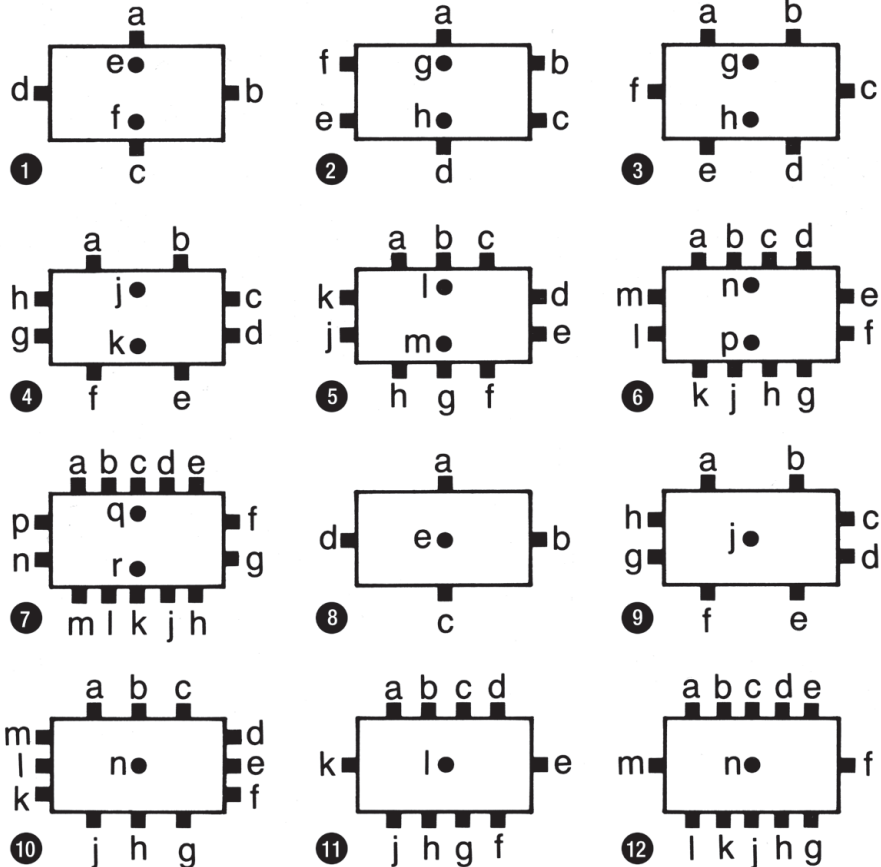
### Symbol Table

| Hub Size (Inches) | Braze Threaded Hub Symbol | Braze Union Hub Symbol |
|-------------------|---------------------------|------------------------|
| Blank             | 0                         | 0                      |
| 1/2               | 1                         | 1E                     |
| 3/4               | 2                         | 2E                     |
| 1                 | 3                         | 3E                     |

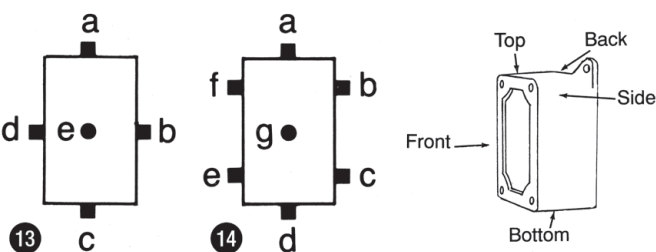
### Standard Hub Arrangement Diagrams

Hub "a" is always TOP of box

#### 2-, 3-, 4- and 5-Gang (Front View)



#### 1-Gang (Front View)



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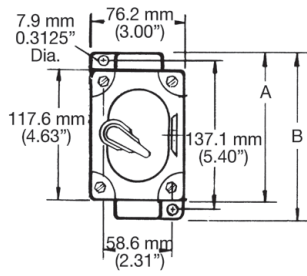
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**NEC/CEC:**

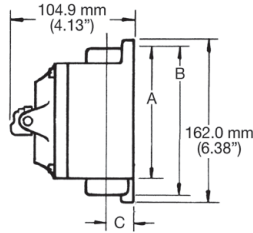
Class I, Division 1, Groups C, D  
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 Class II, Division 1 and 2, Groups E, F, G  
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**Dimensions in Millimeters (Inches)**

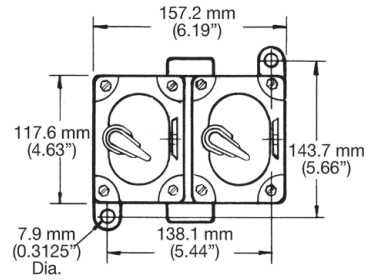
**1-Gang and 2-Gang**



**1-Gang Front**



**1- and 2-Gang Side**



**2-Gang Front**

| Hub Size<br>(Inches) | Dimensions in Millimeters (Inches) |              |             |
|----------------------|------------------------------------|--------------|-------------|
|                      | A                                  | B            | C           |
| 1/2                  | 153.9 (6.06)                       | 172.9 (6.81) | 19.0 (0.75) |
| 3/4                  | 153.9 (6.06)                       | 172.9 (6.81) | 22.3 (0.88) |
| 1                    | 156.7 (6.17)                       | 178.5 (7.03) | 25.4 (1.00) |

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