



- Three-pole versions up to 630A in IEC AC3 duty
- Four-pole versions up to 1600A in IEC AC1 duty
- Versions for power factor correction up to 100kvar at 400VAC
- Four-pole versions with 2NO+2NC or 4NC main poles
- Versions for photovoltaic application
- Versions with AC, AC/DC or DC control
- Low-consumption versions with DC control circuit for control relays and 9-38A contactors in IEC AC3 duty
- Extensive choice of add-on blocks and accessories
- Certified by primary international authorities.

## Contactors

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**THREE-POLE CONTACTORS**

- IEC lth ratings in AC1 duty at  $\leq 40^{\circ}\text{C}$ : 16 to 1600A
- IEC le ratings in AC3 440V duty: 6 to 630A
- IEC Power ratings in AC3 400V duty: 2.2 to 335kW
- UL/CSA ratings: 3 to 500HP at 480V and 600V
- AC, AC/DC, DC and DC low-consumption coil.



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**FOUR-POLE CONTACTORS**

- IEC lth ratings in AC1 duty at  $\leq 40^{\circ}\text{C}$ : 20 to 1600A
- IEC Power ratings in AC1 400V duty: 14 to 950kW
- UL/CSA general use: 16 to 1000A
- AC, AC/DC, DC and DC low-consumption coil.



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**FOUR-POLE CONTACTORS WITH 2NO+2NC MAIN POWER POLES**

- IEC lth ratings in AC1 duty at  $\leq 40^{\circ}\text{C}$ : 20 to 115A
- UL/CSA general use: 20 to 115A
- AC, AC/DC, DC and DC low-consumption coil.



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**FOUR-POLE CONTACTORS WITH 4 NC POLES FOR PHOTOVOLTAIC APPLICATIONS**

- IEC lth ratings in AC1 duty at  $\leq 40^{\circ}\text{C}$ : 25 to 40A
- UL/CSA general use: 20 to 55A for 4NC types
- Operational current up to 125A (DC1 at  $\leq 55^{\circ}\text{C}$  with 4 NO poles in series) for photovoltaic applications.
- AC, AC/DC, DC and DC low-consumption coil.



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**CONTACTORS FOR POWER FACTOR CORRECTION**

- With limiting resistors included
- IEC Power ratings at 400V: 7.5 to 100kvar
- UL/CSA ratings: 9 to 100kvar at 480V; 10 to 120kvar at 600V
- AC coil.



Page 2-15

**CONTROL RELAYS**

- AC, DC and DC low-consumption coil
- Screw or Faston termination
- 4, 8 or 11 auxiliary contact composition.



LOVATO Electric contactors are suitable for new motors with high IE3 efficiency values

## 2 Contactors

### BG series mini-contactors



- Highly conductive auxiliary contacts with four contact points
- AC and DC versions of same size
- Quick connect - snap on accessory mounting
- Distinct contact status indication
- Up to four auxiliary contacts can be mounted
- Mechanical interlock only 5mm deep
- Positive (force) guided contacts (mechanically-linked per IEC)

- Three-pole mini-contactors, 6 to 12A IEC AC3 duty / 3 to 7.5HP 480V - 3 to 10HP 600V UL/CSA
- Four-pole mini-contactors, 20A IEC AC1 duty
- Versions with 2NO+2NC main power poles
- Highly conductive auxiliary contacts
- Coils with AC or DC supply
- Low-consumption DC versions
- Screw, faston and rear PCB solder pin termination.

|       | 3 poles  |    |    | 4 poles   |    |    |
|-------|----------|----|----|-----------|----|----|
|       | Ie (AC3) | AC | DC | Ith (AC1) | AC | DC |
| BG06  | 6A       | ●  | ●  | —         | —  | —  |
| BG09  | 9A       | ●  | ●  | 20A       | ●  | ●  |
| BGF09 | 9A       | ●  | ●  | 20A       | ●  | ●  |
| BGP09 | 9A       | ●  | ●  | 20A       | ●  | ●  |
| BG12  | 12A      | ●  | ●  | —         | —  | —  |

### BF series contactors



- Highly conductive auxiliary contacts
- Quick connect - snap on accessory mounting
- Distinct contact status indication
- Up to eight auxiliary contacts can be mounted
- Mechanical interlock only 5mm deep
- Positive (force) guided contacts (mechanically-linked per IEC)

- Three-pole contactors, 9 to 150A IEC AC3 duty / 5 to 75HP 480V - 7.5 to 100HP 600V UL/CSA
- Four-pole contactors, 25 to 165A in AC1 duty
- Power factor correction contactors, 7.5 to 100kvar at 400V IEC / 9 to 110kvar at 480V UL/CSA
- Types with 2NO+2NC or 4NC main power poles
- Types for photovoltaic applications
- Highly conductive auxiliary contacts
- Coils with AC or DC supply
- Wide-range coils with electronic control for contactors from 40 to 150A AC3
- Low-consumption versions for control relays and 9-38A contactors in IEC AC3 duty.

|       | 3 poles |    |    |     |        |
|-------|---------|----|----|-----|--------|
|       | Ie AC3  | AC | DC | DC① | AC/DC② |
| BF09  | 9A      | ●  | ●  | ●   | —      |
| BF12  | 12A     | ●  | ●  | ●   | —      |
| BF18  | 18A     | ●  | ●  | ●   | —      |
| BF25  | 25A     | ●  | ●  | ●   | —      |
| BF26  | 26A     | ●  | ●  | ●   | —      |
| BF32  | 32A     | ●  | ●  | ●   | —      |
| BF38  | 38A     | ●  | ●  | ●   | —      |
| BF40  | 40A     | ●  | —  | —   | ●      |
| BF50  | 50A     | ●  | —  | —   | ●      |
| BF65  | 65A     | ●  | —  | —   | ●      |
| BF80  | 80A     | ●  | —  | —   | ●      |
| BF94  | 95A     | ●  | —  | —   | ●      |
| BF95  | 95A     | ●  | —  | —   | ●      |
| BF115 | 115A    | ●  | —  | —   | ●      |
| BF150 | 150A    | ●  | —  | —   | ●      |

|       | 4 poles |    |    |     |        |
|-------|---------|----|----|-----|--------|
|       | Ith AC1 | AC | DC | DC① | AC/DC② |
| BF09  | 25A     | ●  | ●  | ●   | —      |
| BF12  | 28A     | ●  | —  | —   | —      |
| BF18  | 32A     | ●  | ●  | ●   | —      |
| BF26  | 45A     | ●  | ●  | ●   | —      |
| BF38  | 56A     | ●  | ●  | ●   | —      |
| BF40  | 70A     | ●  | —  | —   | —      |
| BF50  | 90A     | ●  | —  | —   | —      |
| BF65  | 100A    | ●  | —  | —   | ●      |
| BF80  | 115A    | ●  | —  | —   | ●      |
| BF95  | 140A    | ●  | —  | —   | ●      |
| BF115 | 160A    | ●  | —  | —   | ●      |
| BF150 | 165A    | ●  | —  | —   | ●      |

① Low-consumption version.

② Wide-range coil with electronic control.

### B series contactors



- 3 frame sizes offering 11 different contactors
- Coil operates indifferently on AC or DC supply voltage
- Coil with low in-rush and holding
- Coil removable without disconnecting power wiring
- Red indicator when contactor is energised
- Unique right-angle magnet design - limits contact bounce
- Safety feature prevents contactor to be energised without arc chute in place and locked
- Convertible auxiliary contact block (2NO + 1NC or 1NO + 2NC), maximum of 4 blocks per contactor for a total of 12 contacts
- Contactor terminals with bolt, washer and nut
- Simple horizontal or vertical interlock
- Positive (force) guided contacts (mechanically-linked per IEC)

- Three-pole contactors, 150A to 630A IEC AC3 duty
- Four-pole contactors, 250A to 1600A IEC AC1 duty
- 100 to 500HP 600V UL/CSA
- Coils with AC/DC supply
- Screw termination.

|           | 3 poles  |    |    | 4 poles   |    |    |
|-----------|----------|----|----|-----------|----|----|
|           | Ie (AC3) | AC | DC | Ith (AC1) | AC | DC |
| B145      | 150A     | ●  | ●  | 250A      | ●  | ●  |
| B180      | 185A     | ●  | ●  | 275A      | ●  | ●  |
| B250      | 265A     | ●  | ●  | 350A      | ●  | ●  |
| B310      | 320A     | ●  | ●  | 450A      | ●  | ●  |
| B400      | 420A     | ●  | ●  | 550A      | ●  | ●  |
| B500      | 520A     | ●  | ●  | 700A      | ●  | ●  |
| B630      | 630A     | ●  | ●  | 800A      | ●  | ●  |
| B630 1000 | ①        | ●  | ●  | 1000A     | ●  | ●  |
| B1250     | ①        | ●  | —  | 1250A     | ●  | —  |
| B1600     | ①        | ●  | —  | 1600A     | ●  | —  |

① For AC1 / general use duty only.

# THE IDEAL SOLUTION!

## 45mm WIDE CONTACTORS

Ratings up to 38A in AC3 (18.5kW) 400V 30HP  
480V UL - merely 45mm wide: exceptional benefit for electric panel dimensions.

## 55mm WIDE CONTACTORS

Ratings up to 95A in AC3 (45kW) 400V / 60HP  
480V UL - merely 55mm wide: exceptional benefit for electric panel dimensions.

## 75mm WIDE CONTACTORS

Ratings up to 150A in AC3 (75kW) 400V / 100HP  
480V UL - merely 75mm wide: exceptional benefit for electric panel dimensions.

## COILS WITH WIDE OPERATING RANGE

BF...D contactors are equipped with a wide operating range coil and are particularly useful in applications subject to considerable voltage variations, such as in electric traction railway equipment.



## 4-TERMINAL COIL

Connecting cables can be coupled to the coil both on the line and load ends of the contactor.

## ELECTRONIC COIL

Contactors from 40 to 150A AC3 can be equipped with AC/DC electronic coil with wide operating range.  
Example: single 100 to 250V AC/DC coil.

## BUILT-IN SURGE SUPPRESSOR

BF series contactors up to 150A AC3 with voltages in DC or AC/DC already have a built-in surge suppressor.

## LOW-CONSUMPTION COILS

The BF...L contactors feature a 2.4W low consumption. This characteristic widely allows their direct control by PLC outputs.



## SIDE ADD-ON FOURTH POLE

For the 45A to 165A AC1 ratings, a side-mount fourth power pole can be snapped on the three-pole contactor. This solution permits the optimisation of inventory.

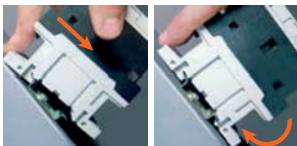


## MECHANICAL INTERLOCK

Smaller-size contactors, 9 to 25A in AC3, can be mechanically and electrically interlocked with larger-size contactors, 9 to 38A AC3. The BFX50 01 and BFX53 01 mechanical interlock comprises two built-in NC auxiliary contacts to make the electrical interlock as well.



## 35MM IN RAIL MOUNTING AND FIXING



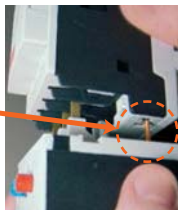
Contactor mounting on and removal from a 35mm DIN rail are tool-less operations and are done by simply applying pressure on the contactor.

## STARTER ASSEMBLY



The assembly and wiring of electromechanical starters is extremely fast and reliable. Versatile electrical and mechanical connecting systems provide easy and foolproof assembly of compact starters.

## EFFORTLESS THERMAL OVERLOAD RELAY LINK RF38, RF82 AND RF110 TYPES

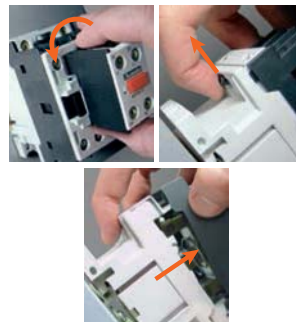


During the connection of the thermal overload relay to the contactor, its auxiliary contact is simultaneously linked to the contactor coil terminal rigid connector. The complete overload relay fixing is obtained with one single operation and without other connections.

## TERMINAL ADAPTABILITY

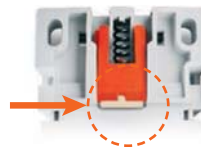
Terminals are suitable for every type of cable: flexible, rigid, according to AWG standards and interlocked with any type of cable terminal. For BF09...BF38 contactors, a single type of screwdriver tightens the screws for the power contacts, auxiliary contacts and coil.

## SNAP-ON INSTALLATION



On the contactors, it's quick and easy to fit and remove auxiliary contacts and accessories, without using tools; the same applies to replacing the coil in the AC BF09...BF38 contactors.

## RUBBER PAD INSERT TO PREVENT DIN RAIL SLIDING



A rubber insert prevents the contactors from sliding on the 35mm DIN rail even when out of tolerance or mounted vertically.

## BREAKER-CONTACTOR CONNECTIONS

The rigid connections between breaker and contactor allow complete compact starters to be created easily, quickly and with less space used in the panel. It is fitted on a single DIN rail.



## IP20 CONNECTION SECURITY



For BF09...BF38 contactors, the easy access and space for the terminals is combined with IP20 protection, preventing accidental contact with live parts.

## DOUBLE LUG TERMINALS

40 to 150A AC3 contactors are equipped with double lug terminals for easy, functional access for power cables. It is extremely simple to create star-delta starters, reversing switches, changeovers and arrange parallel supply for several contactors.



## ELECTRONIC COIL

Contactors from 40 to 150A AC3 can be equipped with AC/DC electronic coil with the following advantages:

- wide operating range: 20...48V, 60...110V, 100...250V
- low consumption in service
- no chattering in the event of irregular voltage.

## 2 Contactors

Three-pole contactors with AC control circuit



BG06 A...BG12 A



BF09 A...BF25 A



BF26 A...BF38 A



BF40 A...BF94 A



BF95 A...BF150 A



B145...B180



B250...B400

new

| Three-phase motor control in AC3 duty |                       |          |                      |                |                                            |      |      |      |      |      |       | UL/CSA details |                                   |      |      |      |      |
|---------------------------------------|-----------------------|----------|----------------------|----------------|--------------------------------------------|------|------|------|------|------|-------|----------------|-----------------------------------|------|------|------|------|
| Order code                            | IEC operating current |          |                      |                | Maximum IEC power at ≤55°C (AC3)           |      |      |      |      |      |       |                | Maximum UL/CSA horsepower ratings |      |      |      |      |
| AC coil                               | I <sub>th</sub> (AC1) |          | I <sub>e</sub> (AC3) |                | 230V                                       | 400V | 415V | 440V | 500V | 690V | 1000V | Single phase   | Three phase                       | 200V | 240V | 480V | 600V |
|                                       | ≤40°C                 | ≤55°C    | ≤70°C                | ≤440V at ≤55°C |                                            |      |      |      |      |      |       | 120V           | 240V                              |      |      |      |      |
| [A]                                   | [A]                   | [A]      | [A]                  | [A]            | [kW]                                       | [kW] | [kW] | [kW] | [kW] | [kW] | [kW]  | [HP]           | [HP]                              | [HP] | [HP] | [HP] | [HP] |
| 11 BG06 01 A①                         | 16                    | 14       | 12                   | 6              | 1.5                                        | 2.2  | 2.4  | 2.5  | 3    | 3    | —     | 1/3            | 1                                 | 1½   | 2    | 3    | 3    |
| 11 BG06 10 A①                         |                       |          |                      |                |                                            |      |      |      |      |      |       |                |                                   |      |      |      |      |
| 11 BG09 01 A①                         | 20                    | 18       | 15                   | 9              | 2.2                                        | 4    | 4.3  | 4.5  | 5    | 5    | —     | 1/2            | 1½                                | 2    | 3    | 5    | 5    |
| 11 BG09 10 A①                         |                       |          |                      |                |                                            |      |      |      |      |      |       |                |                                   |      |      |      |      |
| 11 BGF09 01 A①                        | 20                    | 18       | 15                   | 9              | 2.2                                        | 4    | 4.3  | 4.5  | 5    | 5    | —     | 1/2            | 1½                                | 2    | 3    | 5    | 5    |
| 11 BGF09 10 A①                        |                       |          |                      |                |                                            |      |      |      |      |      |       |                |                                   |      |      |      |      |
| 11 BGP09 01 A①                        | 20                    | 18       | 15                   | 9              | 2.2                                        | 4⑦   | 4.3⑦ | 4.5⑦ | 5⑦   | —    | —     | 1/2            | 1½                                | 2    | 3    | 5⑦   | —    |
| 11 BGP09 10 A①                        |                       |          |                      |                |                                            |      |      |      |      |      |       |                |                                   |      |      |      |      |
| 11 BG12 01 A①②                        | 20                    | 18       | 15                   | 12             | 3.2                                        | 5.7  | 6.2  | 5.5  | 5    | 5    | —     | 1/2            | 1½                                | 3    | 3    | 7½   | 10   |
| 11 BG12 10 A①②                        |                       |          |                      |                |                                            |      |      |      |      |      |       |                |                                   |      |      |      |      |
| BF09 01 A①②                           | 25                    | 20       | 18                   | 9              | 2.2                                        | 4.2  | 4.5  | 4.8  | 5.5  | 7.5  | —     | ¾              | 2                                 | 3    | 3    | 5    | 7½   |
| BF09 10 A①②                           |                       |          |                      |                |                                            |      |      |      |      |      |       |                |                                   |      |      |      |      |
| BF12 01 A①②                           | 28                    | 23       | 20                   | 12             | 3.2                                        | 5.7  | 6.2  | 6.2  | 7.5  | 10   | —     | 1              | 2                                 | 5    | 5    | 7½   | 10   |
| BF12 10 A①②                           |                       |          |                      |                |                                            |      |      |      |      |      |       |                |                                   |      |      |      |      |
| BF18 01 A①②                           | 32                    | 26       | 23                   | 18             | 4                                          | 7.5  | 9    | 9    | 10   | 10   | —     | 1              | 3                                 | 5    | 5    | 10   | 15   |
| BF18 10 A①②                           |                       |          |                      |                |                                            |      |      |      |      |      |       |                |                                   |      |      |      |      |
| BF25 01 A①                            | 32                    | 26       | 23                   | 25             | 7                                          | 12.5 | 13.4 | 13.4 | 15   | 11   | —     | 2              | 3                                 | 7½   | 7½   | 15   | 15   |
| BF25 10 A①                            |                       |          |                      |                |                                            |      |      |      |      |      |       |                |                                   |      |      |      |      |
| BF26 00 A①②                           | 45                    | 36       | 32                   | 26             | 7.3                                        | 13   | 14   | 14   | 15.6 | 18.5 | —     | 2              | 5                                 | 7½   | 7½   | 15   | 20   |
| BF32 00 A①②                           | 56                    | 45       | 40                   | 32             | 8.8                                        | 16   | 17   | 17   | 20   | 22   | —     | 3              | 7½                                | 10   | 10   | 20   | 25   |
| BF38 00 A①                            | 56 (60④)              | 45 (48④) | 40 (42④)             | 38             | 11                                         | 18.5 | 18.5 | 18.5 | 20   | 22   | —     | 3              | 7½                                | 10   | 15   | 30   | 30   |
| BF40 00A ①                            | 70                    | 60       | 50                   | 40             | 11                                         | 18.5 | 22   | 22   | 22   | 30   | 18.5  | 3              | 7½                                | 10   | 15   | 30   | 40   |
| BF50 00A ①②                           | 90                    | 75       | 65                   | 50             | 15                                         | 22   | 30   | 30   | 30   | 37   | 22    | 5              | 10                                | 15   | 20   | 40   | 40   |
| BF65 00A ①②                           | 100                   | 80       | 70                   | 65             | 18.5                                       | 30   | 37   | 37   | 37   | 45   | 30    | —              | —                                 | 20   | 25   | 50   | 60   |
| BF80 00A ①                            | 115                   | 95       | 80                   | 80             | 22                                         | 45   | 45   | 45   | 55   | 55   | 37    | —              | —                                 | 25   | 30   | 60   | 75   |
| BF94 00A ①                            | 115                   | 95       | 80                   | 95             | 30                                         | 55   | 55   | 55   | 55   | 55   | 37    | —              | —                                 | 25   | 30   | 60   | 75   |
| BF95 00A ①                            | 140                   | 115      | 100                  | 95             | 30                                         | 55   | 55   | 55   | 75   | 90   | 45    | —              | —                                 | 30   | 30   | 60   | 75   |
| BF115 00A ①                           | 160                   | 130      | 115                  | 115            | 37                                         | 55   | 55   | 55   | 75   | 110  | 55    | —              | —                                 | 40   | 40   | 75   | 100  |
| BF150 00A ①                           | 165                   | 135      | 118                  | 150            | 45                                         | 75   | 75   | 75   | 90   | 110  | 55    | —              | —                                 | 50   | 50   | 100  | 125  |
| 11 B145 00②③                          | 250                   | 235      | 190                  | 150            | 46                                         | 80   | 88   | 93   | 100  | 120  | 75    | —              | —                                 | 50   | 50   | 100  | 125  |
| 11 B180 00②③                          | 275                   | 250      | 200                  | 185            | 57                                         | 100  | 108  | 115  | 123  | 144  | 103   | —              | —                                 | 60   | 75   | 150  | 150  |
| 11 B250 00②③                          | 350                   | 300      | 250                  | 265            | 83                                         | 140  | 155  | 164  | 176  | 212  | 156   | —              | —                                 | 75   | 100  | 200  | 250  |
| 11 B310 00②③                          | 450                   | 370      | 300                  | 320            | 100                                        | 170  | 188  | 200  | 213  | 256  | 180   | —              | —                                 | 100  | 125  | 250  | 300  |
| 11 B400 00②③                          | 550                   | 430      | 360                  | 420            | 130                                        | 225  | 247  | 263  | 271  | 352  | 208   | —              | —                                 | 125① | 150① | 350① | 400① |
| 11 B500 00②③                          | 700                   | 550      | 500                  | 520            | 156                                        | 290  | 306  | 328  | 367  | 416  | 312   | —              | —                                 | 150① | 200① | 400① | 450① |
| 11 B630 00②③                          | 800                   | 640      | 540                  | 630            | 198                                        | 355  | 368  | 368  | 368  | 440  | 368   | —              | —                                 | 200  | 250  | 500  | 500  |
| 11 B630 1000 00②③                     | 1000                  | 850      | 700                  | —              | For AC1/Resistive duty only, see page 2-8. |      |      |      |      |      |       |                | —                                 | —    | —    | —    | —    |
| 11 B1250 24②③                         | 1250                  | 1050     | 880                  | —              | For AC1/Resistive duty only, see page 2-8. |      |      |      |      |      |       |                | No UL                             | —    | —    | —    | —    |
| 11 B1600 24②③                         | 1600                  | 1360     | 1120                 | —              | For AC1/Resistive duty only, see page 2-8. |      |      |      |      |      |       |                | No UL                             | —    | —    | —    | —    |

- ① Complete order code with coil voltage digit or with voltage digit followed by 60 (if 60Hz).  
Standard voltages are as follows:  
– AC 50/60Hz 024 / 048 / 110 / 230 / 400V  
– AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 / 460 60 / 575 60 (V).  
Example: 11 BG06 10 A230 for mini-contactor BG06, three poles, with one NO contact and 230VAC 50/60Hz coil.  
11 BG06 10 A460 60 for mini-contactor BG06 with one NO contact and 460VAC 60Hz coil.
- ② The coil of the contactor can be powered indifferently in AC or DC. Complete the order code only with the digit of the coil voltage. Standard voltages are:  
– AC/DC 24 / 48 / 60 / 110-125 (indicate 110) / 220-240 (indicate 220) / 380-415 (indicate 380) / 440-480V (indicate 440).  
Example: 11 B145 00 110 for contactor B145, three poles, without auxiliary contacts and with 110-125VAC/DC coil.
- The 24VAC/DC voltage is not possible for B500-B630 1000 contactors.  
Other voltages available on request.
- ③ If predisposed for mechanical latch (G495), the order code becomes 11 B...SL.00 ②  
If already fitted with mechanical latch (G495), the order code becomes 11 B...L.00 ② ④.

- ④ Indicate rated voltage of the mechanical latch, preceded by the letter C if in DC. Available voltages are:  
– AC 50/60Hz 48 / 110-125 indicate 110 / 220-240 indicate 220 / 380-415V indicate 380  
– DC 48 / 110-125 indicate 110 / 220-240V indicate 220.  
Example: 11 B145L 00 110 220 for contactor B145 without auxiliary contacts, with 110-125VAC/DC coil and mechanical latch powered at 220-240VAC.
- ⑤ G495 mechanical latch cannot be mounted.
- ⑥ Complete the order code with the digit of the coil voltage. For 110-125VAC (50/60Hz) indicate 110 or 220-240VAC (50/60Hz) indicate 220.  
Example: 11 B1250 24 110 for contactor B1250, three poles, with 2NO+4NC auxiliary contacts and 110-125VAC 50/60Hz coil.
- ⑦ Maximum voltage is limited at 300V for UL. For certified type up to 600V, consult Technical support for information; see contact details on inside front cover.
- ⑧ For voltages 024 / 230 / 400VAC 50-60Hz: 10 pieces/package.  
For all other voltages: 1 piece/package.
- ⑨ Highly conductive auxiliary contact.
- ⑩ For use at this other current value, a 16mm<sup>2</sup> cable, headed with a fork terminal, must be used.
- ⑪ No UL/CSA ratings; data given for indication and reference purposes only.
- ⑫ Definite-purpose (DP) contactors are available. Consult Technical support for information; see contact details on inside front cover.

## 2 Contactors

### Three-pole contactors with AC control circuit



B500-B630



B630 1000



B1250-B1600

|  | UL/CSA<br>General<br>(purpose) use | UL/CSA<br>Fuse class | Short circuit<br>current RMS<br>sym. 600VAC | Type of terminal    | Incorporated<br>auxiliary<br>contacts | Quantity<br>per<br>pkg | Weight |
|--|------------------------------------|----------------------|---------------------------------------------|---------------------|---------------------------------------|------------------------|--------|
|  | [A]                                | Type/[A]             | [kA] UL/CSA                                 |                     | NO NC                                 | n°                     | [kg]   |
|  | 16                                 | K5/30                | 5                                           | Clamp-screw         | — 1Ⓢ                                  | 10                     | 0.180  |
|  |                                    |                      |                                             |                     | 1Ⓢ —                                  | 10                     | 0.180  |
|  | 20                                 | K5/30                | 5                                           | Clamp-screw         | — 1Ⓢ                                  | 10                     | 0.180  |
|  |                                    |                      |                                             |                     | 1Ⓢ —                                  | 10                     | 0.180  |
|  | 20                                 | K5/30                | 5                                           | Faston              | — 1Ⓢ                                  | 10                     | 0.180  |
|  |                                    |                      |                                             |                     | 1Ⓢ —                                  | 10                     | 0.180  |
|  | 20                                 | K5/30                | 5                                           | Rear PCB solder pin | — 1Ⓢ                                  | 10                     | 0.197  |
|  |                                    |                      |                                             |                     | 1Ⓢ —                                  | 10                     | 0.197  |
|  | 20                                 | K5/30                | 5                                           | Clamp-screw         | — 1Ⓢ                                  | 10                     | 0.180  |
|  |                                    |                      |                                             |                     | 1Ⓢ —                                  | 10                     | 0.180  |
|  | 25                                 | RK5/60               | 5                                           | Clamp-screw         | — 1Ⓢ                                  | 1                      | 0.367  |
|  |                                    |                      |                                             |                     | 1Ⓢ —                                  | Ⓢ                      | 0.367  |
|  | 28                                 | RK5/70               | 5                                           | Clamp-screw         | — 1Ⓢ                                  | 1                      | 0.367  |
|  |                                    |                      |                                             |                     | 1Ⓢ —                                  | Ⓢ                      | 0.367  |
|  | 32                                 | RK5/80               | 5                                           | Clamp-screw         | — 1Ⓢ                                  | 1                      | 0.367  |
|  |                                    |                      |                                             |                     | 1Ⓢ —                                  | Ⓢ                      | 0.367  |
|  | 32                                 | RK5/100              | 5                                           | Clamp-screw         | — 1Ⓢ                                  | 1                      | 0.367  |
|  |                                    |                      |                                             |                     | 1Ⓢ —                                  | Ⓢ                      | 0.367  |
|  | 45                                 | RK5/100              | 5                                           | Clamp-screw         | — —                                   | 1                      | 0.437  |
|  | 55                                 | RK5/125              | 5                                           | Clamp-screw         | — —                                   | 1                      | 0.437  |
|  | 55                                 | RK5/150              | 5                                           | Clamp-screw         | — —                                   | 1                      | 0.437  |
|  | 70                                 | RK5/150              | 10                                          | Lug-clamp Ⓢ         | — —                                   | 1                      | 1.020  |
|  | 90                                 | RK5/150              | 10                                          | Lug-clamp Ⓢ         | — —                                   | 1                      | 1.020  |
|  | 100                                | RK5/200              | 10                                          | Lug-clamp Ⓢ         | — —                                   | 1                      | 1.020  |
|  | 115                                | RK5/200              | 10                                          | Lug-clamp Ⓢ         | — —                                   | 1                      | 1.020  |
|  | 115                                | RK5/200              | 10                                          | Lug-clamp Ⓢ         | — —                                   | 1                      | 1.020  |
|  | 140                                | RK5/250              | 10                                          | Lug-clamp Ⓢ         | — —                                   | 1                      | 2.020  |
|  | 160                                | RK5/250              | 10                                          | Lug-clamp Ⓢ         | — —                                   | 1                      | 2.020  |
|  | 165                                | RK5/250              | 10                                          | Lug-clamp Ⓢ         | — —                                   | 1                      | 2.020  |
|  | 250                                | RK5/500              | 5                                           | Screw-nut           | — —                                   | 1                      | 5.400  |
|  | 275                                | RK5/500              | 10                                          | Screw-nut           | — —                                   | 1                      | 5.400  |
|  | 350                                | L/800                | 18                                          | Screw-nut           | — —                                   | 1                      | 9.575  |
|  | 450                                | L/800                | 18                                          | Screw-nut           | — —                                   | 1                      | 9.575  |
|  | 550                                | L/800 Ⓢ              | 18 Ⓢ                                        | Screw-nut           | — —                                   | 1                      | 9.575  |
|  | 700                                | L/1200 Ⓢ             | 18 Ⓢ                                        | Screw-nut           | — —                                   | 1                      | 18.000 |
|  | 800                                | L/1500 Ⓢ             | 18 Ⓢ                                        | Screw-nut           | — —                                   | 1                      | 18.620 |
|  | 1000                               | L/1500               | 18                                          | Screw-nut           | — —                                   | 1                      | 21.400 |
|  | No UL                              | —                    | —                                           | Screw-nut           | 2 4                                   | 1                      | 48.000 |
|  | No UL                              | —                    | —                                           | Screw-nut           | 2 4                                   | 1                      | 50.000 |

Ⓢ IEC/EN 60947-1 designation: Pillar terminal.

#### Certifications and compliance

Certifications obtained:

| Type       | cULus | UL | CSA | EAC | CCC | Register of shipping<br>RINA | LR |
|------------|-------|----|-----|-----|-----|------------------------------|----|
| BG06 A     | ●     |    |     | ●   | ●   |                              |    |
| BG09 A     | ●     |    |     | ●   | ●   |                              |    |
| BG12 A     | ●     |    |     | ●   | ●   |                              |    |
| BGF09 A    | ●     |    |     | ●   | ●   |                              |    |
| BGP... A Ⓢ | ●     |    |     | ●   | ●   |                              |    |
| BF09 A     | ●     |    | ●   | ●   | ●   | ●                            |    |
| BF12 A     | ●     |    | ●   | ●   | ●   | ●                            |    |
| BF18 A     | ●     |    | ●   | ●   | ●   | ●                            |    |
| BF25 A     | ●     |    | ●   | ●   | ●   | ●                            |    |
| BF26 A     | ●     |    | ●   | ●   | ●   | ●                            |    |
| BF32 A     | ●     |    | ●   | ●   | ●   | ●                            |    |
| BF38 A     | ●     |    | ●   | ●   | ●   | ●                            |    |
| BF40 A     | ●     |    |     | ●   | ●   |                              |    |
| BF50 A     | ●     |    |     | ●   | ●   |                              |    |
| BF65 A     | ●     |    |     | ●   | ●   |                              |    |
| BF80 A     | ●     |    |     | ●   | ●   |                              |    |
| BF94 A     | ●     |    |     |     |     |                              |    |
| BF95 A     | ●     |    |     |     |     |                              |    |
| BF115 A    | ●     |    |     |     |     |                              |    |
| BF150 A    | ●     |    |     |     |     |                              |    |
| B145       |       | ●  | ●   | ●   | ●   | ●                            | ●  |
| B180       |       | ●  | ●   | ●   | ●   | ●                            | ●  |
| B250       |       | ●  | ●   | ●   | ●   | ●                            | ●  |
| B310       |       | ●  | ●   | ●   | ●   | ●                            | ●  |
| B400       |       | ●  | ●   | ●   | ●   | ●                            | ●  |
| B500       | ●     |    |     | ●   |     |                              |    |
| B630       | ●     |    |     | ●   |     |                              |    |
| B630 1000  | ●     |    |     | ●   |     |                              |    |
| B1250      |       |    |     | ●   |     |                              |    |
| B1600      |       |    |     | ●   |     |                              |    |

● Certified products.

- UL - UL Listed, for USA and Canada (cULus - File E93602) for BG...BF150 types indicated, as Motor Controllers - Contactors, except for BGP09... types which are UL Recognized, for USA and Canada (cULus - File E93602 - Component - Products having this type of marking are intended for use as components of complete workshop-assembled equipment).  
BGP is UL rated up to 300V; for type with rating up to 600V, consult Technical support for information - see contact details on inside front cover.  
UL Listed for USA only (File E93602) for B145...B400 types indicated, as Motor Controllers - Contactors.  
UL Listed for USA and Canada (cULus - File E172189) for B500...B630 1000 and B500 SL... B630 SL types as Industrial Control Switches.
- CSA - BF09...BF95 and B145...B400 contactors are also CSA certified, for Canada only (File 54332).  
In addition, BF12..., BF25... and BF38... types are CSA certified as "Elevator Equipment" (File 54332, class 2411); BF65 is UL certified as "Elevator Equipment" (File E 93602).  
See technical characteristics on page 2-63 for BF12-BF38 and page 2-65 for BF65.

Ⓢ This contactor has also achieved CSA elevator equipment certification.

● cULus pending.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14; UL 60947-1, UL 60947-4-1, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1.

Plastic materials are compliant with standards IEC/EN 60335; for all BF09...BF38 versions only, add suffix V260 to the standard product order code.

Example: BF09 10 A230V260 for BF09, three poles, with one NO contact and 230V 50/60Hz coil with compliant plastic materials.

## 2 Contactors

Three-pole contactors with DC and AC/DC control circuit

BG06 D...BG12 D  
BG09 LBF09 D...BF25 D  
BF09 L...BF25 LBF26 D-BF38 D  
BF26 L-BF38 L

BF40 E...BF94 E



BF95 E...BF150 E



B145...B180



B250...B400

new

| Three-phase motor control |                 |                                                |          |          |                                           |                                            |      |      |      |      |      |       | UL/CSA details |                                   |      |             |      |      |  |
|---------------------------|-----------------|------------------------------------------------|----------|----------|-------------------------------------------|--------------------------------------------|------|------|------|------|------|-------|----------------|-----------------------------------|------|-------------|------|------|--|
| Order code<br>DC coil     | DC coil         | IEC operating current<br>I <sub>th</sub> (AC1) |          |          |                                           | Maximum IEC power at ≤55°C (AC3)           |      |      |      |      |      |       |                | Maximum UL/CSA horsepower ratings |      |             |      |      |  |
|                           |                 | ≤40°C   ≤55°C   ≤70°C                          |          |          | I <sub>e</sub> (AC3)<br>≤440V<br>at ≤55°C |                                            |      |      |      |      |      |       |                | Single phase                      |      | Three phase |      |      |  |
|                           | Low consumption | ≤40°C                                          | ≤55°C    | ≤70°C    |                                           | 230V                                       | 400V | 415V | 440V | 500V | 690V | 1000V | 120V           | 240V                              | 200V | 240V        | 480V | 600V |  |
|                           |                 | [A]                                            | [A]      | [A]      | [A]                                       | [kW]                                       | [kW] | [kW] | [kW] | [kW] | [kW] | [kW]  | [HP]           | [HP]                              | [HP] | [HP]        | [HP] | [HP] |  |
| 11 BG06 01 D❶             | —               | 16                                             | 14       | 12       | 6                                         | 1.5                                        | 2.2  | 2.4  | 2.5  | 3    | 3    | —     | 1/3            | 1                                 | 1½   | 2           | 3    | 3    |  |
| 11 BG06 10 D❶             | —               |                                                |          |          |                                           |                                            |      |      |      |      |      |       |                |                                   |      |             |      |      |  |
| 11 BG09 01 D❶             | 11 BG09 01 L❷   | 20                                             | 18       | 15       | 9                                         | 2.2                                        | 4    | 4.3  | 4.5  | 5    | 5    | —     | 1/2            | 1½                                | 2    | 3           | 5    | 5    |  |
| 11 BG09 10 D❶             | 11 BG09 10 L❷   |                                                |          |          |                                           |                                            |      |      |      |      |      |       |                |                                   |      |             |      |      |  |
| 11 BGF09 01 D❶            | 11 BGF09 01 L❷  | 20                                             | 18       | 15       | 9                                         | 2.2                                        | 4    | 4.3  | 4.5  | 5    | 5    | —     | 1/2            | 1½                                | 2    | 3           | 5    | 5    |  |
| 11 BGF09 10 D❶            | 11 BGF09 10 L❷  |                                                |          |          |                                           |                                            |      |      |      |      |      |       |                |                                   |      |             |      |      |  |
| 11 BGP09 01 D❶            | —               | 20                                             | 18       | 15       | 9                                         | 2.2                                        | 4❸   | 4.3❸ | 4.5❸ | 5❸   | —    | —     | 1/2            | 1½                                | 2    | 3           | 5❸   | —    |  |
| 11 BGP09 10 D❶            | —               |                                                |          |          |                                           |                                            |      |      |      |      |      |       |                |                                   |      |             |      |      |  |
| 11 BG12 01 D❶❷            | —               | 20                                             | 18       | 15       | 12                                        | 3.2                                        | 5.7  | 6.2  | 5.5  | 5    | 5    | —     | 1/2            | 1½                                | 3    | 3           | 7½   | 10   |  |
| 11 BG12 10 D❶❷            | —               |                                                |          |          |                                           |                                            |      |      |      |      |      |       |                |                                   |      |             |      |      |  |
| BF09 01 D❶❷               | BF09 01 L❷❷     | 25                                             | 20       | 18       | 9                                         | 2.2                                        | 4.2  | 4.5  | 4.8  | 5.5  | 7.5  | —     | ¾              | 2                                 | 3    | 3           | 5    | 7½   |  |
| BF09 10 D❶❷               | BF09 10 L❷❷     |                                                |          |          |                                           |                                            |      |      |      |      |      |       |                |                                   |      |             |      |      |  |
| BF12 01 D❶❷               | BF12 01 L❷❷     | 28                                             | 23       | 20       | 12                                        | 3.2                                        | 5.7  | 6.2  | 6.2  | 7.5  | 10   | —     | 1              | 2                                 | 5    | 5           | 7½   | 10   |  |
| BF12 10 D❶❷               | BF12 10 L❷❷     |                                                |          |          |                                           |                                            |      |      |      |      |      |       |                |                                   |      |             |      |      |  |
| BF18 01 D❶❷               | BF18 01 L❷❷     | 32                                             | 26       | 23       | 18                                        | 4                                          | 7.5  | 9    | 9    | 10   | 10   | —     | 1              | 3                                 | 5    | 5           | 10   | 15   |  |
| BF18 10 D❶❷               | BF18 10 L❷❷     |                                                |          |          |                                           |                                            |      |      |      |      |      |       |                |                                   |      |             |      |      |  |
| BF25 01 D❶                | BF25 01 L❷      | 32                                             | 26       | 23       | 25                                        | 7                                          | 12.5 | 13.4 | 13.4 | 15   | 11   | —     | 2              | 3                                 | 7½   | 7½          | 15   | 15   |  |
| BF25 10 D❶                | BF25 10 L❷      |                                                |          |          |                                           |                                            |      |      |      |      |      |       |                |                                   |      |             |      |      |  |
| BF26 00 D❶❷               | BF26 00 L❷❷     | 45                                             | 36       | 32       | 26                                        | 7.3                                        | 13   | 14   | 14   | 15.6 | 18.5 | —     | 2              | 5                                 | 7½   | 7½          | 15   | 20   |  |
| BF32 00 D❶❷               | BF32 00 L❷❷     | 56                                             | 45       | 40       | 32                                        | 8.8                                        | 18   | 17   | 17   | 20   | 22   | —     | 3              | 7½                                | 10   | 10          | 20   | 25   |  |
| BF38 00 D❶                | BF38 00 L❷      | 56 (60❹)                                       | 45 (48❹) | 40 (42❹) | 38                                        | 11                                         | 18.5 | 18.5 | 18.5 | 20   | 22   | —     | 3              | 7½                                | 10   | 15          | 30   | 30   |  |
| BF40 00 E❸                | —               | 70                                             | 60       | 50       | 40                                        | 11                                         | 18.5 | 22   | 22   | 22   | 30   | 18.5  | 3              | 7½                                | 10   | 15          | 30   | 30   |  |
| BF50 00 E❸❷               | —               | 90                                             | 75       | 65       | 50                                        | 15                                         | 22   | 30   | 30   | 30   | 37   | 22    | 5              | 10                                | 15   | 20          | 40   | 40   |  |
| BF65 00 E❸❷               | —               | 100                                            | 80       | 70       | 65                                        | 18.5                                       | 30   | 37   | 37   | 37   | 45   | 30    | —              | —                                 | 20   | 25          | 50   | 60   |  |
| BF80 00 E❸                | —               | 115                                            | 95       | 80       | 80                                        | 22                                         | 45   | 45   | 45   | 55   | 55   | 37    | —              | —                                 | 25   | 30          | 60   | 75   |  |
| BF94 00 E❸                | —               | 115                                            | 95       | 80       | 95                                        | 30                                         | 55   | 55   | 55   | 55   | 55   | 37    | —              | —                                 | 25   | 30          | 60   | 75   |  |
| BF95 00 E❸                | —               | 140                                            | 115      | 100      | 95                                        | 30                                         | 55   | 55   | 55   | 75   | 90   | 45    | —              | —                                 | 30   | 30          | 60   | 75   |  |
| BF115 00 E❸               | —               | 160                                            | 130      | 115      | 115                                       | 37                                         | 55   | 55   | 55   | 75   | 110  | 55    | —              | —                                 | 40   | 40          | 75   | 100  |  |
| BF150 00 E❸               | —               | 165                                            | 135      | 118      | 150                                       | 45                                         | 75   | 75   | 75   | 90   | 110  | 55    | —              | —                                 | 50   | 50          | 100  | 125  |  |
| 11 B145 00❹❺              | —               | 250                                            | 235      | 190      | 150                                       | 46                                         | 80   | 88   | 93   | 100  | 120  | 75    | —              | —                                 | 50   | 50          | 100  | 125  |  |
| 11 B180 00❹❺              | —               | 275                                            | 250      | 200      | 185                                       | 57                                         | 100  | 108  | 115  | 123  | 144  | 103   | —              | —                                 | 60   | 75          | 150  | 150  |  |
| 11 B250 00❹❺              | —               | 350                                            | 300      | 250      | 265                                       | 83                                         | 140  | 155  | 164  | 176  | 212  | 156   | —              | —                                 | 75   | 100         | 200  | 250  |  |
| 11 B310 00❹❷              | —               | 450                                            | 370      | 300      | 320                                       | 100                                        | 170  | 188  | 200  | 213  | 256  | 180   | —              | —                                 | 100  | 125         | 250  | 300  |  |
| 11 B400 00❹❺              | —               | 550                                            | 430      | 360      | 420                                       | 130                                        | 225  | 247  | 263  | 271  | 352  | 208   | —              | —                                 | 125  | 150         | 350  | 400  |  |
| 11 B500 00❹❺              | —               | 700                                            | 550      | 500      | 520                                       | 156                                        | 290  | 306  | 328  | 367  | 416  | 312   | —              | —                                 | 150❶ | 200❶        | 400❶ | 450❶ |  |
| 11 B630 00❹❺              | —               | 800                                            | 640      | 540      | 630                                       | 198                                        | 335  | 368  | 368  | 368  | 440  | 368   | —              | —                                 | 200❶ | 250❶        | 500❶ | 500❶ |  |
| 11 B630 1000 00❹❷         | —               | 1000                                           | 850      | 700      | —                                         | For AC1/Resistive duty only, see page 2-8. |      |      |      |      |      |       | —              | —                                 | —    | —           | —    | —    |  |

- ① Complete order code with coil voltage digit.  
For BG09...D 24VDC version complete with built-in surge suppressor, add suffix **V120** to the standard order code.  
The BF09-BF38D types already have a standard supplied built-in TVS (Transient Voltage Suppressor).  
Standard voltages are as follows:  
— DC 012 / 024 / 048 / 060 / 110 / 125 / 220V.  
Example: 11 BG06 10 D012 for mini-contactor BG06, three poles, with one NO contact and 12VDC coil.  
11 BG09 10 D024 V120 for mini-contactor BG09, three poles, with one NO contact and 24VDC coil, complete with built-in TVS (diode) suppressor.
- ② Low-consumption version.  
No add-on auxiliary contacts or mechanical interlock can be mounted on BG... type contactors.  
Complete order code with coil voltage digit.  
The BF09-BF38L types already have a standard supplied built-in TVS (Transient Voltage Suppressor).  
Standard voltages are as follows:  
— DC 024 / 048V.  
Example: 11 BG09 01 L024 for mini-contactor BG09, three poles, with one NC contact and 24VDC low-consumption coil.
- ③ The contactor coil is controlled electronically; it can have either an AC or a DC supply and has a wide operating range.  
The order code must be completed with the coil voltage digit.  
The standard voltages are as follows:  
— AC/DC 024 = 20...48V; 110 = 60...110V; 230 = 100...250V.

- ④ The coil of the contactor can be powered indifferently in AC or DC. Complete the order code only with the digit of the coil voltage.  
Standard voltages are:  
— AC/DC 24 / 48 / 60 / 110-125 (indicate 110) / 220-240 (indicate 220) / 380-415 (indicate 380) / 440-480V (indicate 440).  
Example: 11 B145 00 110 for contactor B145, three poles, without auxiliary contacts and with 110-125VAC/DC coil.  
**The 24VAC/DC voltage is not possible for B500-B630 1000 contactors.**  
Other voltages available on request.
- ⑤ If predisposed for mechanical latch (G495), the order code becomes 11 B...SL00 ④.  
If already fitted with mechanical latch (G495), the order code becomes 11 B...L00 ④ ⑤.
- ⑥ Indicate rated voltage of the mechanical latch, preceded by the letter C if in DC.  
Standard voltages are:  
— AC 50/60Hz 48 / 110-125 indicate 110 / 220-240 indicate 220 / 380-415V indicate 380  
— DC 48 / 110-125 indicate 110 / 220-240V indicate 220.  
Example: 11 B145L 00 110 C48 for contactor B145, three poles, without auxiliary contacts, with 110-125VAC/DC coil and mechanical latch powered at 48VDC.
- ⑦ G495 mechanical latch cannot be mounted.
- ⑧ Maximum voltage is limited at 300V for UL. For certified type up to 600V, consult Technical support for information; see contact details on inside front cover.
- ⑨ Highly conductive auxiliary contact.

## 2 Contactors

### Three-pole contactors with DC and AC/DC control circuit



B500-B630



B630 1000

|  | UL/CSA<br>General<br>(purpose) use | UL/CSA<br>Fuse class | Short circuit<br>current RMS<br>sym. 600VAC | Type of terminal    | Incorporated<br>auxiliary<br>contacts | Quantity<br>per<br>pkg | Weight |
|--|------------------------------------|----------------------|---------------------------------------------|---------------------|---------------------------------------|------------------------|--------|
|  | [A]                                | Type/[A]             | [kA] UL/CSA                                 |                     | NO NC                                 | n°                     | [kg]   |
|  | 16                                 | K5/30                | 5                                           | Clamp-screw         | — 1⑩                                  | 10                     | 0.214  |
|  |                                    |                      |                                             |                     | 1⑩ —                                  | 10                     | 0.214  |
|  | 20                                 | K5/30                | 5                                           | Clamp-screw         | — 1⑩                                  | 10                     | 0.214  |
|  |                                    |                      |                                             |                     | 1⑩ —                                  | 10                     | 0.214  |
|  | 20                                 | K5/30                | 5                                           | Faston              | — 1⑩                                  | 10                     | 0.210  |
|  |                                    |                      |                                             |                     | 1⑩ —                                  | 10                     | 0.210  |
|  | 20                                 | K5/30                | 5                                           | Rear PCB solder pin | — 1⑩                                  | 10                     | 0.240  |
|  |                                    |                      |                                             |                     | 1⑩ —                                  | 10                     | 0.240  |
|  | 20                                 | K5/30                | 5                                           | Clamp-screw         | — 1⑩                                  | 10                     | 0.214  |
|  |                                    |                      |                                             |                     | 1⑩ —                                  | 10                     | 0.214  |
|  | 25                                 | RK5/60               | 5                                           | Clamp-screw         | — 1⑩                                  | 1                      | 0.494  |
|  |                                    |                      |                                             |                     | 1 —                                   | 1                      | 0.494  |
|  | 28                                 | RK5/70               | 5                                           | Clamp-screw         | — 1⑩                                  | 1                      | 0.494  |
|  |                                    |                      |                                             |                     | 1 —                                   | 1                      | 0.494  |
|  | 32                                 | RK5/80               | 5                                           | Clamp-screw         | — 1⑩                                  | 1                      | 0.494  |
|  |                                    |                      |                                             |                     | 1 —                                   | 1                      | 0.494  |
|  | 32                                 | RK5/100              | 5                                           | Clamp-screw         | — 1⑩                                  | 1                      | 0.494  |
|  |                                    |                      |                                             |                     | 1 —                                   | 1                      | 0.494  |
|  | 45                                 | RK5/100              | 5                                           | Clamp-screw         | — —                                   | 1                      | 0.559  |
|  | 55                                 | RK5/125              | 5                                           | Clamp-screw         | — —                                   | 1                      | 0.559  |
|  | 55                                 | RK5/150              | 5                                           | Clamp-screw         | — —                                   | 1                      | 0.559  |
|  | 70                                 | RK5/150              | 5                                           | Lug-clamp ⑬         | — —                                   | 1                      | 1.050  |
|  | 90                                 | RK5/150              | 5                                           | Lug-clamp ⑬         | — —                                   | 1                      | 1.050  |
|  | 100                                | RK5/200              | 10                                          | Lug-clamp ⑬         | — —                                   | 1                      | 1.050  |
|  | 115                                | RK5/200              | 10                                          | Lug-clamp ⑬         | — —                                   | 1                      | 1.050  |
|  | 115                                | RK5/200              | 10                                          | Lug-clamp ⑬         | — —                                   | 1                      | 1.050  |
|  | 140                                | RK5/250              | 10                                          | Lug-clamp ⑬         | — —                                   | 1                      | 2.060  |
|  | 160                                | RK5/250              | 10                                          | Lug-clamp ⑬         | — —                                   | 1                      | 2.060  |
|  | 165                                | RK5/250              | 10                                          | Lug-clamp ⑬         | — —                                   | 1                      | 2.060  |
|  | 250                                | RK5/500              | 10                                          | Screw-nut           | — —                                   | 1                      | 5.400  |
|  | 275                                | RK5/500              | 10                                          | Screw-nut           | — —                                   | 1                      | 5.400  |
|  | 350                                | L/800                | 18                                          | Screw-nut           | — —                                   | 1                      | 9.635  |
|  | 450                                | L/800                | 18                                          | Screw-nut           | — —                                   | 1                      | 9.635  |
|  | 500 ⑬                              | L/800                | 18                                          | Screw-nut           | — —                                   | 1                      | 9.635  |
|  | 700 ⑬                              | L/1200 ①             | 18 ①                                        | Screw-nut           | — —                                   | 1                      | 18.060 |
|  | 800 ⑬                              | L/1500 ①             | 18 ①                                        | Screw-nut           | — —                                   | 1                      | 18.620 |
|  | 1000                               | L/1500               | 18                                          | Screw-nut           | — —                                   | 1                      | 21.400 |

⑩ For use at this other current value, a 16mm<sup>2</sup> cable, headed with a fork terminal, must be used.

① No UL/CSA ratings; data given for indication and reference purposes only.

② Definite-purpose (DP) contactors are available. Consult Technical support for information; see contact details on inside front cover.

③ IEC/EN 60947-1 designation: Pillar terminal.

#### Certifications and compliance

Certifications obtained:

| Type            | cULus | UL | CSA | EAC | CCC | RINA |
|-----------------|-------|----|-----|-----|-----|------|
| BG06 D          | ●     |    |     | ●   | ●   |      |
| BG09 D          | ●     |    |     | ●   | ●   |      |
| BG12 D          | ●     |    |     | ●   | ●   |      |
| BGF09 D         | ●     |    |     | ●   | ●   |      |
| BGP09 D ⑤       | ●     | ●  | ●   |     |     |      |
| BF09 D - BF09 L | ●     |    | ●   | ●   | ●   | ●    |
| BF12 D - BF12 L | ●     |    | ● ⑬ | ●   | ●   | ●    |
| BF18 D - BF18 L | ●     |    | ●   | ●   | ●   | ●    |
| BF25 D - BF25 L | ●     |    | ● ⑬ | ●   | ●   | ●    |
| BF26 D - BF26 L | ●     |    | ●   | ●   | ●   | ●    |
| BF32 D - BF32 L | ●     |    | ●   | ●   | ●   | ●    |
| BF38 D - BF38 L | ●     |    | ● ⑬ | ●   | ●   | ●    |
| BF40 E          | ●     |    |     | ●   | ●   |      |
| BF50 E          | ●     |    |     | ●   | ●   |      |
| BF65 E          | ●     |    |     | ●   | ●   |      |
| BF80 E          | ●     |    |     | ●   | ●   |      |
| BF94 E          | ⑬     |    |     |     |     |      |
| BF95 E          | ●     |    |     |     |     |      |
| BF115 E         | ●     |    |     |     |     |      |
| BF150 E         | ●     |    |     |     |     |      |
| B145            |       | ●  | ●   | ●   | ●   | ●    |
| B180            |       | ●  | ●   | ●   | ●   | ●    |
| B250            |       | ●  | ●   | ●   | ●   | ●    |
| B310            |       | ●  | ●   | ●   | ●   | ●    |
| B400            |       | ●  | ●   | ●   | ●   | ●    |
| B500            | ●     |    |     | ●   |     |      |
| B630            | ●     |    |     | ●   | ●   |      |
| B630 1000       | ●     |    |     | ●   |     |      |

● Certified products.

UL - UL Listed, for USA and Canada (cULus File E93602) for BG...BF110 types indicated, as Motor Controllers – Contactors, except for BGP09... types which are UL Recognized, for USA and Canada (cULus File E93602 – Component). Products having this type of marking are intended for use as components of complete workshop-assembled equipment.  
BGP is UL rated up to 300V; for type with rating up to 600V, consult Technical support for information – see contact details on inside front cover.

UL Listed for USA only (File E93602) for B145...B400 types indicated, as Motor Controllers – Contactors.

UL Listed for USA and Canada (cULus - File E172189) for B500...B630 1000 and B500 SL... B630 SL types as Industrial Control Switches.

CSA - BF09...BF95 and B145...B400 contactors are also CSA certified, for Canada only (File 54332).

In addition, BF12...BF25... and BF38... types are CSA certified as "Elevator Equipment" (File 54332, class 2411); BF65 is UL certified as "Elevator Equipment" (File E 93602).

See technical characteristics on page 2-63 for BF12-BF38 and page 2-65 for BF65.

⑬ This contactor has also achieved CSA elevator equipment certification.

⑤ cULus pending.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14; UL 60947-1, UL 60947-4-1, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1.

Plastic materials are compliant with standards IEC/EN 60335; for all BF09...BF38 versions only, add suffix V260 to the standard product order code.

Example: BF09 10 D024 V260 for BF09, three poles, with one NO contact and 24VDC coil with compliant plastic materials.

## 2 Contactors

Four-pole contactors with AC control circuit



BG09 T4 A

BF09A T4 A...BF18 T4 A

BF26 T4 A...BF38 T4 A

BF40 T4 A...BF80 T4 A

BF95 T4 A...BF150 T4 A

B145 4...B180 4

B250 4...B400 4

### Resistive load control

| Resistive load control |                                                |          |          |                                        |                                  |      |      |      |      |      |       | UL/CSA details                     |
|------------------------|------------------------------------------------|----------|----------|----------------------------------------|----------------------------------|------|------|------|------|------|-------|------------------------------------|
| Order code             | IEC operating current<br>I <sub>th</sub> (AC1) |          |          |                                        | Maximum IEC power at ≤40°C (AC1) |      |      |      |      |      |       | UL/CSA<br>General<br>(purpose) use |
| AC coil                | ≤40°C                                          | ≤55°C    | ≤70°C    | I <sub>e</sub> (AC3)<br>≤440V at ≤55°C | 230V                             | 400V | 415V | 440V | 500V | 690V | 1000V |                                    |
|                        | [A]                                            | [A]      | [A]      | [A]                                    | [kW]                             | [kW] | [kW] | [kW] | [kW] | [kW] | [kW]  | [A]                                |
| 11 BG09 T4 A00         | 20                                             | 18       | 15       | 9                                      | 8                                | 14   | 14   | 15   | 16   | 22   | —     | 20                                 |
| 11 BGF09 T4 A0         | 20                                             | 18       | 15       | 9                                      | 8                                | 14   | 14   | 15   | 16   | 22   | —     | 20                                 |
| 11 BGP09 T4 A0         | 20                                             | 18       | 15       | 9                                      | 8                                | 14⑦  | 14⑦  | 15⑦  | 16⑦  | —    | —     | 20                                 |
| BF09 T4 A00            | 25                                             | 20       | 18       | 9                                      | 9.5                              | 16   | 17   | 18   | 21   | 27   | —     | 25                                 |
| BF12 T4 A00            | 28                                             | 23       | 20       | 12                                     | 10                               | 18   | 19   | 20   | 23   | 32   | —     | 28                                 |
| BF18 T4 A00            | 32                                             | 26       | 23       | 18                                     | 12                               | 21   | 22   | 23   | 26   | 36   | —     | 32                                 |
| BF26 T4 A000           | 45                                             | 36       | 32       | 26                                     | 17                               | 30   | 31   | 33   | 37   | 51   | —     | 45                                 |
| BF38 T4 A000           | 56 (60⑧)                                       | 45 (48⑧) | 40 (42⑧) | 38                                     | 21                               | 36   | 38   | 40   | 45   | 62   | —     | 55                                 |
| BF40 T4 A0             | 70                                             | 60       | 50       | 40                                     | 26                               | 46   | 48   | 51   | 58   | 79   | 115   | 70                                 |
| BF50 T4 A0             | 90                                             | 75       | 65       | 50                                     | 34                               | 59   | 61   | 65   | 74   | 102  | 148   | 90                                 |
| BF65 T4 A0             | 100                                            | 80       | 70       | 65                                     | 38                               | 65   | 68   | 72   | 82   | 114  | 165   | 100                                |
| BF80 T4 A0             | 115                                            | 95       | 80       | 80                                     | 43                               | 76   | 79   | 83   | 95   | 120  | 185   | 115                                |
| BF95 T4 A0             | 140                                            | 115      | 100      | 95                                     | 53                               | 92   | 96   | 101  | 115  | 159  | 230   | 140                                |
| BF115 T4 A0            | 160                                            | 130      | 115      | 115                                    | 61                               | 105  | 109  | 116  | 132  | 182  | 263   | 160                                |
| BF150 T4 A0            | 165                                            | 135      | 118      | 150                                    | 62                               | 110  | 113  | 119  | 136  | 187  | 271   | 165                                |
| 11 B145 4 0000         | 250                                            | 235      | 190      | 150                                    | 91                               | 150  | 162  | 180  | 196  | 270  | 390   | 250                                |
| 11 B180 4 0000         | 275                                            | 250      | 200      | 185                                    | 95                               | 160  | 177  | 200  | 213  | 298  | 430   | 275                                |
| 11 B250 4 0000         | 350                                            | 300      | 250      | 265                                    | 124                              | 214  | 234  | 255  | 282  | 380  | 560   | 350                                |
| 11 B310 4 0000         | 450                                            | 370      | 300      | 320                                    | 158                              | 270  | 293  | 325  | 350  | 488  | 700   | 450                                |
| 11 B400 4 0000         | 550                                            | 430      | 360      | 420                                    | 200                              | 345  | 377  | 400  | 452  | 598  | 870   | 550                                |
| 11 B500 4 0000         | 700                                            | 550      | 500      | 520                                    | 252                              | 438  | 478  | 500  | 575  | 755  | 1100  | 700                                |
| 11 B630 4 0000         | 800                                            | 640      | 540      | 630                                    | 288                              | 500  | 545  | 580  | 655  | 860  | 1250  | 800                                |
| 11 B630 1000 4 0000    | 1000                                           | 850      | 700      | —                                      | 350                              | 600  | 630  | 725  | 750  | 1000 | 1600  | 1000                               |
| 11 B1250 4 2400        | 1250                                           | 1050     | 880      | —                                      | 480                              | 830  | 900  | 905  | 1100 | 1450 | 2000  | No UL/CSA                          |
| 11 B1600 4 2400        | 1600                                           | 1360     | 1120     | —                                      | 550                              | 950  | 1000 | 1160 | 1200 | 1650 | 2500  | No UL/CSA                          |

① Complete order code with coil voltage digit or voltage digit followed by 60 if 60Hz.

Standard voltages are as follows:

– AC 50/60Hz 024 / 048 / 110 / 230 / 400V

– AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 / 460 60 / 575 60 (V).

Example: 11 BG09 T4 A230 for mini-contactor BG09, four poles, with 230VAC 50/60Hz coil.

11 BG09 T4 A460 60 for mini-contactor BG09, four poles, with 460VAC 60Hz coil.

② The coil of the contactor can be powered indifferently in AC or DC. Complete the order code only with the digit of the coil voltage. Standard voltages are:

– AC/DC 24 / 48 / 60 / 110-125 (indicate 110) / 220-240 (indicate 220) / 380-415 (indicate 380) / 440-480V (indicate 440).

Example: 11 B145 4 00 110 for contactor B145, four poles, without auxiliary contacts and with 110-125VAC/DC coil.

**The 24VAC/DC voltage is not possible for B500-B630 1000 contactors.**

Other voltages available on request.

③ If predisposed for mechanical latch (G495), the order code becomes 11 B...4SL 00 ②. If already fitted with mechanical latch (G495), the order code becomes 11 B...4L.00 ② ④.

④ Indicate rated voltage of the mechanical latch, preceded by the letter C if in DC.

Standard voltages are:

– AC 50/60Hz 48 / 110-125 indicate 110 / 220-240 indicate 220 / 380-415V indicate 380

– DC 48 / 110-125 indicate 110 / 220-240V indicate 220.

Example: 11 B145 4L 00 110 C220 for contactor B145, four poles, without auxiliary contacts, with 110-125VAC/DC coil and mechanical latch powered at 220-240VDC.

⑤ G495 mechanical latch cannot be mounted.

⑥ Complete the order code with the digit of the coil voltage. For 110-125VAC 50/60 Hz indicate 110 or 220-240VAC 50/60 Hz indicate 220.

Example: 11 B1250 4 24 110 for contactor B1250, four poles, with 2NO+4NC auxiliary contacts and 110-125VAC/DC 50/60Hz coil.

⑦ Maximum voltage is limited at 300V for UL. For certified type up to 600V. Consult Technical support for information; see contact details on inside front cover.

⑧ Whenever the BF26 T4 or BF38 T4 types need to be mechanically interlocked with either the BFX50 00 or BFX50 01, the add-on fourth pole of one of the contactors needs to be removed from the right side and fitted on the left side.

⑨ For use at this other current value, a 16mm<sup>2</sup> cable, headed with a fork terminal, must be used.

⑩ Definite-purpose (DP) contactors are available. Consult Technical support for information; see contact details on inside front cover.

## 2 Contactors

### Four-pole contactors with AC control circuit



B500 4-B630 4



B630 1000 4



B1250-B1600 4

| UL/CSA Fuse class | Short circuit current RMS sym. 600VAC | Type of terminal    | Incorporated auxiliary contacts |      | Quantity per pkg | Weight |
|-------------------|---------------------------------------|---------------------|---------------------------------|------|------------------|--------|
|                   |                                       |                     | NO                              | NC   |                  |        |
| Type / [A]        | [kA] UL/CSA                           |                     |                                 |      | n°               | [kg]   |
| K5 / 30           | 5                                     | Clamp-screw         | none                            | none | 10               | 0.180  |
| K5 / 30           | 5                                     | Faston              | none                            | none | 10               | 0.180  |
| K5 / 30           | 5                                     | Rear PCB solder pin | none                            | none | 10               | 0.197  |
| RK5 / 60          | 5                                     | Clamp-screw         | none                            | none | 1                | 0.367  |
| RK5 / 70          | 5                                     | Clamp-screw         | none                            | none | 1                | 0.367  |
| RK5 / 80          | 5                                     | Clamp-screw         | none                            | none | 1                | 0.367  |
| RK5 / 100         | 5                                     | Clamp-screw         | none                            | none | 1                | 0.508  |
| RK5 / 150         | 5                                     | Clamp-screw         | none                            | none | 1                | 0.508  |
| RK5 / 150         | 5                                     | Lug-clamp ①         | —                               | —    | 1                | 1.240  |
| RK5 / 150         | 5                                     | Lug-clamp ①         | —                               | —    | 1                | 1.240  |
| RK5 / 200         | 10                                    | Lug-clamp ①         | —                               | —    | 1                | 1.240  |
| RK5 / 200         | 10                                    | Lug-clamp ①         | —                               | —    | 1                | 2.420  |
| RK5 / 250         | 10                                    | Lug-clamp ①         | —                               | —    | 1                | 2.420  |
| RK5 / 250         | 10                                    | Lug-clamp ①         | —                               | —    | 1                | 2.420  |
| RK5 / 500         | 10                                    | Screw-nut           | none                            | none | 1                | 6.340  |
| RK5 / 500         | 10                                    | Screw-nut           | none                            | none | 1                | 6.340  |
| L/800             | 18                                    | Screw-nut           | none                            | none | 1                | 11.195 |
| L/800             | 18                                    | Screw-nut           | none                            | none | 1                | 11.195 |
| L/800 ⑫           | 18 ⑫                                  | Screw-nut           | none                            | none | 1                | 11.195 |
| L/1200 ⑫          | 18 ⑫                                  | Screw-nut           | none                            | none | 1                | 20.910 |
| L/1500 ⑫          | 18 ⑫                                  | Screw-nut           | none                            | none | 1                | 21.880 |
| L/1500            | 18                                    | Screw-nut           | none                            | none | 1                | 25.620 |
| —                 | —                                     | Screw-nut           | 2                               | 4    | 1                | 57.500 |
| —                 | —                                     | Screw-nut           | 2                               | 4    | 1                | 58.400 |

① IEC/EN 60947-1 designation: Pillar terminal.

⑫ No UL/CSA ratings; data given for indication and reference purposes only.

#### IEC utilisation current with poles in parallel

If the poles of the contactors are arranged in parallel, the operating current is the one indicated in the table multiplied by the **K** factor given below, which account for the unequal distribution of the current in the various poles.

To limit distribution inequality, it is advisable to use paralleling links (see pages 2-16, 2-21 and 2-26).

2 POLES in parallel: **K** = 1.6

3 POLES in parallel: **K** = 2.2

4 POLES in parallel: **K** = 2.8

#### Certifications and compliance

Certifications obtained:

| Type         | cULus | UL | CSA | EAC | CCC | RINA |
|--------------|-------|----|-----|-----|-----|------|
| BG09 T4 A    | ●     |    |     | ●   | ●   |      |
| BGF09 T4 A   | ●     |    |     | ●   | ●   |      |
| BGP09 T4 A ⑦ | ●     |    |     | ●   | ●   |      |
| BF09 T4 A    | ●     |    | ●   | ●   | ●   | ●    |
| BF12 T4 A    | ●     |    | ● ⑬ | ●   | ●   | ●    |
| BF18 T4 A    | ●     |    | ●   | ●   | ●   | ●    |
| BF26 T4 A    | ●     |    | ● ⑬ | ●   | ●   | ●    |
| BF38 T4 A    | ●     |    | ● ⑬ | ●   | ●   | ●    |
| BF40 T4 A    | ●     |    |     | ●   | ●   |      |
| BF50 T4 A    | ●     |    |     | ●   | ●   |      |
| BF65 T4 A    | ●     |    |     | ●   | ●   |      |
| BF80 T4 A    | ●     |    |     | ●   | ●   |      |
| BF95 T4 A    | ●     |    |     |     |     |      |
| BF115 T4 A   | ●     |    |     |     |     |      |
| BF150 T4 A   | ●     |    |     |     |     |      |
| B145 4       |       | ●  | ●   | ●   | ●   |      |
| B180 4       |       | ●  | ●   | ●   | ●   |      |
| B250 4       |       | ●  | ●   | ●   | ●   |      |
| B310 4       |       | ●  | ●   | ●   | ●   |      |
| B400 4       |       | ●  | ●   | ●   | ●   |      |
| B500 4       | ●     |    |     | ●   |     |      |
| B630 4       | ●     |    |     | ●   | ●   |      |
| B630 1000 4  | ●     |    |     | ●   |     |      |
| B1250 4      |       |    |     | ●   |     |      |
| B1600 4      |       |    |     | ●   |     |      |

● Certified products.

- UL - UL Listed, for USA and Canada (cULus File E93602) for BG...BF150 types indicated, as Motor Controllers – Contactors, except for BGP09... types which are UL Recognized, for USA and Canada (File E93602 – Component). Products having this type of marking are intended for use as components of complete workshop-assembled equipment.  
BGP is UL rated up to 300V; for type with rating up to 600V, consult Technical support for information – see contact details on inside front cover.  
UL Listed for USA only (File E93602) for B145...B400 types indicated, as Motor Controllers – Contactors.  
UL Listed for USA and Canada (cULus - File E172189) for B500 4... B630 1000 4 and B500 4SL... B630 4SL types as Industrial Control Switches.
- CSA - BF09...BF80 and B145...B400 contactors are also CSA certified, for Canada only (File 54332).  
In addition, BF12..., BF25..., BF38... and BF65... types are CSA certified as "Elevator Equipment" (File 54332, class 2411).  
See technical characteristics on page 2-63 for BF12-BF38 and page 2-65 for BF65.

⑬ This contactor has also achieved CSA elevator equipment certification.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14; UL 60947-1, UL 60947-4-1, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1.

Plastic materials are compliant with standards IEC/EN 60335; for all BF09...BF38 versions only, add suffix V260 to the standard product order code.

Example: BF09 T4 A230 V260 for BF09, four poles, 230V 50/60Hz coil with compliant plastic materials.

## 2 Contactors

Four-pole contactors with DC and AC/DC control circuit



BG09 T4 D

BF09 T4 D-BF18 T4 D  
BF09 T4 L-BF18 T4 LBF26 T4 D-BF38 T4 D  
BF26 T4 L-BF38 T4 LBF65 T4 E  
BF80 T4 E

new



BF95 T4 E...BF150 T4 E



B145 4...B180 4



B250 4...B400 4

### Resistive load control

| Resistive load control |                            |                                                |           |           |                                        |                                  |      |      |      |      |      |       | UL/CSA details |                                    |
|------------------------|----------------------------|------------------------------------------------|-----------|-----------|----------------------------------------|----------------------------------|------|------|------|------|------|-------|----------------|------------------------------------|
| Order code<br>DC coil  | DC coil<br>Low consumption | IEC operating current<br>I <sub>th</sub> (AC1) |           |           |                                        | Maximum IEC power at ≤40°C (AC1) |      |      |      |      |      |       |                | UL/CSA<br>General<br>(purpose) use |
|                        |                            | ≤40°C                                          | ≤55°C     | ≤70°C     | I <sub>e</sub> (AC3)<br>≤440V at ≤55°C | 230V                             | 400V | 415V | 440V | 500V | 690V | 1000V |                |                                    |
|                        |                            | [A]                                            | [A]       | [A]       | [A]                                    | [kW]                             | [kW] | [kW] | [kW] | [kW] | [kW] | [kW]  | [A]            |                                    |
| 11 BG09 T4 D ①         | —                          | 20                                             | 18        | 15        | 9                                      | 8                                | 14   | 14   | 15   | 16   | 22   | —     | 20             |                                    |
| 11 BGF09 T4 D ①        | —                          | 20                                             | 18        | 15        | 9                                      | 8                                | 14   | 14   | 15   | 16   | 22   | —     | 20             |                                    |
| 11 BGP09 T4 D ①        | —                          | 20                                             | 18        | 15        | 9                                      | 8                                | 14 ⑤ | 14 ⑤ | 15 ⑤ | 16 ⑤ | —    | —     | 20             |                                    |
| BF09 T4 D ①            | BF09 T4 L ②                | 25                                             | 20        | 18        | 9                                      | 9.5                              | 16   | 17   | 18   | 21   | 27   | —     | 25             |                                    |
| BF18 T4 D ①            | BF18 T4 L ②                | 32                                             | 26        | 23        | 18                                     | 12                               | 21   | 22   | 23   | 26   | 36   | —     | 32             |                                    |
| BF26 T4 D ①            | BF26 T4 L ②                | 45                                             | 36        | 32        | 26                                     | 17                               | 30   | 31   | 33   | 37   | 51   | —     | 45             |                                    |
| BF38 T4 D ①            | BF38 T4 L ②                | 56 (60 ③)                                      | 45 (48 ③) | 40 (42 ③) | 38                                     | 21                               | 26   | 38   | 40   | 45   | 62   | —     | 55             |                                    |
| BF65 T4 E ④            | —                          | 100                                            | 80        | 70        | 65                                     | 38                               | 65   | 68   | 72   | 82   | 114  | 165   | 100            |                                    |
| BF80 T4 E ④            | —                          | 115                                            | 95        | 80        | 80                                     | 43                               | 76   | 79   | 83   | 95   | 120  | 185   | 115            |                                    |
| BF95 T4 E ④            | —                          | 140                                            | 115       | 100       | 95                                     | 53                               | 92   | 96   | 101  | 115  | 159  | 230   | 140            |                                    |
| BF150 T4 E ④           | —                          | 165                                            | 135       | 118       | 150                                    | 62                               | 110  | 113  | 119  | 136  | 187  | 271   | 165            |                                    |
| 11 B145 4 000 ⑤        | —                          | 250                                            | 235       | 190       | 150                                    | 91                               | 150  | 162  | 180  | 196  | 270  | 390   | 250            |                                    |
| 11 B180 4 000 ⑤        | —                          | 275                                            | 250       | 200       | 185                                    | 95                               | 160  | 177  | 200  | 213  | 298  | 430   | 275            |                                    |
| 11 B250 4 000 ⑤        | —                          | 350                                            | 300       | 250       | 265                                    | 124                              | 214  | 234  | 255  | 282  | 380  | 560   | 350            |                                    |
| 11 B310 4 000 ⑤        | —                          | 450                                            | 370       | 300       | 320                                    | 158                              | 270  | 293  | 325  | 350  | 488  | 700   | 450            |                                    |
| 11 B400 4 000 ⑤        | —                          | 550                                            | 430       | 360       | 420                                    | 200                              | 345  | 377  | 400  | 452  | 598  | 870   | 550            |                                    |
| 11 B500 4 000 ⑤        | —                          | 700                                            | 550       | 500       | 520                                    | 252                              | 438  | 478  | 500  | 575  | 755  | 1100  | 700            |                                    |
| 11 B630 4 000 ⑤        | —                          | 800                                            | 640       | 540       | 630                                    | 288                              | 500  | 545  | 580  | 655  | 860  | 1250  | 800            |                                    |
| 11 B630 1000 4 000 ⑤   | —                          | 1000                                           | 850       | 700       | —                                      | 350                              | 600  | 630  | 725  | 750  | 1000 | 1600  | 1000           |                                    |

① Complete order code with coil voltage digit.

The BF09-BF38D types already have a standard supplied built-in TVS (Transient Voltage Suppressor). Standard voltages are as follows:

– DC 012 / 024 / 048 / 060 / 110 / 125 / 220VDC.

Example: 11 BG09 T4 D012 for mini-contactor BG09, four poles, with 12VDC coil.

② Low consumption version. Complete the order code with coil voltage digit.

The BF09-BF38L types already have a standard supplied built-in TVS (Transient Voltage Suppressor). Standard voltages are as follows:

– DC 024 / 048V

Example: BF09 T4 L024 for contactor BF09, four poles, with 24VDC low-consumption coil.

③ The contactor coil is controlled electronically; it can have either an AC or a DC supply and has a wide operating range.

Complete the order code only with the digit of the coil voltage.

Standard voltages are:

– AC/DC 024 = 20...48V; 110 = 60...110V; 230 = 100...250V.

④ The coil of the contactor can be powered indifferently in AC or DC. Complete the order code only with the digit of the coil voltage.

Standard voltages are:

– AC/DC 24 / 48 / 60 / 110-125 indicate 110 / 220-240 indicate 220 / 380-415 indicate 380 / 440-480V indicate 440.

Example: 11 B145 00 110 for contactor B145, four poles, without auxiliary contacts and with 110-125VAC/DC coil.

The 24VAC/DC voltage is not possible for B500-B630 1000 contactors.

**The 24V voltage is not possible for B500-B630 1000 contactors.**

Other voltages available on request.

⑤ If predisposed for mechanical latch (G495), the order code becomes 11 B...4SL 00 ④.

If already fitted with mechanical latch (G495), the order code becomes 11 B...4L.00 ④ ⑤.

⑥ Indicate rated voltage of the mechanical latch, preceded by the letter C if in DC.

Standard voltages are:

– AC 50/60Hz 48 / 110-125 indicate 110 / 220-240 indicate 220 / 380-415V indicate 380

– DC 48 / 110-125 indicate 110 / 220-240V indicate 220.

Example: 11 B145L 00 110 C48 for contactor B145, four poles, without auxiliary contacts, with 110-125VAC/DC coil and mechanical latch powered at 48VDC.

⑦ G495 mechanical latch cannot be mounted.

⑧ Maximum voltage is limited at 300V for UL. For certified type up to 600V consult Technical support for information; see contact details on inside front cover.

⑨ For use at this other current value, a 16mm<sup>2</sup> cable, headed with a fork terminal, must be used.

## 2 Contactors

Four-pole contactors with DC and AC/DC control circuit



B500 4-B630 4



B630 1000 4

|  | UL/CSA Fuse class | Short circuit RMS sym. 600VAC | Type of terminal    | Incorporated auxiliary contacts |    | Quantity per pkg | Weight |
|--|-------------------|-------------------------------|---------------------|---------------------------------|----|------------------|--------|
|  | Type / [A]        | [kA] UL/CSA                   |                     | NO                              | NC | n°               | [kg]   |
|  | K5 / 30           | 5                             | Clamp-screw         | —                               | —  | 10               | 0.220  |
|  | K5 / 30           | 5                             | Faston              | —                               | —  | 10               | 0.220  |
|  | K5 / 30           | 5                             | Rear PCB solder pin | —                               | —  | 10               | 0.242  |
|  | RK5 / 60          | 5                             | Clamp-screw         | —                               | —  | 1                | 0.498  |
|  | RK5 / 80          | 5                             | Clamp-screw         | —                               | —  | 1                | 0.498  |
|  | RK5 / 100         | 5                             | Clamp-screw         | —                               | —  | 1                | 0.665  |
|  | RK5 / 150         | 5                             | Clamp-screw         | —                               | —  | 1                | 0.665  |
|  | RK5 / 225         | 10                            | Lug-clamp⑩⑪         | —                               | —  | 1                | 1.280  |
|  | RK5 / 250         | 10                            | Lug-clamp⑩⑪         | —                               | —  | 1                | 1.280  |
|  | RK5 / 250         | 10                            | Lug-clamp⑩⑪         | —                               | —  | 1                | 2.460  |
|  | RK5 / 250         | 10                            | Lug-clamp⑩⑪         | —                               | —  | 1                | 2.460  |
|  | RK5 / 500         | 10                            | Screw-nut           | —                               | —  | 1                | 6.340  |
|  | RK5 / 500         | 10                            | Screw-nut           | —                               | —  | 1                | 6.340  |
|  | L/800             | 18                            | Screw-nut           | —                               | —  | 1                | 11.195 |
|  | L/800             | 18                            | Screw-nut           | —                               | —  | 1                | 11.195 |
|  | L/800             | 18                            | Screw-nut           | —                               | —  | 1                | 11.195 |
|  | L/1200 ⑩          | 18 ⑩                          | Screw-nut           | —                               | —  | 1                | 20.910 |
|  | L/1200 ⑩          | 18 ⑩                          | Screw-nut           | —                               | —  | 1                | 21.880 |
|  | L/1500 ⑩          | 18 ⑩                          | Screw-nut           | —                               | —  | 1                | 25.600 |

⑩ No UL/CSA ratings; data given for indication and reference purposes only.

⑪ IEC/EN 60947-1 designation: Pillar terminal.

### IEC utilisation current with poles in parallel

If the poles of the contactors are arranged in parallel, the operating current is the one indicated in the table multiplied by the **K** factor given below, which account for the unequal distribution of the current in the various poles.

To limit distribution inequality, it is advisable to use paralleling links (see pages 2-16, 2-21 and 2-26).

2 POLES in parallel: **K** = 1.6

3 POLES in parallel: **K** = 2.2

4 POLES in parallel: **K** = 2.8

### Certifications and compliance

Certifications obtained:

| Type                  | cULus | UL | CSA | EAC | CCC | RINA |
|-----------------------|-------|----|-----|-----|-----|------|
| BG09 T4 D             | ●     |    |     | ●   | ●   |      |
| BGF09 T4 D            | ●     |    |     | ●   | ●   |      |
| BGP09 T4 D            | ●     |    |     | ●   | ●   |      |
| BF09 T4 D - BF09 T4 L | ●     |    | ●   | ●   | ●   | ●    |
| BF18 T4 D - BF18 T4 L | ●     |    | ●   | ●   | ●   | ●    |
| BF26 T4 D - BF26 T4 L | ●     |    | ●   | ●   | ●   | ●    |
| BF38 T4 D - BF38 T4 L | ●     |    | ●   | ●   | ●   | ●    |
| BF65 T4 E             | ●     |    |     | ●   | ●   |      |
| BF80 T4 E             | ●     |    |     | ●   | ●   |      |
| BF95 T4 E             | ●     |    |     |     |     |      |
| BF150 T4 E            | ●     |    |     |     |     |      |
| B145 4                |       | ●  | ●   | ●   | ●   |      |
| B180 4                |       | ●  | ●   | ●   | ●   |      |
| B250 4                |       | ●  | ●   | ●   | ●   |      |
| B310 4                |       | ●  | ●   | ●   | ●   |      |
| B400 4                |       | ●  | ●   | ●   | ●   |      |
| B500 4                | ●     |    |     | ●   |     |      |
| B630 4                | ●     |    |     | ●   | ●   |      |
| B630 1000 4           | ●     |    |     | ●   |     |      |

● Certified products.

- UL - UL Listed, for USA and Canada (cULus File E93602) for BG...BF150 types indicated, as Motor Controllers – Contactors, except for BGP09... types which are UL Recognized, for USA and Canada (cULus File E93602 – Component). Products having this type of marking are intended for use as components of complete workshop-assembled equipment.  
BGP is UL rated up to 300V; for type with rating up to 600V, consult Technical support for information – see contact details on inside front cover.  
UL Listed for USA only (File E93602) for B145...B400 types indicated, as Motor Controllers – Contactors.  
UL Listed for USA and Canada (cULus - File E172185) for B500 4... B630 1000 4 and B500 4SL... B630 4SL types as Industrial Control Switches.
- CSA - BF09...BF95 and B145...B400 contactors are also CSA certified, for Canada only (File 54332).  
In addition, BF12..., BF25..., BF38... and BF65... types are CSA certified as "Elevator Equipment" (File 54332, class 2411).  
See technical characteristics on page 2-63 for BF12-BF38 and page 2-65 for BF65.

⑫ This contactor has also achieved CSA elevator equipment certification.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14; UL 60947-1, UL 60947-4-1, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1.  
Plastic materials are compliant with standards IEC/EN 60335; for all BF09...BF38 versions only, add suffix V260 to the standard product order code.  
Example: BF09 T4 D024 V260 for BF09, four poles, 24VDC coil with compliant plastic materials.

## 2 Contactors

Four-pole contactors with control circuit: AC and DC

### Mini-contactor four power poles, 2 NO and 2 NC BG series



11 BG09 T2...

### Contactors four power poles, 2 NO and 2 NC BF series



BF09 T2...

| Order code                          | IEC rated conventional<br>free air thermal current Ith |       |       | Qty<br>per<br>pkg | Wt    |
|-------------------------------------|--------------------------------------------------------|-------|-------|-------------------|-------|
|                                     | ≤40°C                                                  | ≤55°C | ≤60°C |                   |       |
|                                     | [A]                                                    | [A]   | [A]   | n°                | [kg]  |
| AC COIL.<br>Terminals: clamp screw. |                                                        |       |       |                   |       |
| <b>11 BG09 T2 A</b>                 | 20                                                     | 18    | 15    | 1                 | 0.170 |
| DC COIL.<br>Terminals: clamp screw. |                                                        |       |       |                   |       |
| <b>11 BG09 T2 D</b>                 | 20                                                     | 18    | 15    | 1                 | 0.175 |

#### Operational characteristics

| Type      | UL/CSA<br>General use | Protection fuse |       | Conductor<br>section |       |
|-----------|-----------------------|-----------------|-------|----------------------|-------|
|           | [A]                   | IEC gG          | UL K5 | [mm²]                | [AWG] |
| BG09...T2 | 20                    | 20              | 30    | 0.75-2.5             | 18-12 |

#### Certifications and compliance

Certifications obtained: CCC, EAC; UL Listed, for USA and Canada (cULus - File E93602), as Motor Controllers - Contactors. Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL 60947-4-1, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1.

| Order code                                                  | IEC rated conventional<br>free air thermal current Ith |         |         | Qty<br>per<br>pkg | Wt    |
|-------------------------------------------------------------|--------------------------------------------------------|---------|---------|-------------------|-------|
|                                                             | ≤40°C                                                  | ≤55°C   | ≤60°C   |                   |       |
|                                                             | [A]                                                    | [A]     | [A]     | n°                | [kg]  |
| AC COIL.<br>Terminals: clamp screw.                         |                                                        |         |         |                   |       |
| <b>BF09 T2 A</b>                                            | 25                                                     | 20      | 18      | 1                 | 0.340 |
| <b>BF18 T2 A</b>                                            | 32                                                     | 26      | 23      | 1                 | 0.340 |
| <b>BF26 T2 A</b>                                            | 45                                                     | 36      | 32      | 1                 | 0.420 |
| <b>BF38 T2 A</b>                                            | 56 (60)                                                | 45 (48) | 40 (42) | 1                 | 0.420 |
| <b>BF80 T2 A</b>                                            | 115                                                    | 95      | 75      | 1                 | 1.075 |
| DC COIL.<br>Terminals: clamp screw.                         |                                                        |         |         |                   |       |
| <b>BF18 T2 D</b>                                            | 32                                                     | 26      | 23      | 1                 | 0.470 |
| <b>BF26 T2 D</b>                                            | 45                                                     | 36      | 32      | 1                 | 0.540 |
| <b>BF38 T2 D</b>                                            | 56 (60)                                                | 45 (48) | 40 (42) | 1                 | 0.540 |
| <b>BF80 T2 D</b>                                            | 115                                                    | 95      | 75      | 1                 | 1.125 |
| DC COIL. Low consumption (2.4W).<br>Terminals: clamp screw. |                                                        |         |         |                   |       |
| <b>BF18 T2 L</b>                                            | 32                                                     | 26      | 23      | 1                 | 0.470 |
| <b>BF26 T2 L</b>                                            | 45                                                     | 36      | 32      | 1                 | 0.540 |
| <b>BF38 T2 L</b>                                            | 56 (60)                                                | 45 (48) | 40 (42) | 1                 | 0.540 |

① Complete with coil voltage digit if 50/60Hz or with voltage digit followed by 60 if 60Hz. N.B.: For BF80 T2, 50/60Hz coils are suitable for 50Hz only. Standard voltages are:  
– AC 50/60Hz 024 / 048 / 110 / 230 / 400V  
– AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 / 460 60 / 575 60 (V).

Example:

- 11 BG09 T2 A230 for mini-contactor BG09 T2, 2 poles NO and 2 poles NC, with 230VAC 50/60Hz coil.
- 11 BG09 T2 A460 60 for mini-contactor BG09 T2, 2 poles NO and 2 poles NC, with 460VAC 60Hz coil.

② Complete the order code with coil voltage digit.

Standard voltages are:  
– DC 012 / 024 / 048 / 060 / 110 / 125 / 220V.

The BF18-BF26-BF38 T2D types already have a standard supplied built-in TVS (Transient Voltage Suppressor).

Example:

- 11 BG09 T2 D012 for mini-contactor BG09 T2, 2 poles NO and 2 poles NC, with 12VDC coil.

③ Low consumption version with built-in TVS. Complete the order code with coil voltage digit.

Standard voltages are:  
– DC 024 / 048V.

Example:

- BF18 T2 L024 for contactor BF18 T2, 2 poles NO and 2 poles NC, with 24VDC low-consumption coil, supplied with TVS.

④ The contactor coil is controlled electronically; it can have either an AC or a DC supply and has a wide operating range.

Complete the order code with coil voltage digit.

Standard voltages are:

– AC/DC 024 = 20...48V; 110 = 60...110V; 230 = 100...250V.

⑤ For use at this other current value, a 16mm² cable, headed with a fork terminal, must be used.

⑥ Maximum combinations of add-on blocks are given on page 2-19.

⑦ For BF80 T2 E... contactors supply voltage must be AC or smoothed DC. For pulsating DC please consult our Technical support.

#### Operational characteristics

| Type | UL/CSA<br>General use | Protection fuse |        | Conductor<br>section |       |
|------|-----------------------|-----------------|--------|----------------------|-------|
|      | [A]                   | IEC gG          | UL RK5 | [mm²]                | [AWG] |
|      | [A]                   | [A]             | [A]    | [mm²]                | [AWG] |

|         |     |     |     |        |       |
|---------|-----|-----|-----|--------|-------|
| BF09 T2 | 25  | 32  | 60  | 1-6    | 16-10 |
| BF18 T2 | 32  | 40  | 80  | 1-6    | 16-10 |
| BF26 T2 | 45  | 50  | 100 | 1.5-10 | 14-6  |
| BF38 T2 | 55  | 80  | 150 | 2.5-16 | 14-6  |
| BF80 T2 | 115 | 115 | 250 | 6-50   | 18-2  |

#### Certifications and compliance

Certifications obtained: EAC, CCC, RINA; UL Listed for USA and Canada (cULus - File E93602) and CSA certified for Canada (File 54332), as Motor Controllers - Contactors.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL 60947-4-1, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1. Plastic materials are compliant with standards IEC/EN 60335; for all BF09...BF38 versions only, add suffix V260 to the standard product order code.

Example: BF09 T2 A230 V260 for BF09, 2NO+2NC main poles, 230V 50/60Hz coil with compliant plastic materials).

## 2 Contactors

Four-pole contactors with control circuit: AC and DC

### Contactors four power poles, 4 NC BF series



BF18 T0...

| Order code | IEC rated conventional free air thermal current I <sub>th</sub> |       |       | Qty per pkg | Wt [kg] |
|------------|-----------------------------------------------------------------|-------|-------|-------------|---------|
|            | ≤40°C                                                           | ≤55°C | ≤60°C |             |         |
|            | [A]                                                             | [A]   | [A]   | n°          | [kg]    |

AC COIL.

Terminals: clamp screw.

|                  |    |    |    |   |       |
|------------------|----|----|----|---|-------|
| <b>BF18 T0 A</b> | 32 | 26 | 23 | 1 | 0.340 |
| <b>BF26 T0 A</b> | 45 | 36 | 32 | 1 | 0.420 |

DC COIL.

Terminals: clamp screw.

|                  |    |    |    |   |       |
|------------------|----|----|----|---|-------|
| <b>BF18 T0 D</b> | 32 | 26 | 23 | 1 | 0.470 |
| <b>BF26 T0 D</b> | 45 | 36 | 32 | 1 | 0.540 |

DC COIL. Low consumption (2.4W).

Terminals: clamp screw.

|                  |    |    |    |   |       |
|------------------|----|----|----|---|-------|
| <b>BF18 T0 L</b> | 32 | 26 | 23 | 1 | 0.470 |
|------------------|----|----|----|---|-------|

#### Operational characteristics

| Type | UL/CSA General use | Protection fuse IEC gG | UL RK5 | Conductor section |       |
|------|--------------------|------------------------|--------|-------------------|-------|
|      | [A]                | [A]                    | [A]    | [mm²]             | [AWG] |

|         |    |    |     |        |       |
|---------|----|----|-----|--------|-------|
| BF18 T0 | 32 | 40 | 80  | 1-6    | 16-10 |
| BF26 T0 | 45 | 50 | 150 | 1.5-10 | 14-6  |

#### Certifications and compliance

Certifications obtained: EAC, CCC, RINA; UL Listed for USA and Canada (cULus - File E93602) and CSA certified for Canada (File 54332), as Motor Controllers - Contactors.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL 60947-4-1, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1. Plastic materials are compliant with standards IEC/EN 60335; for BF18 and BF26 versions only, add suffix V260 to the standard product order code.

Example: BF18 T0 A230 V260 for BF18, four NC main poles, 230VAC 50/60Hz coil with compliant plastic materials).

NOTE: The BF18-BF26 T0D and BF18 T0L types have a standard supplied built-in TVS (Transient Voltage Suppressor).

### Contactors four NO power poles to connect in series for photovoltaic applications BF series



BFD80 T4...

**new**

| Order code | Operational current at 600V in DC1 ≤55°C with 4 poles in series | Qty per pkg | Wt [kg] |
|------------|-----------------------------------------------------------------|-------------|---------|
|            |                                                                 |             |         |
|            | [A]                                                             | n°          | [kg]    |

AC COIL.

Terminals: lug clamp.

|                   |     |   |       |
|-------------------|-----|---|-------|
| <b>BFD80 T4 A</b> | 100 | 1 | 1.100 |
|-------------------|-----|---|-------|

AC/DC COIL.

Terminals: lug clamp.

|                    |     |   |       |
|--------------------|-----|---|-------|
| <b>BFD80 T4 E</b>  | 100 | 1 | 1.100 |
| <b>BFD150 T4 E</b> | 165 | 1 | 2.550 |

- Complete with coil voltage digit if 50/60Hz or with voltage digit followed by 60 if 60Hz. Standard voltages are:  
- AC 50/60Hz 024 / 048 / 110 / 230 / 400V  
- AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 / 460 60 / 575 60 (V).

Example:

- BF18 T0 A230 for contactor BF18 T0, 4 NC power poles, with 230VAC 50/60Hz.
- 11 BFD80 40 024 for contactor BFD80 40, 4 NO power poles, with 24V 50/60Hz for photovoltaic application.

- Complete the order code with coil voltage digit.

Standard voltages are:

- DC 012 / 024 / 048 / 060 / 110 / 125 / 220V.

Example:

- BF18 T0 D012 for micro-contactor BF18 T0, 4 NC power poles, with 12VDC coil.

- Low-consumption version. Complete the order code with coil voltage digit.

Standard voltages are:

- DC 024 / 048V.

Example:

- BF18 T2 L024 (low-consumption BF18 T2 contactor with 2 NO poles and 2 NC poles supplied at 24VDC).

- The contactor coil is controlled electronically; it can have either an AC or a DC supply and has a wide operating range.

Complete the order code with coil voltage digit.

Standard voltages are:

- AC/DC 024 = 20...48V; 110 = 60...110V; 230 = 100...250V.

- IEC/EN 60947-1 designation: Pillar terminal.

- Maximum combinations of add-on blocks are given on page 2-19.

#### General characteristics

The contactors are specifically made with magnetic elements in the arc extinction chambers to obtain high DC load operational capabilities. They are used to disconnect and isolate the load between the photovoltaic panel and the AC/DC inverter.

For add-on contact blocks, accessories and spare parts, consider indications of the corresponding standard (BF80 T4 A..., BF80 T4 E... and BF150 T4 E...).

#### Italian Fire Department Directives

These directives provide for a disconnecting device for all current-carrying elements, that can be operated by remote control switch, placed in an easily reached and marked position, in order to safely isolate each part of the installation within the fire system compartment including the photovoltaic (PV) generator.

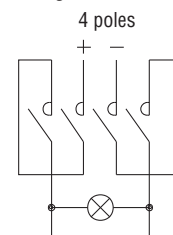
As an alternative, the PV generator must be installed, either externally of the fire system compartment or internally but in a dedicated compartment with adequate fire-resistant features. For such function, specifically designed contactors for on-load use in IEC DC1 duty up to 1000VDC are available.

#### Operational characteristics

Use in IEC DC1 duty

| Type           | IEC operational voltage U <sub>e</sub>                                     |      |      |       |
|----------------|----------------------------------------------------------------------------|------|------|-------|
|                | 400V                                                                       | 600V | 800V | 1000V |
|                | IEC max current I <sub>e</sub> in DC1 with L/R ≤1ms with 4 poles in series |      |      |       |
|                | [A]                                                                        | [A]  | [A]  | [A]   |
| BFD80 T4 A...  | 100                                                                        | 100  | 76   | 60    |
| BFD80 T4 E...  | 100                                                                        | 100  | 76   | 60    |
| BFD150 T4 E... | 165                                                                        | 165  | 125  | 100   |

#### Wiring scheme



#### Certification and compliance

Certification obtained: cULus for BFD80 T4 A.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL 60947-4-1, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1.

## 2 Contactors

Contactors for power factor correction with AC control circuit

### BFK contactors (including limiting resistors)



BFK...

**new**

| Order code          | Maximum IEC operational power at ≤50°C (AC-6b) ① |        |        |        | ②    | Qty per pkg | Wt    |
|---------------------|--------------------------------------------------|--------|--------|--------|------|-------------|-------|
|                     | 240V                                             | 400V   | 440V   | 690V   | 480V |             |       |
|                     | [kvar]                                           | [kvar] | [kvar] | [kvar] | NO   | n°          | [kg]  |
| AC COIL             |                                                  |        |        |        |      |             |       |
| <b>BFK09 10A</b> ③  | 4.5                                              | 7.5    | 9      | 10     | 1    | 10          | 0.413 |
| <b>BFK12 10A</b> ③  | 7                                                | 12.5   | 14     | 16     | 1    | 10          | 0.413 |
| <b>BFK18 10A</b> ③  | 9                                                | 15     | 17     | 20     | 1    | 10          | 0.413 |
| <b>BFK26 00A</b> ③  | 11                                               | 20     | 22     | 25     | –    | 10          | 0.472 |
| <b>BFK32 00A</b> ③  | 14                                               | 25     | 27.5   | 30     | –    | 10          | 0.472 |
| <b>BFK38 00A</b> ③  | 17                                               | 30     | 33     | 36     | –    | 10          | 0.472 |
| <b>BFK50 00A</b> ③  | 22                                               | 40     | 41     | 46     | –    | 5           | 1.080 |
| <b>BFK65 00A</b> ③  | 26                                               | 45     | 50     | 56     | –    | 5           | 1.080 |
| <b>BFK80 00A</b> ③  | 30                                               | 50     | 56     | 65     | –    | 5           | 1.080 |
| <b>BFK95 00A</b> ③  | 34                                               | 60     | 75     | 80     | –    | 5           | 2.095 |
| <b>BFK115 00A</b> ③ | 45                                               | 75     | 85     | 135    | –    | 5           | 2.095 |
| <b>BFK150 00A</b> ③ | 50                                               | 100    | 115    | 150    | –    | 5           | 2.095 |

- ① To use the contactor in the delta, consult our Technical support, see contact details on front cover.
- ② NO auxiliary contacts available.
- ③ The order code must be completed either with the coil voltage digit if 50/60Hz or with the coil voltage digit followed by the number 60 if 60Hz. Standard voltages are:
- AC 50-60Hz 024 / 048 / 110 / 230 / 400VAC
  - AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 / 460 60 / 575 60 (V).
- Example: BFK09 10 A230 for contactor BFK09 with one NO contact and 230VAC 50/60Hz coil.  
BFK09 10 A460 60 for contactor BFK09 with one NO contact and 460VAC 60Hz coil.

#### UL/CSA details

Maximum UL/CSA kvar ratings

|            | 240V | 480V | 600V |
|------------|------|------|------|
|            | kVAR | kVAR | kVAR |
| BFK09 10A  | 4.5  | 9    | 10   |
| BFK12 10A  | 7    | 14   | 16   |
| BFK18 10A  | 9    | 17   | 20   |
| BFK26 00A  | 11   | 22   | 27.5 |
| BFK32 00A  | 14   | 27.5 | 32   |
| BFK38 00A  | 17   | 33   | 36   |
| BFK50 00A  | 22   | 41   | 46   |
| BFK65 00A  | 26   | 50   | 56   |
| BFK80 00A  | 30   | 60   | 75   |
| BFK95 00A  | 40   | 80   | 100  |
| BFK115 00A | 45   | 90   | 120  |
| BFK150 00A | 50   | 100  | 125  |

### Kit to assemble BFK contactors



11 G46...

**new**

| Order code     | For contactor                                                   | Qty per pkg | Wt    |
|----------------|-----------------------------------------------------------------|-------------|-------|
|                |                                                                 | n°          | [kg]  |
| <b>11 G460</b> | BF09 10A - BF12 10A - BF18 10A - BF26 00A - BF32 00A - BF38 00A | 10          | 0.072 |
| <b>BFX10K3</b> | BF50 00A - BF65 00A - BF80 00A                                  | 10          | 0.078 |
| <b>BFX10K4</b> | BFK95 00A - BFK115 00A - BFK150 00A                             | 10          | 0.080 |

#### Operational characteristics

| Type   | IEC rated operational current ≤440V | IEC - UL/CSA protection fuse gG-SC |
|--------|-------------------------------------|------------------------------------|
|        | [A]                                 | [A]                                |
| BFK09  | 12                                  | 16                                 |
| BFK12  | 18                                  | 25                                 |
| BFK18  | 23                                  | 40                                 |
| BFK26  | 30                                  | 40                                 |
| BFK32  | 36                                  | 63                                 |
| BFK38  | 43                                  | 63                                 |
| BFK50  | 58                                  | 80                                 |
| BFK65  | 65                                  | 100                                |
| BFK80  | 75                                  | 125                                |
| BFK95  | 90                                  | 125                                |
| BFK115 | 115                                 | 160                                |
| BFK150 | 144                                 | 160                                |

Ambient operating temperature: ≤50°C. For ambient temperatures higher than 50°C and up to 70°C, the maximum operating power values indicated in the table must be reduced by a percentage equal to the difference between the operating ambient temperature and 50°C.

E.g.: Using a BFK26 00 contactor at the ambient temperature of 60°C, the maximum operating power (at 400V) of the contactor will be equal to 20kvar – 10% = 18kvar.

Operating cycle: ≤120 cycles/h

Electrical life: ≥400,000 cycles.

#### Add-on auxiliary contacts

The following contact blocks, can be fitted on the BFK contactors: BFX12..., 11 G418..., 11 G481..., 11 G482... and 11 G218.

#### Certifications and compliance

Certification obtained: UL Listed for USA and Canada (cULus - File E93602), as Motor Controllers - Magnetic Capacitive Switches; CCC, EAC.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14.

Plastic materials are compliant with standards IEC/EN 60335; for BFK versions only, add suffix V260 to the standard product order code.

#### General characteristics

To optimise contactor stock management, a kit is available to transform normal three-pole contactors into BFK types for power factor correction. The table to the left indicates which kits to purchase depending on the standard contactor in stock.

## 2 Contactors

Control relays with control circuit: AC and DC

### Control relays BG00 type



11 BG00...



11 BGF00...

| Order code                       | Configuration and<br>n° of contacts⑤ |    | Quantity<br>per pkg. | Wt    |
|----------------------------------|--------------------------------------|----|----------------------|-------|
|                                  | NO                                   | NC | n°                   | [kg]  |
| AC COIL.                         |                                      |    |                      |       |
| Terminals: clamp screw.          |                                      |    |                      |       |
| 11 BG00 40 A①                    | 4                                    | 0  | 1                    | 0.170 |
| 11 BG00 31 A①                    | 3                                    | 1  | 1                    | 0.170 |
| 11 BG00 22 A①                    | 2                                    | 2  | 1                    | 0.170 |
| Terminals: Faston.               |                                      |    |                      |       |
| 11 BGF00 40 A①                   | 4                                    | 0  | 1                    | 0.160 |
| 11 BGF00 31 A①                   | 3                                    | 1  | 1                    | 0.160 |
| 11 BGF00 22 A①                   | 2                                    | 2  | 1                    | 0.160 |
| DC COIL.                         |                                      |    |                      |       |
| Terminals: clamp screw.          |                                      |    |                      |       |
| 11 BG00 40 D②                    | 4                                    | 0  | 1                    | 0.175 |
| 11 BG00 31 D②                    | 3                                    | 1  | 1                    | 0.175 |
| 11 BG00 22 D②                    | 2                                    | 2  | 1                    | 0.175 |
| Terminals: Faston.               |                                      |    |                      |       |
| 11 BGF00 40 D②                   | 4                                    | 0  | 1                    | 0.165 |
| 11 BGF00 31 D②                   | 3                                    | 1  | 1                    | 0.165 |
| 11 BGF00 22 D②                   | 2                                    | 2  | 1                    | 0.165 |
| DC COIL. Low-consumption (2.3W). |                                      |    |                      |       |
| Terminals: clamp screw.          |                                      |    |                      |       |
| 11 BG00 40 L③                    | 4                                    | 0  | 1                    | 0.175 |
| 11 BG00 31 L③                    | 3                                    | 1  | 1                    | 0.175 |
| 11 BG00 22 L③                    | 2                                    | 2  | 1                    | 0.175 |
| Terminals: Faston.               |                                      |    |                      |       |
| 11 BGF00 40 L③                   | 4                                    | 0  | 1                    | 0.165 |
| 11 BGF00 31 L③                   | 3                                    | 1  | 1                    | 0.165 |
| 11 BGF00 22 L③                   | 2                                    | 2  | 1                    | 0.165 |

#### Operational characteristics

- IEC rated insulation voltage  $U_i$ : 690V
- IEC rated conventional free air thermal current  $I_{th}$ : 10A
- UL/CSA and IEC/EN 60947-5-1 designation:
  - BG types: A600-Q600
  - BF types: A600-P600
- Low-consumption version of BG types cannot accept additional contacts.

**NOTE: No coil change or replacement is possible.**

#### Certifications and compliance

Certification obtained: CCC, EAC, UL Listed for USA and Canada (cULus - File E93602), as Motor Controllers - Auxiliary contactors for all; RINA for BF00 types. Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1. Plastic materials are compliant with standards IEC/EN 60335; for BF00 version only, add suffix V260 to the standard product order code. Example: BF00 40 A230 V260 for BF00 control relay having 4 NO auxiliary contacts and 230VAC 50/60Hz coil with compliant plastic materials.

**NOTE:** The BF00...D and BF00...L types have a standard supplied built-in TVS (Transient Voltage Suppressor).

### Control relays BF00 type



BF00... A...



BF00... D...  
BF00... L...

| Order code                       | Configuration and<br>n° of contacts ⑤ |    | Quantity<br>per pkg. | Wt    |
|----------------------------------|---------------------------------------|----|----------------------|-------|
|                                  | NO                                    | NC | n°                   | [kg]  |
| AC COIL.                         |                                       |    |                      |       |
| Terminals: clamp screw.          |                                       |    |                      |       |
| BF00 40 A①                       | 4                                     | 0  | 1                    | 0.340 |
| BF00 31 A①                       | 3                                     | 1  | 1                    | 0.340 |
| BF00 22 A①                       | 2                                     | 2  | 1                    | 0.340 |
| BF00 04 A①                       | 0                                     | 4  | 1                    | 0.340 |
| DC COIL.                         |                                       |    |                      |       |
| Terminals: clamp screw.          |                                       |    |                      |       |
| BF00 40 D②④                      | 4                                     | 0  | 1                    | 0.470 |
| BF00 31 D②④                      | 3                                     | 1  | 1                    | 0.470 |
| BF00 22 D②④                      | 2                                     | 2  | 1                    | 0.470 |
| BF00 04 D②④                      | 0                                     | 4  | 1                    | 0.470 |
| DC COIL. Low consumption (2.4W). |                                       |    |                      |       |
| Terminals: clamp screw.          |                                       |    |                      |       |
| BF00 40 L③④                      | 4                                     | 0  | 1                    | 0.470 |
| BF00 31 L③④                      | 3                                     | 1  | 1                    | 0.470 |
| BF00 22 L③④                      | 2                                     | 2  | 1                    | 0.470 |
| BF00 04 L③④                      | 0                                     | 4  | 1                    | 0.470 |

- ① The order code must be completed either with the coil voltage digit if 50/60Hz or with the coil voltage digit followed by the number 60 if 60Hz. Standard voltages are:
  - AC 50/60Hz 024 / 048 / 110 - 230 / 400V
  - AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 / 460 60 / 575 60 (V).
 Example: 11 BG00 40 A230 (auxiliary mini-contactor 4 NO auxiliary contacts supplied at 230VAC 50/60Hz).  
BF00 40 A460 60 (auxiliary contactor with 4 NO auxiliary contacts supplied at 460VAC 60Hz).
- ② Complete the order code with coil voltage digit. Standard voltages are:
  - DC 012 / 024 / 048 / 060 / 110 / 125 / 220V.
 Example: BF00 40 D012 (auxiliary contactor with 4 NO auxiliary contacts supplied at 12VDC).
- ③ Low-consumption version. Complete the order code with coil voltage digit. Standard voltages are:
  - DC 024 / 048V.
 Example: 11 BG00 40 L024 (low-consumption auxiliary mini-contactor with 4 NO auxiliary contacts supplied at 24VDC).
- ④ Maximum combinations of add-on blocks are given on page 2-19.
- ⑤ All contacts are highly conductive.

## 2 Contactors

Add-on blocks and accessories for BG series mini-contactors



11 BGX10... (20-11-02)  
11 BGX11 11



11 BGX10... (40-31-22-13-04)  
11 BGX11 22



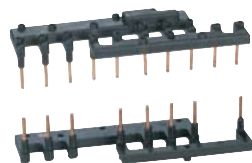
11 BGXF...



11 BGX77... -  
11 BGX78 225 -  
11 BGX79...



11 BGX50 00



11 SMX90 21  
11 SMX90 22

| Order code | Characteristics | Max<br>qty<br>per<br>contactor | Qty<br>per<br>pkg | Wt   |
|------------|-----------------|--------------------------------|-------------------|------|
|            |                 | n°                             | n°                | [kg] |

Auxiliary contacts.  
Screw terminals.

|              |           |   |    |       |
|--------------|-----------|---|----|-------|
| 11 BGX10 02① | 2NC       | 1 | 10 | 0.021 |
| 11 BGX10 11① | 1NO + 1NC | 1 | 10 | 0.021 |
| 11 BGX10 20① | 2NO       | 1 | 10 | 0.021 |
| 11 BGX10 04② | 4NC       | 1 | 10 | 0.028 |
| 11 BGX10 13② | 1NO + 3NC | 1 | 10 | 0.028 |
| 11 BGX10 22② | 2NO + 2NC | 1 | 10 | 0.028 |
| 11 BGX10 31② | 3NO + 1NC | 1 | 10 | 0.028 |
| 11 BGX10 40② | 4NO       | 1 | 10 | 0.028 |

Auxiliary contacts for reversing and changeover assemblies.  
Screw terminals.

|              |           |   |    |       |
|--------------|-----------|---|----|-------|
| 11 BGX11 11③ | 1NO + 1NC | 1 | 10 | 0.021 |
| 11 BGX11 22③ | 2NO + 2NC | 1 | 10 | 0.028 |

Auxiliary contacts.  
Faston terminals.

|               |           |   |    |       |
|---------------|-----------|---|----|-------|
| 11 BGXF10 02④ | 2NC       | 1 | 10 | 0.021 |
| 11 BGXF10 11④ | 1NO + 1NC | 1 | 10 | 0.021 |
| 11 BGXF10 20④ | 2NO       | 1 | 10 | 0.021 |
| 11 BGXF10 04⑤ | 4NC       | 1 | 10 | 0.028 |
| 11 BGXF10 13⑤ | 1NO + 3NC | 1 | 10 | 0.028 |
| 11 BGXF10 22⑤ | 2NO + 2NC | 1 | 10 | 0.028 |
| 11 BGXF10 31⑤ | 3NO + 1NC | 1 | 10 | 0.028 |
| 11 BGXF10 40⑤ | 4NO       | 1 | 10 | 0.028 |

Mechanical interlock.

|              |                       |   |    |       |
|--------------|-----------------------|---|----|-------|
| 11 BGX50 00⑥ | For BG...A and BG...D | 1 | 10 | 0.008 |
|--------------|-----------------------|---|----|-------|

Quick connect surge suppressors.

|              |                                   |    |       |
|--------------|-----------------------------------|----|-------|
| 11 BGX77 048 | ≤48VAC/DC (Varistor)              | 10 | 0.007 |
| 11 BGX77 125 | 48...125VAC/DC (Varistor)         | 10 | 0.007 |
| 11 BGX77 240 | 125...240VAC/DC (Varistor)        | 10 | 0.007 |
| 11 BGX78 225 | ≤225VDC (Diode)                   | 10 | 0.007 |
| 11 BGX79 048 | ≤48VAC (Resistor-Capacitor)       | 10 | 0.007 |
| 11 BGX79 125 | 48...125VAC (Resistor-Capacitor)  | 10 | 0.007 |
| 11 BGX79 240 | 125...240VAC (Resistor-Capacitor) | 10 | 0.007 |
| 11 BGX79 415 | 240...415VAC (Resistor-Capacitor) | 10 | 0.007 |

Modular shroud.

|              |                       |    |       |
|--------------|-----------------------|----|-------|
| 11 BGX80 00⑦ | IP40 front protection | 20 | 0.006 |
|--------------|-----------------------|----|-------|

Paralleling links.

|          |             |    |       |
|----------|-------------|----|-------|
| 11 G323⑧ | For 2 poles | 10 | 0.009 |
| 11 G324  |             | 10 | 0.009 |
| 11 G325⑧ | For 4 poles | 10 | 0.014 |
| 11 G326  |             | 10 | 0.014 |

Rigid connecting kits.

|              |                                                                     |    |       |
|--------------|---------------------------------------------------------------------|----|-------|
| 11 SMX90 21⑨ | Rigid connections for star-delta starter with BG... mini-contactors | 10 | 0.040 |
| 11 SMX90 22⑨ | Rigid connections for reversing switches with BG... mini-contactors | 1  | 0.026 |

- ① Cannot be used with BG...L types.
- ② Cannot be used with BG...D and BG...L types.
- ③ Suitable for left-hand mini-contactor only of BGT and BGTP reversing and BGC changeover assemblies.
- ④ The shroud can be used with BG... types with screw termination only and with no auxiliary contacts, surge suppressor or mechanical interlock mounted. It raises the front degree of protection of the mini-contactor when these are used in consumer switchboards.
- ⑤ Cannot be used with BGX80 00 shroud.
- ⑥ Contactors with one NC auxiliary contact, 01 type, are usually used. The SM1 breaker can be directly fitted with rigid connector; type connection SM1X30 40P for SM1P... breaker and connection SM1X30 40R for SM1R... breaker. The relay cannot be directly mounted on the contactor. Use the RF38 type and the RFX38 04 independent mounting base.

### Operational characteristics

| Type                                                |                      | BGX10...<br>BGX11... | BGXF10...                    |
|-----------------------------------------------------|----------------------|----------------------|------------------------------|
| IEC rated conventional free air thermal current Ith | A                    | 10                   | 10                           |
| IEC rated insulation voltage Ui                     | V                    | 690                  | 690                          |
| Terminals                                           | Screw                | M3                   | Faston<br>1x6.3mm<br>2x2.8mm |
|                                                     | Width                | mm                   | 6.9                          |
| Tightening torque                                   | Nm                   | 0.8...1              | —                            |
|                                                     | Ibin                 | 7...9                | —                            |
| Conductor section maximum (with 1 or 2 cables)      |                      |                      |                              |
|                                                     | flexible without lug | mm²                  | 2.5                          |
|                                                     | flexible with lug    | mm²                  | 2.5                          |
|                                                     | AWG                  | n°                   | 14                           |
| UL/CSA and IEC/EN 60947-5-1 designation             | AC                   | A600                 | A600                         |
|                                                     | DC                   | Q600                 | Q600                         |
| Mechanical life (million)                           | cycles               | 20                   | 20                           |

### SM1 breaker - mini-contactor connecting kit

See page 1-5.

### Certifications and compliance

Certifications obtained:

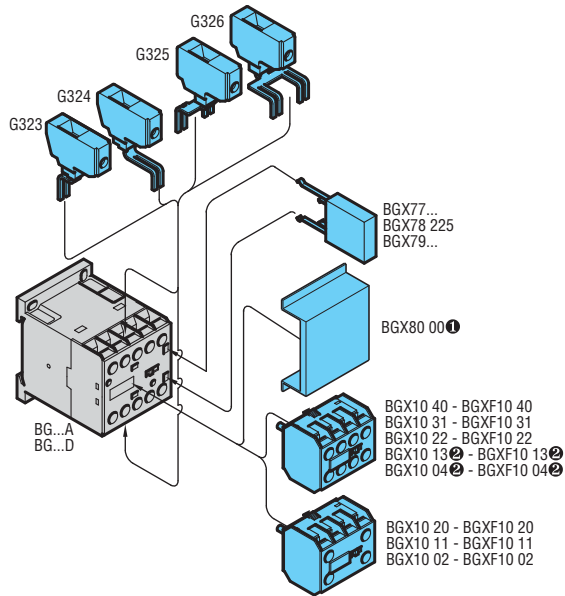
| Type      | UL | cULus | EAC | CCC |
|-----------|----|-------|-----|-----|
| BGX10...  | —  | ●     | ●   | ●   |
| BGX11...  | —  | ●     | ●   | ●   |
| BGXF10... | —  | ●     | ●   | —   |
| BGX50 00  | —  | ●     | ●   | —   |
| BGX7...   | —  | ●     | ●   | —   |
| BGX80 00  | —  | —     | ●   | —   |
| G32...    | —  | —     | ●   | —   |
| SMX90...  | UL | —     | —   | —   |

● Certified products;

UL - UL Recognized for USA only (File E197069) as Panel and Switchboard Accessories - Component.  
Products having this type of marking are intended for use as components of complete workshop-assembled equipment.  
cULus - UL Listed for USA and Canada (cULus - File E93601) as Auxiliary Devices - Component.

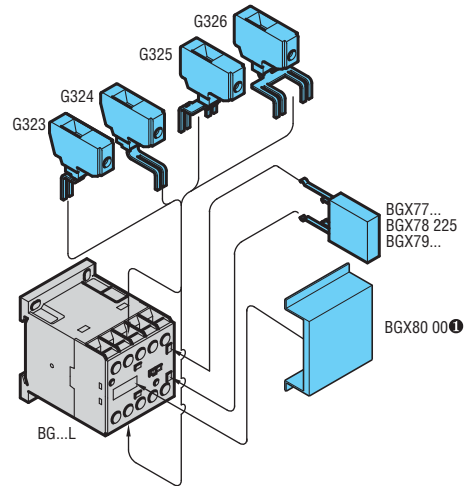
Compliant with standards: UL 60947-4-1, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1; IEC/EN 60947-1; IEC/EN 60947-5-1 for auxiliary contacts.

Combinations: mounting position on BG...A and BG...D mini-contactors

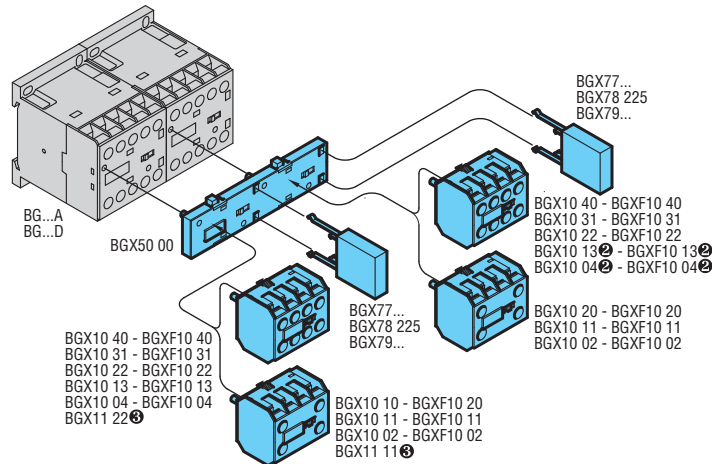


- ❶ Not suitable for mini-contactors BG... with auxiliaries contacts BGX10..., surge suppressor BGX7... and interlock BGX50 00.
- ❷ Not suitable for BG...D types.

Combinations: mounting position on BG...L mini-contactors

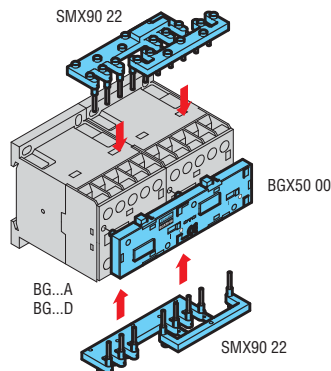


Combinations for reversing and changeover contactors assembled with BG...A and BG...D types

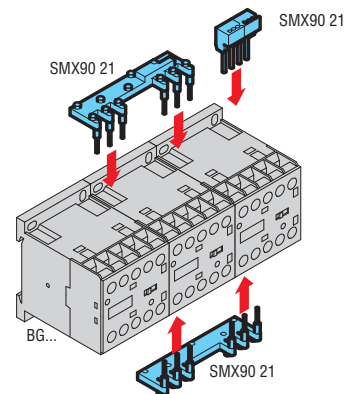


- ❷ Not suitable for BG...D types.
- ❸ For left-hand mini-contactor of BGT, BGTP and BGC contactor assemblies only. See page 4-5.

Connections for reversing contactor assembly



Connections for star-delta assembly



## 2 Contactors

Add-on blocks and accessories for BF series contactors



BFX10...



11 G484...



BFX10...



11 G418...



11 G218

11 G481...  
11 G482

11 G428...



BFX12...

11 G485...  
11 G486...  
11 G487

| Order code | Characteristics | Max qty<br>per<br>cont. | Qty<br>per<br>pkg. | Wt   |
|------------|-----------------|-------------------------|--------------------|------|
|            |                 | n°                      | n°                 | [kg] |

Auxiliary contacts with front center mounting ②.  
Screw terminals.

|                    |                       |   |   |       |
|--------------------|-----------------------|---|---|-------|
| <b>BFX10 02①</b>   | 2NC                   | 1 | 5 | 0.030 |
| <b>BFX10 11①</b>   | 1NO + 1NC             | 1 | 5 | 0.030 |
| <b>BFX10 20①</b>   | 2NO                   | 1 | 5 | 0.030 |
| <b>11 G484 03①</b> | 3NC                   | 1 | 5 | 0.039 |
| <b>11 G484 12①</b> | 1NO + 2NC             | 1 | 5 | 0.039 |
| <b>11 G484 21①</b> | 2NO + 1NC             | 1 | 5 | 0.039 |
| <b>11 G484 30①</b> | 3NO                   | 1 | 5 | 0.039 |
| <b>BFX10 04</b>    | 4NC                   | 1 | 5 | 0.048 |
| <b>BFX10 13</b>    | 1NO + 3NC             | 1 | 5 | 0.048 |
| <b>BFX10 22</b>    | 2NO + 2NC             | 1 | 5 | 0.048 |
| <b>BFX10 31</b>    | 3NO + 1NC             | 1 | 5 | 0.048 |
| <b>BFX10 40</b>    | 4NO                   | 1 | 5 | 0.048 |
| <b>BFX10 11 11</b> | 1NO+1NC and 1EM+1LB③④ | 1 | 5 | 0.048 |

Auxiliary contacts with front lateral mounting. Screw terminals⑤.

|                    |      |   |    |       |
|--------------------|------|---|----|-------|
| <b>11 G418 01</b>  | 1NC  | 2 | 10 | 0.014 |
| <b>11 G418 01D</b> | 1LB⑤ | 2 | 10 | 0.014 |
| <b>11 G418 10</b>  | 1NO  | 2 | 10 | 0.014 |
| <b>11 G418 10A</b> | 1EM⑤ | 2 | 10 | 0.014 |

Auxiliary contacts with front lateral mounting. Faston terminals⑤.

|                   |                       |   |    |       |
|-------------------|-----------------------|---|----|-------|
| <b>11 G218</b>    | 1NO or 1NC reversible | 2 | 10 | 0.011 |
| <b>11 G481 02</b> | 2NC                   | 2 | 10 | 0.013 |
| <b>11 G481 11</b> | 1NO + 1NC             | 2 | 10 | 0.013 |
| <b>11 G481 20</b> | 2NO                   | 2 | 10 | 0.013 |
| <b>11 G482⑤⑥</b>  | Changeover contact    | 2 | 10 | 0.013 |

Adapter for auxiliary contact side mounting.

|                |                   |   |    |       |
|----------------|-------------------|---|----|-------|
| <b>11 G280</b> | for G218          | 2 | 10 | 0.008 |
| <b>11 G419</b> | for G418          | 2 | 10 | 0.010 |
| <b>11 G483</b> | for G481 and G482 | 2 | 10 | 0.010 |

Auxiliary contacts with low side mounting.  
Screw terminals.

|                    |                               |   |    |       |
|--------------------|-------------------------------|---|----|-------|
| <b>BFX12 02②</b>   | 2NC for BF00, BF09...BF94     | 2 | 5  | 0.044 |
| <b>BFX12 11②</b>   | 1NO+1NC for BF00, BF09...BF94 | 2 | 5  | 0.044 |
| <b>BFX12 20②</b>   | 2NO for BF00, BF09...BF94     | 2 | 5  | 0.044 |
| <b>11 G428 01</b>  | 1NC                           | 2 | 10 | 0.024 |
| <b>11 G428 01D</b> | 1LB⑤                          | 2 | 10 | 0.024 |
| <b>11 G428 10</b>  | 1NO                           | 2 | 10 | 0.024 |
| <b>11 G428 10A</b> | 1EM⑤                          | 2 | 10 | 0.024 |

Delayed auxiliary contacts 1NO + 1NC (pneumatic operation)  
on energisation for front center mounting ①③.  
Screw terminals.

|                    |      |   |   |       |
|--------------------|------|---|---|-------|
| <b>11 G485 3</b>   | 3s   | 1 | 1 | 0.040 |
| <b>11 G485 6</b>   | 6s   | 1 | 1 | 0.040 |
| <b>11 G485 15</b>  | 15s  | 1 | 5 | 0.040 |
| <b>11 G485 30</b>  | 30s  | 1 | 5 | 0.040 |
| <b>11 G485 60</b>  | 60s  | 1 | 5 | 0.040 |
| <b>11 G485 120</b> | 120s | 1 | 1 | 0.040 |

Delayed auxiliary contacts 1NO + 1NC (pneumatic operation)  
on de-energisation for front center mounting ①③⑤.  
Screw terminals.

|                    |      |   |   |       |
|--------------------|------|---|---|-------|
| <b>11 G486 3</b>   | 3s   | 1 | 1 | 0.040 |
| <b>11 G486 6</b>   | 6s   | 1 | 1 | 0.040 |
| <b>11 G486 15</b>  | 15s  | 1 | 5 | 0.040 |
| <b>11 G486 30</b>  | 30s  | 1 | 5 | 0.040 |
| <b>11 G486 60</b>  | 60s  | 1 | 5 | 0.040 |
| <b>11 G486 120</b> | 120s | 1 | 1 | 0.040 |
| <b>11 G487</b>     | 70ms | 1 | 1 | 0.040 |

### Operational characteristics for add-on auxiliary contacts

| Type                                           |                  | G418⑤<br>G428⑤<br>G485⑤<br>G486⑤<br>G487⑤ | G484<br>BFX10<br>BFX12 | G218⑦<br>G481⑦  | G482⑥           |
|------------------------------------------------|------------------|-------------------------------------------|------------------------|-----------------|-----------------|
| IEC conventional free air thermal current Ith  | A                | 10                                        | 10                     | 10              | 0.1⑤            |
| IEC rated insulation voltage Ui                | V                | 690                                       | 690                    | 690             | 690             |
| Terminals                                      | Screw            | M3.5                                      | M3                     | —               | —               |
|                                                | Width            | mm                                        | 7                      | 7               | —               |
|                                                | Faston           | —                                         | —                      | 1x6.35<br>2x2.8 | 1x6.35<br>2x2.8 |
| Tightening torque                              | Nm               | 0.8...1                                   | 0.8...1                | —               | —               |
|                                                | lbin             | 7...9                                     | 7...9                  | —               | —               |
| Conductor section maximum with (1 or 2 cables) |                  |                                           |                        |                 |                 |
|                                                | flexible w/o lug | mm2                                       | 2.5                    | 2.5             | —               |
|                                                | flexible c/w lug | mm2                                       | 2.5                    | 2.5             | 2.5             |
|                                                | AWG              | n°                                        | 14                     | 14              | 14              |
| Terminal protection per IEC/EN60529            |                  | IP20<br>⑥⑤                                | IP20                   | IP20⑦           | IP20⑥           |
| UL/CSA and IEC/EN 60947-5-1 designation        | AC               | A600                                      | A600                   | A600            | A600            |
|                                                | DC               | P600⑥                                     | Q600                   | P600            | P600            |
| Mechanical life (million)                      | cycles           | 10⑤                                       | 10                     | 10              | 10              |

### SM1 breaker - contactor connecting kit

See page 1-5.

### Maximum assembly combination of add-on blocks

See pages 2-19 and 2-22...25.

### Certifications and compliance

Certifications obtained:

| Type             | UL | cULus | CSA | EAC | CCC |
|------------------|----|-------|-----|-----|-----|
| BFX10...         | —  | ●     | —   | ●   | ●   |
| BFX12...         | —  | ●     | —   | ●   | —   |
| G218             | UL | —     | ●   | ●   | —   |
| G418..., G428... | UL | —     | ●   | ●   | —   |
| G481...          | UL | —     | ●   | ●   | —   |
| G482             | UL | —     | ●   | ●   | —   |
| G484...          | UL | —     | ●   | ●   | —   |
| G485...          | UL | —     | ●   | ●   | —   |
| G486...          | UL | —     | ●   | ●   | —   |
| G487...          | UL | —     | ●   | ●   | —   |

● Certified products; pending for BFX10 1111

UL - UL Recognized for USA only (File E93601) as Auxiliary Devices - Component.

Products having this type of marking are intended for use as components of complete workshop-assembled equipment.

cULus - UL Listed for USA and Canada (cULus - File E93601) as Auxiliary Devices.

CSA - CSA certified for Canada only (File 54332) as Auxiliary Devices for motor controllers.

Add-on auxiliary contacts are compliant with the following standards: IEC/EN 60947-1, IEC/EN 60947-5-1, UL 60947-1, UL 60947-5-1, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-5-1;

① The contacts can also be fitted on B type contactors using the adapter G358.

See pages 2-26 and 2-28.

② Highly conductive contacts.

③ Normally closed late-break contact.

④ Normally open early-make contact.

⑤ Gold-plated contacts inside tight casing for use in pollutant environments.

The Ith value refers to 125VAC and 30VDC.

IEC IP20 protection is warranted to equipment wired with insulated Faston terminals.

⑥ IEC IP20 protection is warranted to equipment wired with minimum 0.75mm² conductor section.

Designation in DC is Q600 for G418 and G419 types.

⑦ IEC IP20 protection is warranted to equipment wired with insulated Faston terminals.

⑧ IEC IP20 protection is warranted to equipment wired with minimum 1mm² conductor section. Mechanical life is 3 million cycles.

## 2 Contactors

Add-on blocks and accessories for BF series contactors

### BF00 A, BF09 A...BF150 A, BF40 E...BF150 E

Maximum assembly combination for alternating-current contactors BF00 A, BF09 A...BF150.  
Maximum assembly combination for alternating/direct-current contactors BF40 E...BF150 E.

|            |               | Front centre mount          |          |          |                      | Front lateral mount         |               |              | Side mount       |                |
|------------|---------------|-----------------------------|----------|----------|----------------------|-----------------------------|---------------|--------------|------------------|----------------|
|            |               |                             |          |          |                      |                             |               |              |                  |                |
|            |               | BFX10 11                    | BFX10 13 | G486...  | G272... <sup>④</sup> | BFX50 03<br>①               | BFX54 03<br>⑨ | G218         | G419+<br>G418... | BFX12 11       |
|            |               | BFX10 20                    | BFX10 22 | G487     | BFX64 1...<br>④      |                             |               | G481...      | G280+<br>G218    | BFX12 20       |
|            |               |                             |          | BFX10 31 |                      |                             |               | G482         | G483+<br>G481... | BFX50 00<br>③⑤ |
|            |               |                             |          | BFX10 40 |                      |                             |               |              | G483+<br>G482    | BFX50 01<br>③⑤ |
|            |               | n° of blocks<br>1 type only |          |          | n° of blocks         | n° of blocks<br>1 type only |               | n° of blocks | n° of blocks     | n° of blocks   |
| Contactors | Control relay | BF00 A                      | 1        | 1        | 1                    | 1                           | —             | 1 ② ①        | 1 ② ①            | 1 ③            |
|            | Three poles   | BF09 A...BF25 A             | 1        | 1        | 1                    | 1                           | —             | 1 ② ①        | 1 ② ①            | 1 ③            |
|            |               | BF26 A...BF38 A             | 1        | 1        | 1                    | 1                           | —             | 1 ② ①        | 1 ② ①            | 1 ③            |
|            |               | BF40 A...BF150 A            | 1        | 1        | 1                    | 1                           | —             | 1 ② ①        | 1 ② ①            | 1 ③            |
|            |               | BF40 E...BF150 E            | 1        | 1        | 1                    | 1                           | —             | 1 ② ①        | 1 ② ①            | 1 ③            |
|            | Four poles    | BF09 A...BF25 A             | 1        | 1        | 1                    | 1                           | —             | 1 ②          | 1 ② ①            | 1 ③            |
|            |               | BF26 A...BF38 A             | 1        | 1        | 1                    | 1                           | —             | 1 ①          | 1 ② ①            | 1 ③            |
|            |               | BF40 A...BF150 A            | 1        | 1        | 1                    | 1                           | —             | 1 ②          | 1 ②              | 1 ③            |
|            |               | BF40 E...BF150 E            | 1        | 1        | 1                    | 1                           | —             | 1 ②          | 1 ②              | 1 ③            |
|            |               |                             |          |          |                      |                             |               |              |                  |                |

- ① Cannot be fitted with BFX10... with 4 contacts and G222.  
② To fit the mechanical interlock, the add-on fourth pole needs to be mounted on the left side of the one of the contactors.  
③ One only side-mount block can be fitted on each contactor whenever the BFX50 0... interlock is mounted.  
④ One BFX10... or delayed G48... contact block can be mounted on the G222 or G272 mechanical latch.  
⑤ G222 mechanical latch.  
⑥ G272 mechanical latch.  
⑦ For BF40...BF94 code BFX53 00 or BFX53 01; for BF95...BF150 code BFX54 00 or BFX54 01.  
⑧ BFX53 03 for BF40...BF94; BFX54 03 for BF95...BF150.  
⑨ BFX5303 cannot be mounted if a contact block BFX10... with 4 contacts (BFX10 04, BFX10 13, BFX10 22, BFX10 31, BFX10 40) is installed.

### BF00 D, BF09 D...BF38 D, BF00 L, BF09 L...BF38 L

Maximum assembly combination for direct-current contactors BF00 D, BF09 D...BF38 D  
Maximum assembly combination for direct-current contactors BF00 L, BF09 L...BF38 L with low absorption

|            |               | Front centre mount            |                                           |                            |              |   |   | Front lateral mount                             | Side mount    |
|------------|---------------|-------------------------------|-------------------------------------------|----------------------------|--------------|---|---|-------------------------------------------------|---------------|
|            |               |                               |                                           |                            |              |   |   |                                                 |               |
|            |               | BFX10...<br>...02 ...11 ...20 | BFX10...<br>...04 ...13 ...22 ...31 ...40 | G485...<br>G486...<br>G487 | G222...<br>④ |   |   | 1 type only BFX50...<br>...02 ...03 ...00 ...01 | BFX12...<br>⑤ |
|            |               | n° of blocks<br>1 type only   |                                           |                            | n° of blocks |   |   | n° of blocks<br>1 type only                     |               |
| Contactors | Control relay | BF00 D                        | 1                                         | 1                          | 1            | 1 | — | 1                                               | 1             |
|            | Three poles   | BF00 L                        | 1                                         | —                          | 1            | 1 | — | 1                                               | 1             |
|            |               | BF09 D-BF25 D                 | 1                                         | 1                          | 1            | 1 | — | 1                                               | 1             |
|            |               | BF26 D-BF38 D                 | 1                                         | 1                          | 1            | 1 | — | 1                                               | 1             |
|            |               | BF09 L-BF25 L                 | 1                                         | —                          | 1            | 1 | — | 1                                               | 1             |
|            |               | BF26 L-BF38 L                 | 1                                         | —                          | 1            | 1 | — | 1                                               | 1             |
|            | Four poles    | BF09 D-BF25 D                 | 1                                         | 1                          | 1            | 1 | — | 1                                               | 1             |
|            |               | BF26 D-BF38 D                 | —                                         | 1                          | —            | 1 | — | 1 ⑦                                             | 1 ⑦           |
|            |               | BF09 L-BF25 L                 | 1                                         | —                          | 1            | 1 | — | 1                                               | 1             |
|            |               | BF26 L-BF38 L                 | —                                         | 1                          | —            | 1 | — | 1 ⑦                                             | 1 ⑦           |

- ① Mounting of BFX50 03 interlock is not possible when BFX10... block with 4 contacts and G222 latch are mounted.  
② One only side-mount block can be fitted on each contactor whenever the BFX50 0... interlock is mounted.  
③ One BFX10... or delayed G48... contact block can be mounted on the G222 or G272 mechanical latch.  
④ To fit the mechanical interlock, the add-on fourth pole needs to be mounted on the left side of the one of the contactors.  
⑤ For other assembly combination, consult Technical support (E-mail: service@LovatoElectric.com).

## 2 Contactors

Add-on blocks and accessories for BF series contactors

BFX42  
BFXD42BFX50 00  
BFX53 00  
BFX54 00  
BFX50 01  
BFX53 01  
BFX54 01BFX50 02  
BFX50 03  
BFX53 03  
BFX54 0311 G222...  
11 G272...  
BFX64 1...

BFX64 2

BFX77...  
BFX79...

new

new

new

new

| Order code | Characteristics | Max<br>qty per<br>cont. | Qty<br>per<br>pkg | Wt   |
|------------|-----------------|-------------------------|-------------------|------|
|            |                 | n°                      | n°                | [kg] |

Fourth pole.

|               |                                                    |   |   |       |
|---------------|----------------------------------------------------|---|---|-------|
| <b>BFX42</b>  | For BF26 A, BF32 A, BF38 A                         | 1 | 1 | 0.100 |
| <b>BFXD42</b> | For BF26 D, BF32 D, BF38 D, BF26 L, BF32 L, BF38 L | 1 | 1 | 0.108 |
| <b>BFX43</b>  | For BF40 A...BF94 A and BF40 E...BF94 E            | 1 | 1 | 0.150 |
| <b>BFX44</b>  | For BF95 A...BF150 A and BF95 E...BF150 E          | 1 | 1 | 0.500 |

Mechanical interlock.

|                 |                                                            |   |    |       |
|-----------------|------------------------------------------------------------|---|----|-------|
| <b>BFX50 00</b> | Side mount for BF00, BF09...BF38                           | 1 | 5  | 0.039 |
| <b>BFX50 01</b> | Side mount with 2NC contacts for BF00, BF09...BF38         | 1 | 5  | 0.052 |
| <b>BFX50 02</b> | Front mount, low profile for BF00, BF09...BF38             | 1 | 5  | 0.006 |
| <b>BFX50 03</b> | Front mount for BF00, BF09...BF38                          | 1 | 5  | 0.023 |
| <b>BFX89 10</b> | Spacer for interlocking BF09...BF38 AC/DC with types in DC | 1 | 10 | 0.017 |
| <b>BFX53 00</b> | Side mount for BF40...BF94 A/E                             | 1 | 5  | 0.039 |
| <b>BFX53 01</b> | Side mount with 2NC contacts for BF40...BF94 A/E           | 1 | 5  | 0.052 |
| <b>BFX53 03</b> | Front mount for BF40...BF94 A/E                            | 1 | 5  | 0.034 |
| <b>BFX54 00</b> | Side mount for BF95...BF150 A/E                            | 1 | 5  | 0.039 |
| <b>BFX54 01</b> | Side mount with 2NC contacts for BF95...BF150 A/E          | 1 | 5  | 0.052 |
| <b>BFX54 03</b> | Front mount for BF95...BF150 A/E                           | 1 | 5  | 0.034 |

Mechanical latch. Screw terminals

|                    |                       |   |   |       |
|--------------------|-----------------------|---|---|-------|
| <b>11 G222</b>     | For BF00, BF09...BF38 | 1 | 1 | 0.070 |
| <b>11 G272</b>     | For BF40...BF94       | 1 | 1 | 0.070 |
| <b>BFX64 1...0</b> | For BF95...BF150      | 1 | 1 | 0.070 |

Manual closing mechanism.

|                |                       |   |   |       |
|----------------|-----------------------|---|---|-------|
| <b>11 G454</b> | For BF00, BF09...BF38 | 1 | 1 | 0.021 |
| <b>11 G455</b> | For BF40...BF94       | 1 | 1 | 0.021 |
| <b>BFX64 2</b> | For BF95...BF150      | 1 | 1 | 0.021 |

Quick connect surge suppressors for BF00A, BF09A...BF150A contactors.

|                  |                                   |   |       |
|------------------|-----------------------------------|---|-------|
| <b>BFX77 048</b> | ≤48VAC/DC (Varistor)              | 5 | 0.012 |
| <b>BFX77 125</b> | 48...125VAC/DC (Varistor)         | 5 | 0.012 |
| <b>BFX77 240</b> | 125...240VAC/DC (Varistor)        | 5 | 0.012 |
| <b>BFX79 048</b> | ≤48VAC (Resistor-Capacitor)       | 5 | 0.012 |
| <b>BFX79 125</b> | 48...125VAC (Resistor-Capacitor)  | 5 | 0.012 |
| <b>BFX79 240</b> | 125...240VAC (Resistor-Capacitor) | 5 | 0.012 |
| <b>BFX79 415</b> | 240...415VAC (Resistor-Capacitor) | 5 | 0.012 |

① Different sized contactors can be interlocked.  
Example: BF09...BF25 with BF26...BF38.

② Replace with the digit of the voltage if 50 or 60Hz and with the letter C followed by the digit of the voltage if DC.

Standard voltages are:

– AC 50/60Hz 24 (indicate 24) - 48 (indicate 48) - 110...125 (indicate 110) - 220...240 (indicate 220) - 380...415V (indicate 380).  
12 (indicate 12) - 24 (indicate 24) - 48 (indicate 48) - 110...125 (indicate 110) - 220...240V (indicate 220).

NOTE: All contactors BF series, equipped with DC or AC/DC electronic coil, have built-in surge suppressor filter.

### Operational characteristics

| Type                                          |        | BFX42<br>BFXD42 | BFX43       | BFX44     | BFX5001<br>BFX53 01<br>BFX54 01 |
|-----------------------------------------------|--------|-----------------|-------------|-----------|---------------------------------|
| IEC conventional free air thermal current Ith | A      | 56              | 115         | 165       | 10                              |
| IEC rated insulation voltage Ui               | V      | 690             | 1000        | 1000      | 690                             |
| Terminals: Screw                              |        | M4              | M6          | M8        | M3                              |
| Width                                         | mm     | 12.5            | 9.6         | 14.5      | 7                               |
| Tightening torque                             | Nm     | 2.5...3         | 4...5       | 5.5...6.5 | 0.8...1                         |
|                                               | lbin   | 21.6...26.4     | 35.4...44.2 | 48...57   | 7...9                           |
| Conductor section maximum with 1 or 2 cables  |        |                 |             |           |                                 |
| flexible w/o lug                              | mm²    | 16              | 35          | 70        | 2.5                             |
| flexible c/w lug                              | mm²    | 16              | 35          | 70        | 2.5                             |
| AWG                                           | n°     | 6               | 2           | 2/0       | 14                              |
| Terminal protection per IEC/EN60529           |        | IP20            | IP20        | IP20      | IP20                            |
| UL/CSA and IEC/EN 60947-5-1 designation       | AC     | —               | —           | —         | A600                            |
|                                               | DC     | —               | —           | —         | Q600                            |
| Mechanical life (million)                     | cycles | 20              | 15          | 15        | 10                              |

| Type                            |         | G222...  | G272...  | BFX64 1  |
|---------------------------------|---------|----------|----------|----------|
| Rated control circuit voltage   |         |          |          |          |
| AC (50/60Hz)                    | V       | 24...415 | 24...415 | 24...415 |
| DC                              | V       | 12...240 | 12...240 | 12...240 |
| Power consumption with control: |         |          |          |          |
| AC                              | VA      | 40       | 40       | 40       |
| DC                              | W       | 70       | 70       | 70       |
| Minimum energising:             |         |          |          |          |
| drop-out                        | ms      | 10       | 10       | 10       |
| pick-up                         | ms      | 100      | 200      | 200      |
| Tightening torque               |         |          |          |          |
| Nm                              | 0.8...1 | 0.8...1  | 0.8...1  | 0.8...1  |
| lbin                            | 7...9   | 7...9    | 7...9    | 7...9    |
| Conductor section               |         |          |          |          |
| Maximum with 1 or 2 cables      |         |          |          |          |
| flexible w/o lug                | mm²     | 4        | 4        | 4        |
| flexible c/w lug                | mm²     | 2.5      | 2.5      | 2.5      |
| AWG                             | n°      | 14...12  | 14...12  | 14...12  |

③ The condition is front IP20 protection.

### Maximum assembly combination of add-on blocks

See pages 2-19, 2-22...25.

### Certifications and compliance

Certifications obtained:

| Type                    | UL | cULus | CSA | EAC |
|-------------------------|----|-------|-----|-----|
| BFX42 - BFXD42 - BFXD43 | —  | ●     | —   | ●   |
| BFX50...                | —  | ●     | —   | ●   |
| BFX77...                | —  | ●     | —   | ●   |
| BFX79...                | —  | ●     | —   | ●   |
| BFX5...                 | ●  | —     | —   | —   |
| G222...                 | ●  | —     | ●   | ●   |
| G272...                 | ●  | —     | ●   | ●   |

● Certified products.

UL - UL Recognized for USA only (File E93601) as Auxiliary Devices Component.

Products having this type of marking are intended for use as components of complete workshop-assembled equipment.

cULus - UL Listed for USA and Canada (cULus - File E93602) as Magnetic motor controllers.

CSA - CSA certified for Canada only (File 54332) as Auxiliary Devices for motor controllers.

Compliant with standards: IEC/EN 60947-1, UL 60947-1, CSA C22.2 n° 60947-1. IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1 for auxiliary contacts IEC/EN 60947-4-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1 for four poles.

## 2 Contactors

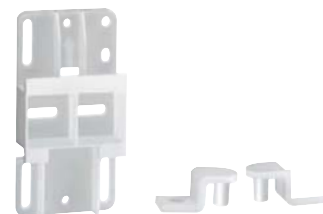
Add-on blocks and accessories for BF series contactors



BFX31...  
BFX32...



BFX 80



BFX89 01

BFX89 02



11 BA135  
11 BA235

11 BA435



11 G231  
11 G232

| Order code                                                         | Characteristics                                                                         | Qty<br>per<br>pkg<br>n° | Wt<br>[kg] |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------|------------|
| Rigid connecting kits for three-pole reversing contactor assembly. |                                                                                         |                         |            |
| <b>BFX31 01</b>                                                    | For contactors BF09...BF25 side by side with BFX50 02 and BFX50 03 mechanical interlock | 1                       | 0.052      |
| <b>BFX31 02</b>                                                    | For contactors BF09...BF25 side by side with BFX50 00 or BFX50 01 mechanical interlock  | 1                       | 0.054      |
| <b>BFX32 01</b>                                                    | For contactors BF26...BF38 side by side with BFX50... mechanical interlock              | 1                       | 0.060      |
| Rigid connecting kits for star-delta starters.                     |                                                                                         |                         |            |
| <b>BFX31 31</b>                                                    | For contactors BF09...BF25                                                              | 1                       | 0.058      |
| <b>BFX32 31</b>                                                    | For contactors BF26...BF38                                                              | 1                       | 0.064      |
| <b>BFX32 32</b>                                                    | For contactors BF26...BF38 (L/Δ) BF09...BF25 (Δ)                                        | 1                       | 0.064      |
| Sealing cover.                                                     |                                                                                         |                         |            |
| <b>BFX80</b>                                                       | Sealing cover for contactors BF00 and BF09 ... BF38                                     | 10                      | 0.001      |
| Screw fixing adapters for contactors.                              |                                                                                         |                         |            |
| <b>BFX89 01</b>                                                    | Universal base to screw fix BF09...BF38 contactors                                      | 5                       | 0.016      |
| <b>BFX89 02</b>                                                    | Screw fixing brackets for BF09...BF38 contactors                                        | 10                      | 0.002      |
| Paralleling links.                                                 |                                                                                         |                         |            |
| <b>11 BA135</b>                                                    | 2 poles for contactors BF09...BF25 types                                                | 10                      | 0.001      |
| <b>11 BA235</b>                                                    | 2 poles for contactors BF26...BF38 types                                                | 10                      | 0.003      |
| <b>11 BA435</b>                                                    | 3 poles for contactors BF95...BF150 types                                               | 10                      | 0.030      |
| One-pole enlarged terminals.                                       |                                                                                         |                         |            |
| <b>11 G231</b>                                                     | 1x6mm <sup>2</sup> for contactors BF09...BF25 types                                     | 12                      | 0.009      |
| <b>11 G232</b>                                                     | 1x16mm <sup>2</sup> for contactors BF26...BF38 types                                    | 12                      | 0.014      |
| Marking element for BF00, BF09...BF150 contactors.                 |                                                                                         |                         |            |
| <b>BFX30</b>                                                       | Blank label for writing                                                                 | 50                      | 0.001      |

### Operational characteristics

| Type              |      | G231    | G232  |
|-------------------|------|---------|-------|
| Tightening torque | Nm   | 1.5-1.8 | 2.5-3 |
|                   | lbin | 13.2-18 | 7-9   |
| Tool              | Type | PH1     | PH2   |

### Certifications and compliance

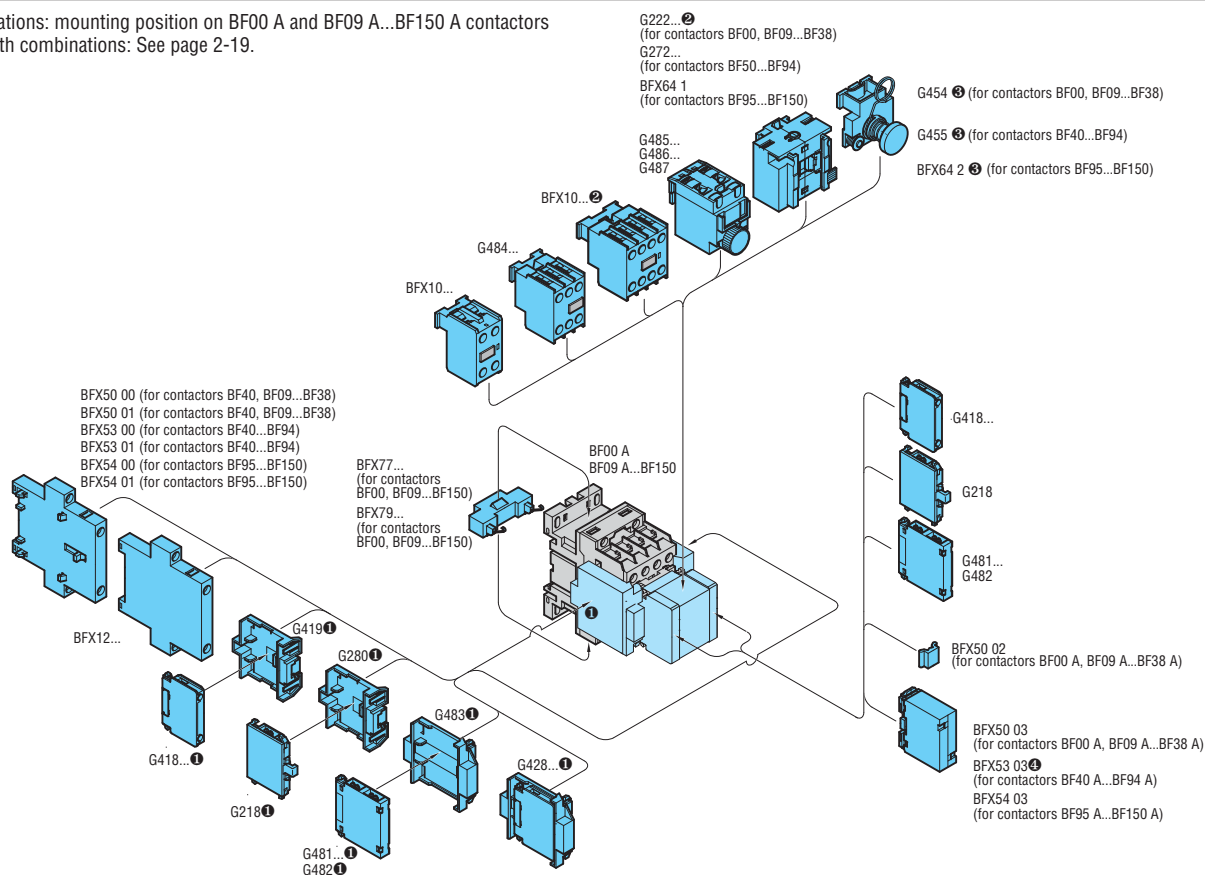
Certifications obtained: GOST for all; UL Listed, for USA and Canada (cULus - File E93602), under Magnetic Motor Controllers for BFX31 01, BFX31 02, BFX32 01, BFX31 31, BFX32 31 and BFX32 32 as rigid kits, G271 and G288 as enlarged terminal kits; EAC for all. Compliant with standards: IEC/EN 60947-1, UL 60947-1, CSA C22.2 n° 60947-1.

## 2 Contactors

Add-on blocks and accessories for BF series contactors

### Add-on blocks for AC and AC/DC contactors

Combinations: mounting position on BF00 A and BF09 A...BF150 A contactors  
Table with combinations: See page 2-19.



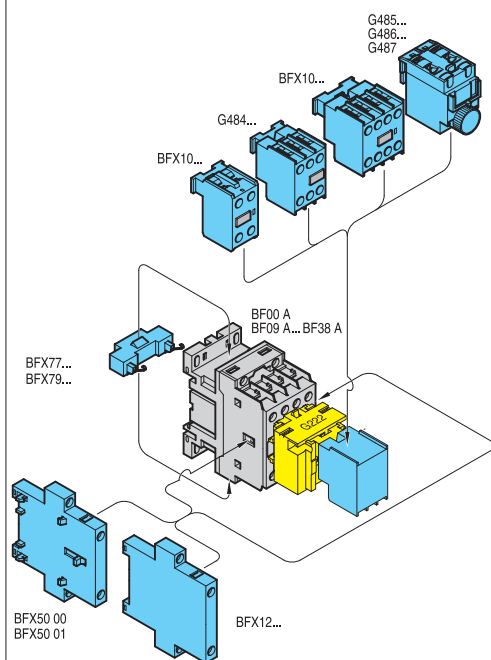
① Mounting is not possible if front lateral contacts or mechanical interlock BFX50 00 or BFX50 01 are mounted. BF00, BF09...38 cannot be fitted with BFX10 with 4 contacts or G222...

② Refer to the diagram below for use with G222... on contactors BF00 A and BF09 A...BF38 A and to the table of combinations on page 2-19.

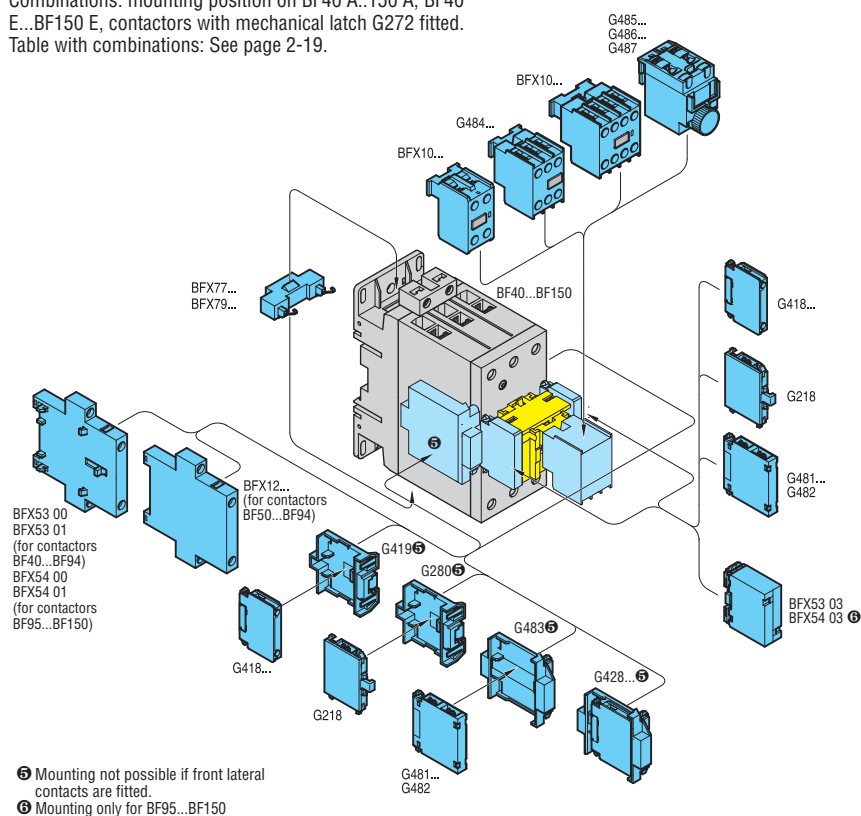
③ No add-on block can be mounted on front when the manual closing mechanism G454 or G455 is fitted.

④ BFX53 03 cannot be mounted if a contact block BFX10... with 4 contacts (BFX10 04, BFX10 13, BFX10 22, BFX10 31, BFX10 40) is installed.

Combinations: mounting position on BF00 A and BF09 A-BF38 A contactors with mechanical latch G222 fitted.  
Table with combinations: See page 2-19.



Combinations: mounting position on BF40 A...150 A, BF40 E...BF150 E, contactors with mechanical latch G272 fitted.  
Table with combinations: See page 2-19.

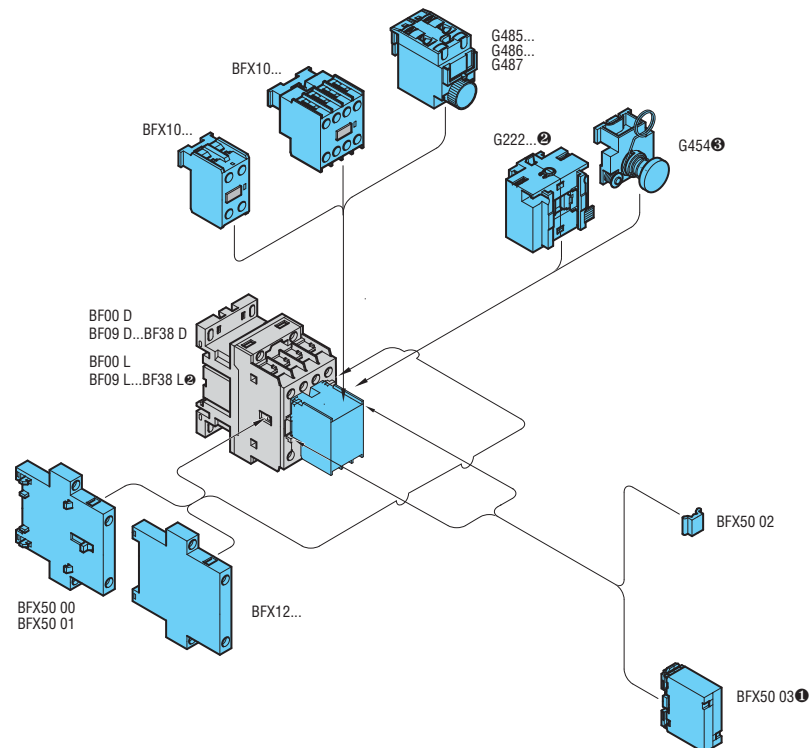


⑤ Mounting not possible if front lateral contacts are fitted.

⑥ Mounting only for BF95...BF150

#### Add-on blocks for DC and DC low consumption contactors

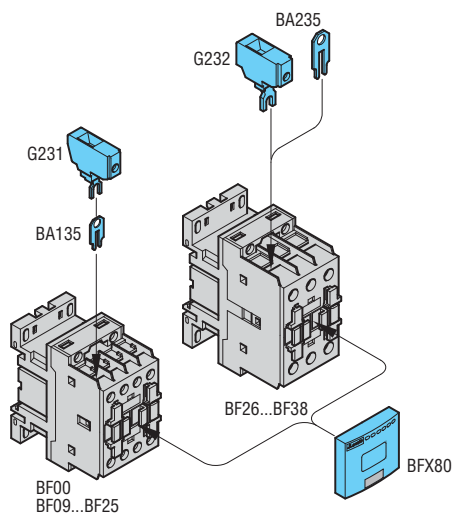
Combinations: mounting position on BF00 and BF09-BF38, D and L versions  
Table with combinations: See page 2-19.



- ❶ Mounting not possible when the G222 mechanical latch is fitted.
- ❷ The G222 mechanical latch cannot be fitted on BF26 L - BF38 L four-pole types.
- ❸ No add-on block can be mounted on front when the G454 manual closing mechanism is fitted.

#### Accessories for AC, DC and DC low consumption contactors

Combinations

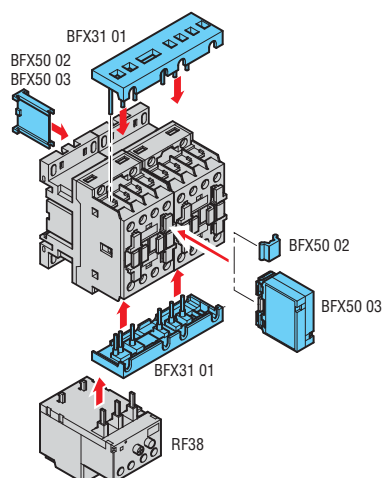


## 2 Contactors

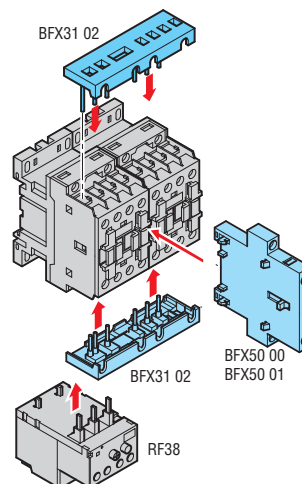
Add-on blocks and accessories for BF series contactors

### Accessories for AC, DC and DC low consumption contactors

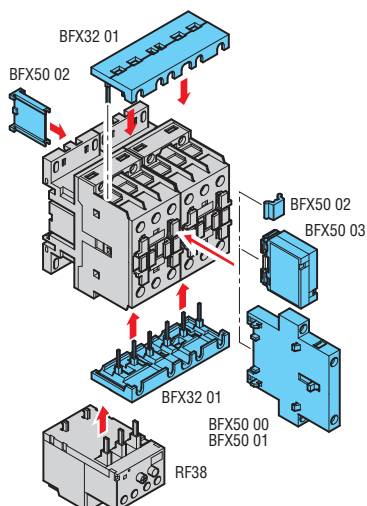
Connections for reversing contactors with contactors BF09...BF25



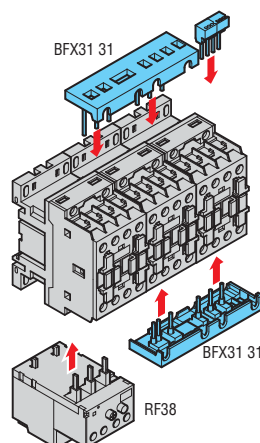
Connections for reversing contactors with contactors BF09...BF25 and mechanical interlock BFX50 00 or BFX50 01



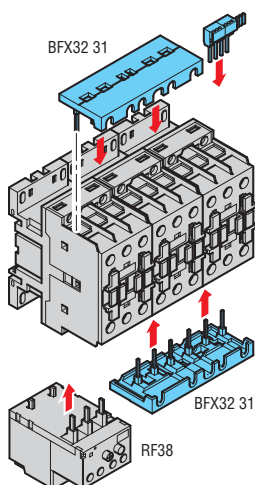
Connections for reversing contactors with contactors BF26...BF38



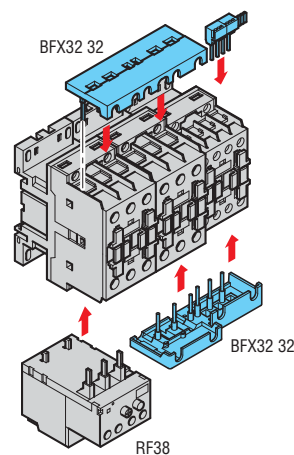
Rigid star-delta starter assembly connecting kits for BF09...BF25 contactors



Rigid star-delta starter assembly connecting kits for BF26...BF38 contactors



Rigid star-delta starter assembly connecting kits for BF26...BF38 (line-delta) and BF09...BF25 (star) contactors



## 2 Contactors

Add-on blocks and accessories for B series contactors

### Add-on blocks



11 G350 - 11 G354



11 G358

### Accessories



11 G361 - 11 G363



11 G527 - 11 G528 - 11 G529  
11 G530



11 G370



11 G371

| Order code | Characteristics | Max<br>qty per<br>contactor | Qty<br>per<br>pk | Wt<br>sg |
|------------|-----------------|-----------------------------|------------------|----------|
|            |                 | n°                          | n°               | [kg]     |

Auxiliary contacts.  
Faston terminals. Side mounting.

|                |                                  |   |   |       |
|----------------|----------------------------------|---|---|-------|
| <b>11 G350</b> | 2NO+1NC or<br>1NO+2NC reversible | 4 | 1 | 0.082 |
| <b>11 G354</b> | 1NO+1NC                          | 4 | 1 | 0.078 |

Adapter.

|                |                                                                                                                                                                       |   |   |       |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|-------|
| <b>11 G358</b> | For fitting auxiliary<br>contacts BFX10...,<br>with 2 contacts,<br>G484..., G485...,<br>G486... and G487<br>on contactors<br>B145...B630 1000<br>described on p. 2-26 | 4 | 5 | 0.050 |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|-------|

Mechanical interlock.

|                  |                     |   |   |       |
|------------------|---------------------|---|---|-------|
| <b>11 G355</b>   | Side by side        | 1 | 1 | 0.026 |
| <b>11 G356 1</b> | One on top of other | 1 | 1 | 0.120 |
| <b>11 G356 2</b> | One on top of other | 1 | 1 | 0.126 |
| <b>11 G356 3</b> | One on top of other | 1 | 1 | 0.132 |
| <b>11 G356 4</b> | One on top of other | 1 | 1 | 0.140 |
| <b>11 G356 5</b> | One on top of other | 1 | 1 | 0.146 |
| <b>11 G356 6</b> | One on top of other | 1 | 1 | 0.150 |

Mechanical latch.

|                |                 |   |   |       |
|----------------|-----------------|---|---|-------|
| <b>11 G495</b> | For B145...B630 | 1 | 1 | 0.795 |
|----------------|-----------------|---|---|-------|

| Order code | Characteristics | Qty<br>per<br>pkg | Wt   |
|------------|-----------------|-------------------|------|
|            |                 | n°                | [kg] |

Power terminal protection.

|                |                               |   |       |
|----------------|-------------------------------|---|-------|
| <b>11 G361</b> | For contactors B145-B180      | 6 | 0.026 |
| <b>11 G363</b> | For contactors B250-B310-B400 | 6 | 0.046 |
| <b>11 G527</b> | For contactor B500            | 1 | 0.238 |
| <b>11 G528</b> | For contactor B500 4          | 1 | 0.265 |
| <b>11 G529</b> | For contactor B630            | 1 | 0.238 |
| <b>11 G530</b> | For contactor B630 4          | 1 | 0.266 |

3 pole star connecting bars.

|                  |                               |   |       |
|------------------|-------------------------------|---|-------|
| <b>11 BA1595</b> | For contactors B145-B180      | 1 | 0.065 |
| <b>11 BA1721</b> | For contactors B250-B310-B400 | 1 | 0.140 |
| <b>11 BA1846</b> | For contactors B500-B630      | 1 | 0.341 |

2 pole bars for parallel arrangement.

|                  |                               |   |       |
|------------------|-------------------------------|---|-------|
| <b>11 BA1594</b> | For contactors B145-B180      | 1 | 0.095 |
| <b>11 BA1720</b> | For contactors B250-B310-B400 | 1 | 0.149 |
| <b>11 BA1845</b> | For contactors B500-B630      | 1 | 0.322 |

Terminal adapter.

|                |                                                                                          |    |       |
|----------------|------------------------------------------------------------------------------------------|----|-------|
| <b>11 G370</b> | To transform Faston terminals<br>of auxiliary contacts and coils<br>into screw terminals | 10 | 0.003 |
| <b>11 G371</b> | To transform both coil<br>Faston terminals into screw<br>terminals                       | 5  | 0.022 |

### Operational characteristics of auxiliary contacts

| Type                                              |        | G350-G354               |
|---------------------------------------------------|--------|-------------------------|
| IEC conventional free-air thermal<br>current Ith  | A      | 16                      |
| IEC rated insulation voltage Ui                   | V      | 690                     |
| Terminals Faston                                  |        | 1-6.35x0.8<br>2-2.8x0.8 |
| Conductor section maximum<br>(with 1 or 2 cables) |        |                         |
| flexible c/w lug                                  | mm²    | 2.5                     |
| AWG                                               | n°     | 14                      |
| UL/CSA and IEC/EN 60947-5-1<br>designation        | AC     | A600                    |
|                                                   | DC     | P600                    |
| Mechanical life (million)                         | cycles | 5                       |

| Type                                |    | G495      |
|-------------------------------------|----|-----------|
| Rated AC control circuit<br>voltage |    |           |
| AC (50/60Hz)                        | V  | 48...480  |
| DC                                  | V  | 48...480  |
| Power consumption with control in:  |    |           |
| AC                                  | VA | 1500      |
| DC                                  | W  | 1100      |
| Minimum energising:                 |    |           |
| drop-out                            | ms | 40        |
| pick-up                             | ms | 300       |
| Terminals Faston                    |    | 1-6.3x0.8 |

| Type                                      |      | G370-G371 |
|-------------------------------------------|------|-----------|
| Tightening torque                         |      |           |
|                                           | Nm   | 1         |
|                                           | lbin | 8.9       |
| Tool                                      | Type | PH2       |
| Conductor section<br>(with 1 or 2 cables) |      |           |
|                                           | mm²  | 4         |
|                                           | AWG  | 10        |

### Certifications and compliance

Certifications obtained:

| Type     | UL | CSA | EAC | CCC |
|----------|----|-----|-----|-----|
| G350     | UL | ●   | ●   | ●   |
| G354     | UL | ●   | ●   | —   |
| G355     | —  | ●   | ●   | —   |
| G356 ... | —  | ●   | ●   | —   |
| G361     | —  | ●   | ●   | —   |
| G362     | —  | ●   | ●   | —   |
| G363     | —  | ●   | ●   | —   |
| G370     | —  | ●   | ●   | —   |

● Certified products.

UL - UL Recognized for USA only (File E93601) as Auxiliary Devices - Component.

Products having this type of marking are intended for use as components of complete workshop-assembled equipment.

CSA - CSA certified for Canada only (File 54332) as Auxiliary Devices for motor controllers.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL 60947-1, UL 60947-4-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14; add-on auxiliary contacts also comply with: IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1.

① Only for B145-B180-B250-B310-B400-B500-B630-B630 1000.

② Not suitable for B630 1000-B1250-B1600.

③ For use with three-pole B630 1000, consult Technical support for information; see contact details on inside front cover.

④ Allowed distances see page 2-68.

⑤ For contactors B1250 and B1600, two G356 6 mechanical interlocks are required.

⑥ Replace with the digit of the voltages if 50 or 60 Hz or with the letter C followed by voltage if DC. The standard voltages are:  
— AC 50/60Hz 48 - 110...125 (indicate 110) - 220...240 (indicate 220) - 380...415 (indicate 380)

— DC 48 - 110...125 (indicate 110) - 220...240 (indicate 220).

⑦ It can be mounted only in contactors if predisposed for it. Technical support for information; see contact details on inside front cover.

⑧ Not suitable for B310 and B310 4.

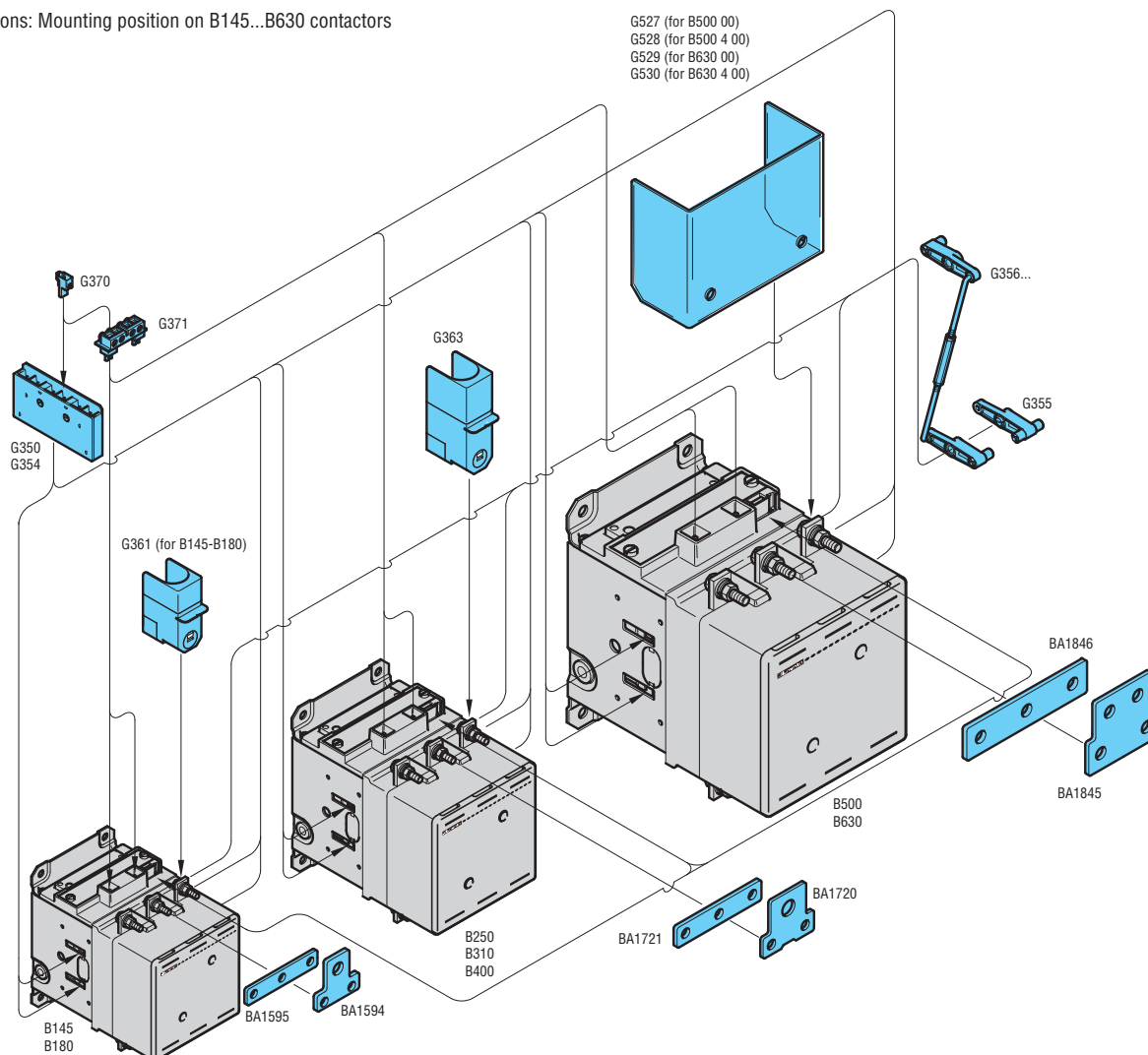
⑨ Provided for one pole terminal only. Example: For three-pole contactors, purchase 3 pieces for the upper terminals only or 6 pieces for all upper and lower terminals.

⑩ Replace with the required alphanumeric symbol; each package contains 100 pieces of the same symbol.

## 2 Contactors

Add-on blocks and accessories for B series contactors

Combinations: Mounting position on B145...B630 contactors

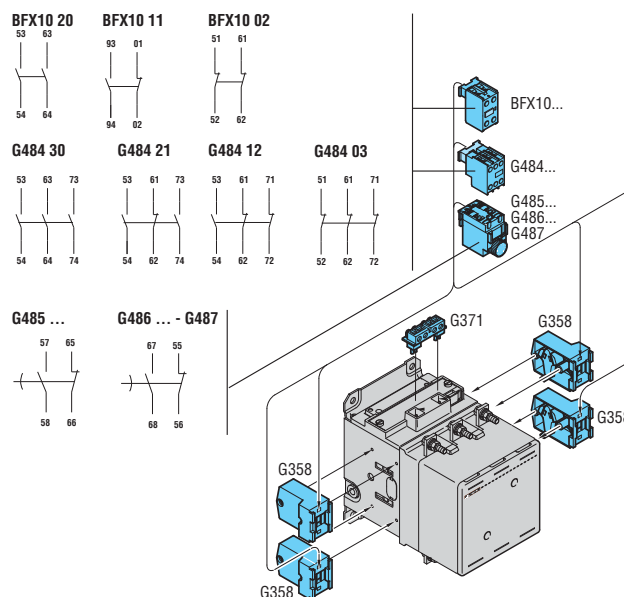
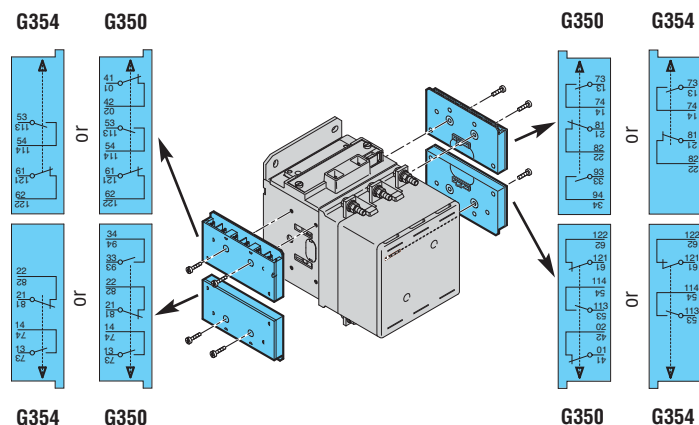


The add-on auxiliary contact blocks G350 and G354 can be applied to contactors B145-B630 1000 only up to a maximum of four pieces for each contactor, for a total of 12 contacts.

The contact block G350 provides a 2NO+1NC or 1NO+2NC combination depending on its mounting position; see the drawing below. The G354 block consists of 1NO+1NC.

Contact blocks, BFX10 with 2 contacts, G484, G485, G486 and G487 types, can be mounted using the G358 adapter, refer to page 2-18 for exact types and order codes of the blocks.

A maximum of four adapters can be possibly used per contactor and each adapter can hold one BFX10, G484, G485, G486 and G487.



## 2 Contactors

Spare parts for BF series contactors

### AC coils



BFX91A...



BFX92A...



BFX93A...



BFX94 A...

| Order code | Rated frequency and voltage |     | Qty per pkg | Wt   |
|------------|-----------------------------|-----|-------------|------|
|            | [Hz]                        | [V] | n°          | [kg] |

For contactors BF00 A-BF09 A-BF12 A-BF18 A-BF25 A.

|               |       |        |   |       |
|---------------|-------|--------|---|-------|
| BFX91 A024    | 50/60 | 24VAC  | 1 | 0.085 |
| BFX91 A048    |       | 48VAC  | 1 | 0.085 |
| BFX91 A110    |       | 110VAC | 1 | 0.085 |
| BFX91 A230    |       | 230VAC | 1 | 0.085 |
| BFX91 A400    | 60    | 400VAC | 1 | 0.085 |
| BFX91 A024 60 |       | 24VAC  | 1 | 0.085 |
| BFX91 A048 60 |       | 48VAC  | 1 | 0.085 |
| BFX91 A120 60 |       | 120VAC | 1 | 0.085 |
| BFX91 A220 60 |       | 220VAC | 1 | 0.085 |
| BFX91 A230 60 |       | 230VAC | 1 | 0.085 |
| BFX91 A460 60 |       | 460VAC | 1 | 0.085 |
| BFX91 A575 60 |       | 575VAC | 1 | 0.085 |

For contactors BF26 A-BF32 A-BF38 A.

|               |       |        |   |       |
|---------------|-------|--------|---|-------|
| BFX92A 024    | 50/60 | 24VAC  | 1 | 0.088 |
| BFX92A 048    |       | 48VAC  | 1 | 0.088 |
| BFX92A 110    |       | 110VAC | 1 | 0.088 |
| BFX92A 230    |       | 230VAC | 1 | 0.088 |
| BFX92A 400    | 60    | 400VAC | 1 | 0.088 |
| BFX92A 024 60 |       | 24VAC  | 1 | 0.088 |
| BFX92A 048 60 |       | 48VAC  | 1 | 0.088 |
| BFX92A 120 60 |       | 120VAC | 1 | 0.088 |
| BFX92A 220 60 |       | 220VAC | 1 | 0.088 |
| BFX92A 230 60 |       | 230VAC | 1 | 0.088 |
| BFX92A 460 60 |       | 460VAC | 1 | 0.088 |
| BFX92A 575 60 |       | 575VAC | 1 | 0.088 |

For contactors BF40 A-BF50 A-BF65 A-BF80 A-BF94 A.

|               |       |        |   |       |
|---------------|-------|--------|---|-------|
| BFX93 A024    | 50/60 | 24VAC  | 1 | 0.150 |
| BFX93 A048    |       | 48VAC  | 1 | 0.150 |
| BFX93 A110    |       | 110VAC | 1 | 0.150 |
| BFX93 A230    |       | 230VAC | 1 | 0.150 |
| BFX93 A400    | 60    | 400VAC | 1 | 0.150 |
| BFX93 A024 60 |       | 24VAC  | 1 | 0.150 |
| BFX93 A048 60 |       | 48VAC  | 1 | 0.150 |
| BFX93 A120 60 |       | 120VAC | 1 | 0.150 |
| BFX93 A220 60 |       | 220VAC | 1 | 0.150 |
| BFX93 A230 60 |       | 230VAC | 1 | 0.150 |
| BFX93 A460 60 |       | 460VAC | 1 | 0.150 |
| BFX93 A575 60 |       | 575VAC | 1 | 0.150 |

For contactors BF95 A-BF115 A-BF150 A.

|               |       |        |   |       |
|---------------|-------|--------|---|-------|
| BFX94 A024    | 50/60 | 24VAC  | 1 | 0.185 |
| BFX94 A048    |       | 48VAC  | 1 | 0.185 |
| BFX94 A110    |       | 110VAC | 1 | 0.185 |
| BFX94 A230    |       | 230VAC | 1 | 0.185 |
| BFX94 A400    | 60    | 400VAC | 1 | 0.185 |
| BFX94 A024 60 |       | 24VAC  | 1 | 0.185 |
| BFX94 A048 60 |       | 48VAC  | 1 | 0.185 |
| BFX94 A120 60 |       | 120VAC | 1 | 0.185 |
| BFX94 A220 60 |       | 220VAC | 1 | 0.185 |
| BFX94 A230 60 |       | 230VAC | 1 | 0.185 |
| BFX94 A460 60 |       | 460VAC | 1 | 0.185 |
| BFX94 A575 60 |       | 575VAC | 1 | 0.185 |

① Four-terminal coil.

### Operational characteristics for BFX91 A, BFX92 A, BFX93 A and BFX94 A coils

AC control

|                              |   |          |
|------------------------------|---|----------|
| Rated voltage at 50/60, 60Hz | V | 12...600 |
|------------------------------|---|----------|

Operating voltage limits

|                              |              |      |          |
|------------------------------|--------------|------|----------|
| 50/60Hz coil 50Hz powered at | pick-up      | % Us | 80...110 |
|                              |              | % Us | 20...55  |
|                              | 60Hz pick-up | % Us | 85...110 |
|                              |              | % Us | 20...55  |
| 60Hz coil powered at 60Hz    | pick-up      | % Us | 80...110 |
|                              | drop-out     | % Us | 20...55  |

Average coil consumption at ≤20°C

|                                   |              |    | BFX91<br>BFX92 | BFX93 | BFX94 |
|-----------------------------------|--------------|----|----------------|-------|-------|
| 50/60Hz coil 50Hz coil powered at | in-rush      | VA | 75             | 210   | 300   |
|                                   |              | VA | 9              | 15    | 20    |
|                                   | 60Hz in-rush | VA | 70             | 195   | 275   |
|                                   |              | VA | 6.5            | 13    | 17    |
| 60Hz coil powered at 60Hz         | in-rush      | VA | 75             | 210   | 300   |
|                                   | holding      | VA | 9              | 15    | 20    |

|             |         |   |     |   |     |
|-------------|---------|---|-----|---|-----|
| Dissipation | at 50Hz | W | 2.5 | 5 | 6.5 |
|-------------|---------|---|-----|---|-----|

### Materials

Class F enamelled copper wire.

### Special versions

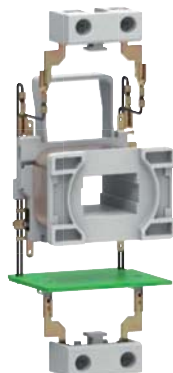
For coils with non standard voltages, consult Technical support for information; see contact details on inside front cover.

**new**

## 2 Contactors

Spare parts for BF series contactors

### AC/DC and DC coils



BFX93 E...



BFX94 E...

| Order code | Rated voltage | Qty per pkg | Wt   |
|------------|---------------|-------------|------|
|            | [V]           | n°          | [kg] |

For contactors BF40 E-BF50 E-BF65 E-BF80 E-BF94 E<sup>①</sup>.

|                               |                  |   |       |
|-------------------------------|------------------|---|-------|
| <b>BFX93 E024<sup>②</sup></b> | 20...48V AC/DC   | 1 | 0.190 |
| <b>BFX93 E110<sup>②</sup></b> | 60...110V AC/DC  | 1 | 0.190 |
| <b>BFX93 E230<sup>②</sup></b> | 100...250V AC/DC | 1 | 0.190 |

For contactors BF95 E-BF115 E-BF150 E.

|                               |                  |   |       |
|-------------------------------|------------------|---|-------|
| <b>BFX94 E024<sup>②</sup></b> | 20...48V AC/DC   | 1 | 0.225 |
| <b>BFX94 E110<sup>②</sup></b> | 60...110V AC/DC  | 1 | 0.225 |
| <b>BFX94 E230<sup>②</sup></b> | 100...250V AC/DC | 1 | 0.225 |

**new**

**NOTE: no coil replacement for contactors BF00 D, BF09 D-BF38 D, BF00 L, BF09 L-BF38 L is possible.**

- ① For BF80 T2 E... contactors the coil supply voltage must be AC or smoothed DC. For pulsating DC please consult our Technical support.
- ② Four-terminal coil.

#### Operational characteristics for BFX93 E coil

AC/DC control

|                                   |          |                            |
|-----------------------------------|----------|----------------------------|
| Rated voltage                     | V        | 20...250                   |
| Operating voltage limits:         | pick-up  | % Us 80...110 <sup>①</sup> |
| 50/60 Hz coil powered at or in DC | drop-out | % Us 20...25 <sup>②</sup>  |
| Average coil cons. at ≤20°C       | in-rush  | W 45...75                  |
|                                   | holding  | W 1.2...2.1                |

#### Operational characteristics for BFX94 E...

AC/DC control

|                                   |          |                            |
|-----------------------------------|----------|----------------------------|
| Rated voltage                     | V        | 20...250                   |
| Operating voltage limits:         | pick-up  | % Us 80...110 <sup>①</sup> |
| 50/60 Hz coil powered at or in DC | drop-out | % Us 20...25 <sup>②</sup>  |
| Average coil cons. at ≤20°C       | in-rush  | W 65...110                 |
|                                   | holding  | W 1.8...3                  |

- ① For electronically controlled AC/DC coils 80% of Us min. and 110% of Us max.
- ② For electronically controlled AC/DC coils 20% of Us min. and 55% of Us max.

#### Materials

Class F enamelled copper wire.

#### Special versions

For coils with non standard voltages, consult Technical support for information; see contact details on inside front cover.

## 2 Contactors

### Spare parts for B series contactors

#### AC/DC coils



Coil



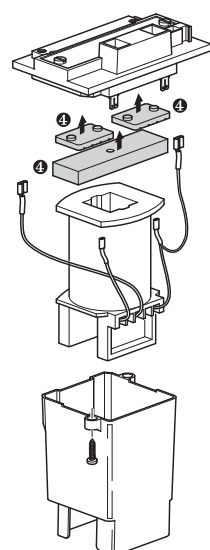
Bridge rectifier



Coil protection



Coil assembly



| Order code | Rated voltage<br>AC 50/60Hz and DC | Qty<br>per<br>pkg | Wt   |
|------------|------------------------------------|-------------------|------|
|            | [V]                                | n°                | [kg] |

Coil for B145-B180 contactors.

|                |                 |   |       |
|----------------|-----------------|---|-------|
| 11 BA11574 24  | 24VAC/DC        | 1 | 0.800 |
| 11 BA11574 48  | 48VAC/DC        | 1 | 0.800 |
| 11 BA11574 60  | 60VAC/DC        | 1 | 0.800 |
| 11 BA11574 110 | 110...125VAC/DC | 1 | 0.800 |
| 11 BA11574 220 | 220...240VAC/DC | 1 | 0.800 |
| 11 BA11574 380 | 380...415VAC/DC | 1 | 0.800 |
| 11 BA11574 440 | 440...480VAC/DC | 1 | 0.800 |

Coil for B250-B310-B400 contactors.

|               |                 |   |       |
|---------------|-----------------|---|-------|
| 11 BA1699 24  | 24VAC/DC        | 1 | 1.800 |
| 11 BA1699 48  | 48VAC/DC        | 1 | 1.800 |
| 11 BA1699 60  | 60VAC/DC        | 1 | 1.800 |
| 11 BA1699 110 | 110...125VAC/DC | 1 | 1.800 |
| 11 BA1699 220 | 220...240VAC/DC | 1 | 1.800 |
| 11 BA1699 380 | 380...415VAC/DC | 1 | 1.800 |
| 11 BA1699 440 | 440...480VAC/DC | 1 | 1.800 |

Coil for B500-B630-B630 1000 contactors.

|               |                 |   |       |
|---------------|-----------------|---|-------|
| 11 BA1800 48  | 48VAC/DC        | 1 | 3.400 |
| 11 BA1800 60  | 60VAC/DC        | 1 | 3.400 |
| 11 BA1800 110 | 110...125VAC/DC | 1 | 3.400 |
| 11 BA1800 220 | 220...240VAC/DC | 1 | 3.400 |
| 11 BA1800 380 | 380...415VAC/DC | 1 | 3.400 |
| 11 BA1800 440 | 440...480VAC/DC | 1 | 3.400 |

Coil for B1250-B1600 contactors.

|                |               |   |       |
|----------------|---------------|---|-------|
| 11 BA1800 110① | 110...125VAC① | 1 | 3.400 |
| 11 BA1800 220① | 220...240VAC① | 1 | 3.400 |

| Order code | For contactor | Qty<br>per<br>pkg | Wt   |
|------------|---------------|-------------------|------|
|            |               | n°                | [kg] |

Bridge rectifier (Faston terminals).

|              |                                    |   |       |
|--------------|------------------------------------|---|-------|
| 11 BA1575 1⑤ | B145-B180                          | 1 | 0.170 |
| 11 BA1700 1⑤ | B250-B310-B400                     | 1 | 0.230 |
| 11 BA1799⑤   | B500-B630-B630 1000<br>B1250-B1600 | 1 | 0.520 |

Coil protection.

|           |                                    |   |       |
|-----------|------------------------------------|---|-------|
| 11 BA1553 | B145-B180                          | 1 | 0.042 |
| 11 BA1678 | B250-B310-B400                     | 1 | 0.079 |
| 11 BA1803 | B500-B630-B630 1000<br>B1250-B1600 | 1 | 0.164 |

Coil assembly

(Coil, rectifier and coil protection).

|            |                                    |   |       |
|------------|------------------------------------|---|-------|
| 11 BA1546② | B145-B180                          | 1 | 1.220 |
| 11 BA1671② | B250-B310-B400                     | 1 | 2.290 |
| 11 BA1796② | B500-B630-B630 1000<br>B1250-B1600 | 1 | 4.650 |

① Available for AC supply only.

② Add the coil voltage digit. Standard voltages are:

- AC/DC 24 - 48 - 60 - 110...125 (indicate 110) - 220...240 (indicate 220) - 380...415 (indicate 380) - 440...480V (indicate 440).

Example: 11 BA1546 110 for B145-B180 contactor coil assembly suitable for 110-125VAC/DC supply.

③ Add the coil voltage digit. Standard voltages are:

- AC/DC 48 - 60 - 110...125 - 220...240 - 380...415 - 440...480V.

Example: 11 BA1796 110 for B500-B1600 contactor coil assembly suitable for 110-125VAC/DC supply.

For B1250 and B1600 only 110...125 and 220...240VAC voltages are available.

④ When replacing the coil, retrieve the dampers (1 pair for B145...B180 and 2 pairs for B250...B1600) and the fixed core and refit them with the new coil.

⑤ For contactors with coil voltage up to 415V. For higher voltages add suffix 440 to the code. E.G.: 11 BA1575 1 440.

#### Operational characteristics

AC and DC control

|                       |          |               |
|-----------------------|----------|---------------|
| For contactor type    |          | B145 - B180   |
| Supply voltage        |          | AC and DC     |
| Rated control voltage | V        | 24...480      |
| Operating limits      | pick-up  | % Us 80...110 |
|                       | drop-out | % Us 20...60  |
| Consumption           | in-rush  | VA/W 300      |
|                       | holding  | VA/W 10       |
| Dissipation           | W        | 10            |

|                       |          |                    |
|-----------------------|----------|--------------------|
| For contactor type    |          | B250 - B310 - B400 |
| Supply voltage        |          | AC and DC          |
| Rated control voltage | V        | 24...480           |
| Operating limits      | pick-up  | % Us 80...110      |
|                       | drop-out | % Us 20...60       |
| Consumption           | in-rush  | VA/W 300           |
|                       | holding  | VA/W 10            |
| Dissipation           | W        | 10                 |

|                       |          |                         |
|-----------------------|----------|-------------------------|
| For contactor type    |          | B500 - B630 - B630 1000 |
| Supply voltage        |          | AC and DC               |
| Rated control voltage | V        | 48...480                |
| Operating limits      | pick-up  | % Us 80...110           |
|                       | drop-out | % Us 20...60            |
| Consumption           | in-rush  | VA/W 400                |
|                       | holding  | VA/W 18                 |
| Dissipation           | W        | 18                      |

|                       |          |               |
|-----------------------|----------|---------------|
| For contactor type    |          | B1250 - B1600 |
| Supply voltage        |          | AC            |
| Rated control voltage | V        | 110/240       |
| Operating limits      | pick-up  | % Us 80...110 |
|                       | drop-out | % Us 20...60  |
| Consumption           | in-rush  | VA/W 800      |
|                       | holding  | VA/W 45       |
| Dissipation           | W        | 40            |

#### Materials

Class F enamelled copper wire.

#### Coil assembly

Comprises the coil, bridge rectifier, fixed core, coil protection, cross piece and fixing screws.

#### Special versions

For coils with non standard voltages, consult Technical support for information; see contact details on inside front cover.

## 2 Contactors

Spare parts for B series contactors

### Main contacts for BF contactors



BFX99...

new

| Order code                                              | For contactor | Qty per pkg | Wt    |
|---------------------------------------------------------|---------------|-------------|-------|
|                                                         |               | n°          | [kg]  |
| Main contacts.<br>3 or 4 pole set complete with screws. |               |             |       |
| BFX99 026T                                              | BF26 00       | 1           | 0.038 |
| BFX99 026F                                              | BF26 T4       | 1           | 0.051 |
| BFX99 032T                                              | BF32 00       | 1           | 0.070 |
| BFX99 038T                                              | BF38 00       | 1           | 0.070 |
| BFX99 038F                                              | BF38 T4       | 1           | 0.093 |
| BFX99 040T                                              | BF40 00       | 1           | 0.095 |
| BFX99 040F                                              | BF40T4        | 1           | 0.127 |
| BFX99 050T                                              | BF50 00       | 1           | 0.095 |
| BFX99 050F                                              | BF50 T4       | 1           | 0.127 |
| BFX99 065T                                              | BF65 00       | 1           | 0.095 |
| BFX99 065F                                              | BF65 T4       | 1           | 0.127 |
| BFX99 080T                                              | BF80 00       | 1           | 0.100 |
| BFX99 080F                                              | BF80 T4       | 1           | 0.130 |
| BFX99 094T                                              | BF94 00       | 1           | 0.100 |
| BFX99 095T                                              | BF95 00       | 1           | 0.210 |
| BFX99 095F                                              | BF95 T4       | 1           | 0.280 |
| BFX99 115T                                              | BF115 00      | 1           | 0.225 |
| BFX99 115F                                              | BF115 T4      | 1           | 0.300 |
| BFX99 150T                                              | BF150 00      | 1           | 0.225 |
| BFX99 150F                                              | BF150 T4      | 1           | 0.300 |

### Special versions

For non standard spare contact configurations, contact Technical support; see contact details on inside front cover.

NOTE: For B1250 and B1600 contactor spares, consult Technical support for information; see contact details on inside front cover.

### Main contacts and arc chutes for B contactors



11 G381... - 11 G382...  
11 G383... - 11 G384... - 11 G385...  
11 G525... - 11 G526... - 11 G537...

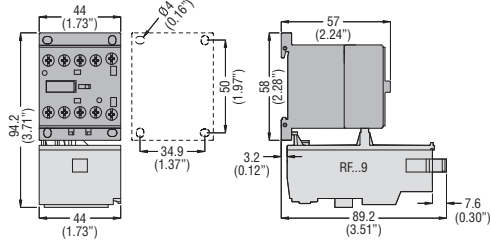
| Order code                                                                                    | For contactor             | Qty per pkg | Wt    |
|-----------------------------------------------------------------------------------------------|---------------------------|-------------|-------|
|                                                                                               |                           | n°          | [kg]  |
| Main contacts.<br>3 or 4 pole set complete with Allen screws and key for contact replacement. |                           |             |       |
| 11 G381                                                                                       | B145                      | 1           | 0.440 |
| 11 G381 4                                                                                     | B145 4                    | 1           | 0.580 |
| 11 G382                                                                                       | B180                      | 1           | 0.440 |
| 11 G382 4                                                                                     | B180 4                    | 1           | 0.580 |
| 11 G383                                                                                       | B250                      | 1           | 0.770 |
| 11 G383 4                                                                                     | B250 4                    | 1           | 1.030 |
| 11 G385                                                                                       | B310                      | 1           | 0.770 |
| 11 G385 4                                                                                     | B310 4                    | 1           | 1.030 |
| 11 G384                                                                                       | B400                      | 1           | 0.770 |
| 11 G384 4                                                                                     | B400 4                    | 1           | 1.030 |
| 11 G525                                                                                       | B500                      | 1           | 2.520 |
| 11 G525 4                                                                                     | B500 4                    | 1           | 3.360 |
| 11 G526                                                                                       | B630                      | 1           | 2.660 |
| 11 G526 4                                                                                     | B630 4                    | 1           | 3.550 |
| 11 G537                                                                                       | B630 1000                 | 1           | 2.660 |
| 11 G537 4                                                                                     | B630 1000 4               | 1           | 3.550 |
| 11 G538                                                                                       | B1250 24                  | 1           | 5.040 |
| 11 G538 4                                                                                     | B1250 4 24                | 1           | 6.720 |
| 11 G539                                                                                       | B1600 24                  | 1           | 5.320 |
| 11 G539 4                                                                                     | B1600 4 24                | 1           | 7.100 |
| Arc chutes.                                                                                   |                           |             |       |
| 11 BA1588                                                                                     | B145-B180                 | 1           | 0.755 |
| 11 BA1589                                                                                     | B145 4-B180 4             | 1           | 1.000 |
| 11 BA1713                                                                                     | B250-B310-B400            | 1           | 1.210 |
| 11 BA1714                                                                                     | B250 4-B310 4-B400 4      | 1           | 1.600 |
| 11 BA1838                                                                                     | B500-B630-B630 1000       | 1           | 1.910 |
| 11 BA1839                                                                                     | B500 4-B630 4-B630 1000 4 | 1           | 2.490 |



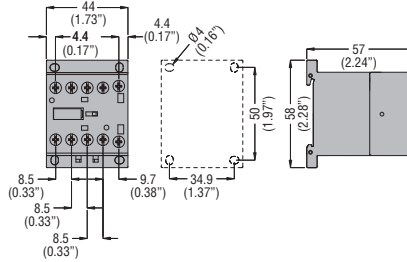
Arc chute

## BG... MINI-CONTACTORS WITH AC OR DC SUPPLY VOLTAGE

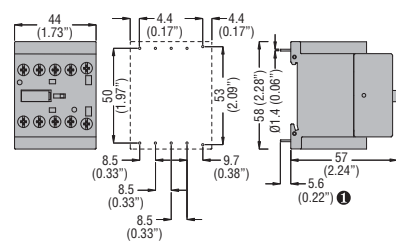
**BG...** three poles with screw terminals  
and **RF...9** thermal overload relay



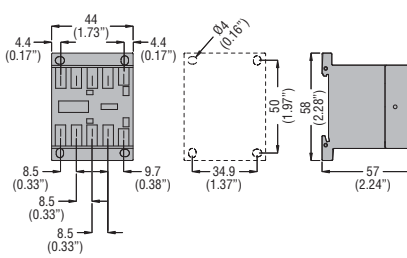
**BG...T...**  
four poles, with screw terminals



**BGP...**  
with rear PCB solder pins



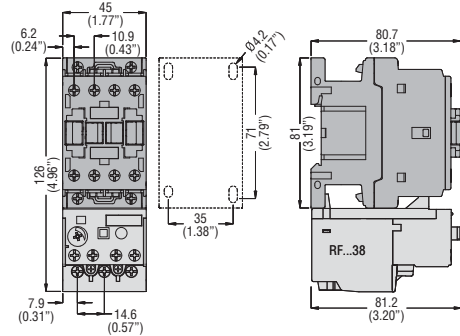
**BGF...**  
with Faston terminals



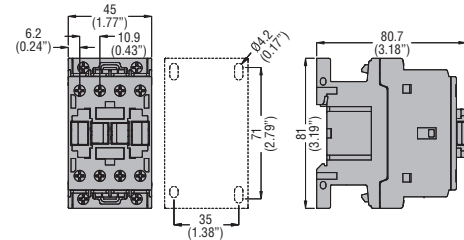
① Recommended PCB drillings 1.7-2mm.

## BF... CONTACTORS WITH AC SUPPLY VOLTAGE

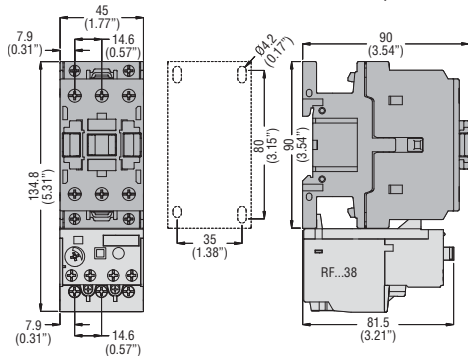
**BF00 A...** - **BF09 A...** - **BF12 A...** - **BF18 A...** - **BF25 A...** three poles with  
**RF...38** thermal overload relay



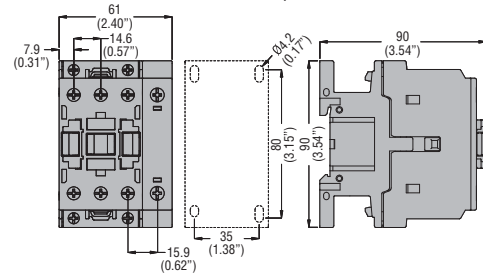
**BF09T...** - **BF12T...** - **BF18T...** four poles



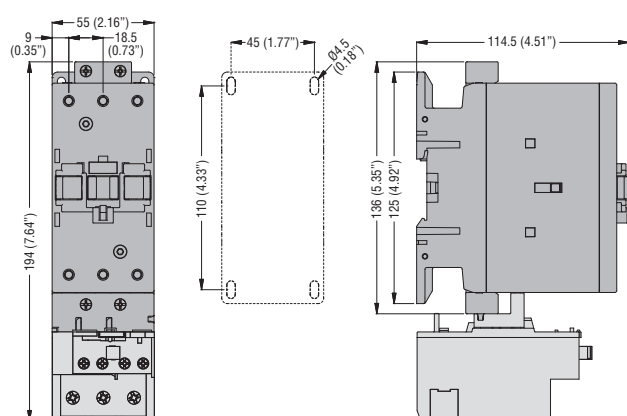
**BF26 00A...** - **BF32 00A...** - **BF38 00A...** three poles with **RF...38** thermal overload relay



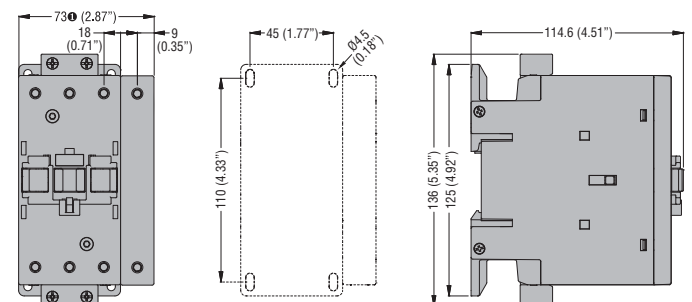
**BF26 T...** - **BF38 T...** four poles



**BF40 00A...** - **BF50 00A...** - **BF65 00A...** - **BF80 00A...** - **BF94 00A...**  
three poles with **RF82** thermal overload relay



**BF40 T4...** - **BF50 T4...** - **BF65 T4...** - **BF80 T4...** - **BF80 T2A...** four poles

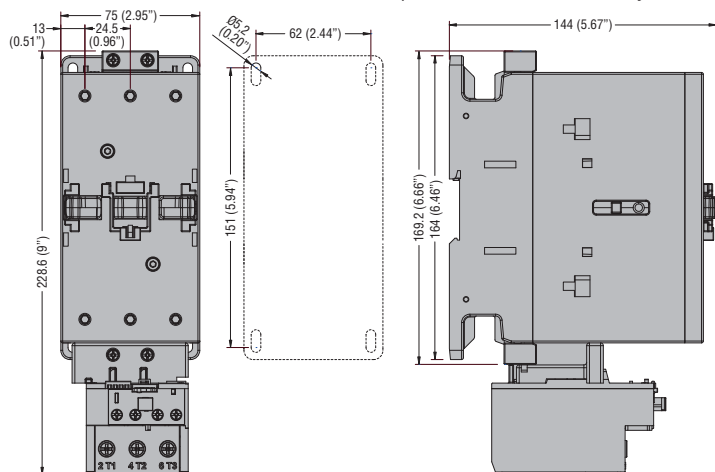


① BF80T2 91mm/3.58"

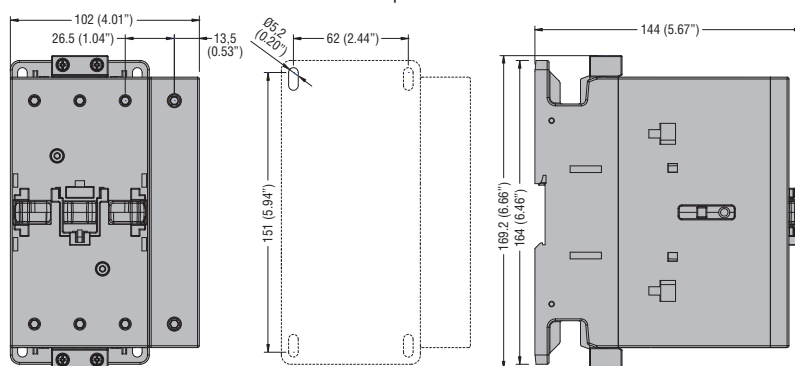
## 2 Contactors

Dimensions [mm (in)]

**BF95 00A... - BF115 00A... - BF150 00A...** three poles with **RF110** thermal relay

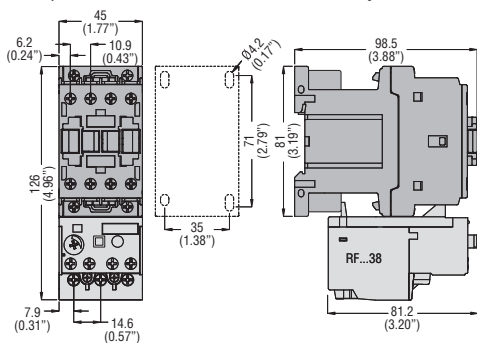


**BF95 T4A... - BF115 T4A... - BF150 T4A...** four poles



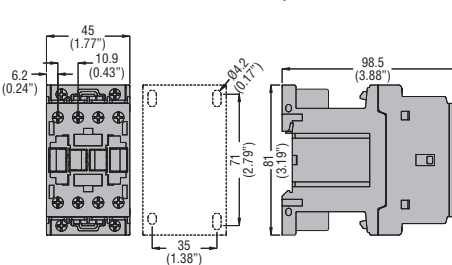
**BF...CONTACTORS WITH DC SUPPLY VOLTAGE**

**BF00...D and BF00...L - BF09... - BF12... - BF18... - BF25...D and L**  
three poles with **RF...38** thermal overload relay

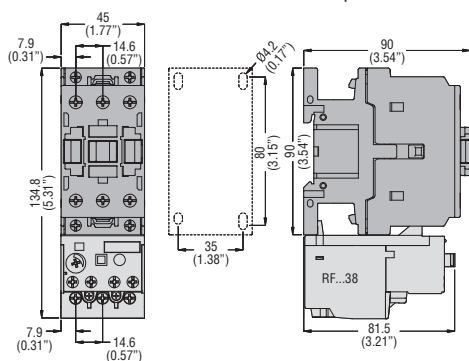


**Control relays**

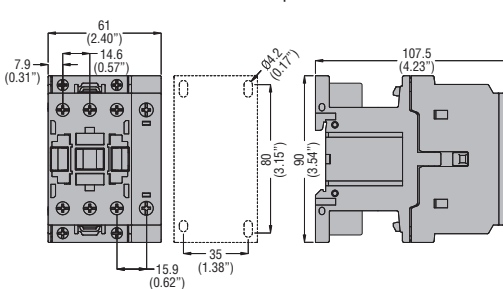
**BF00...D and BF00...L**  
**BF09 T... - BF18 T... D and L** four poles



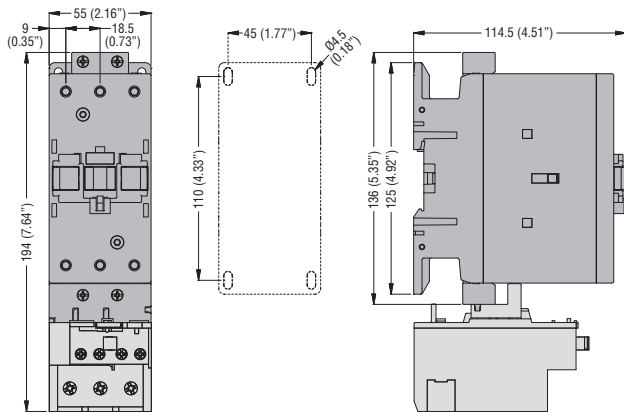
**BF26... - BF32... - BF38... D and L** three poles with **RF...38** thermal overload relay



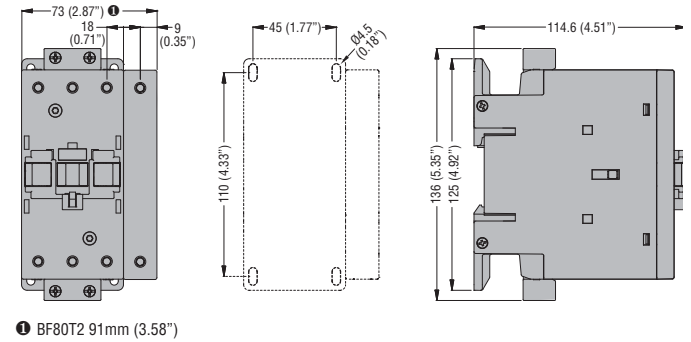
**BF26 T... - BF38 T... D and L** four poles



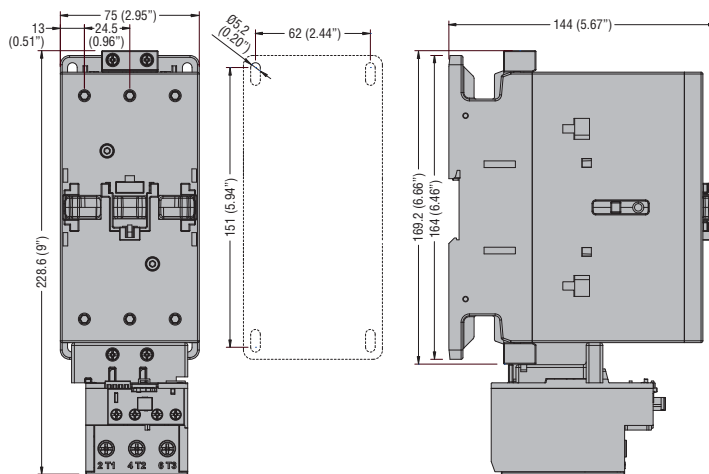
**BF40 00E... - BF50 00E... - BF65 00E... - BF80 00E... - BF94 00E...**  
three poles with **RF82** thermal overload relay



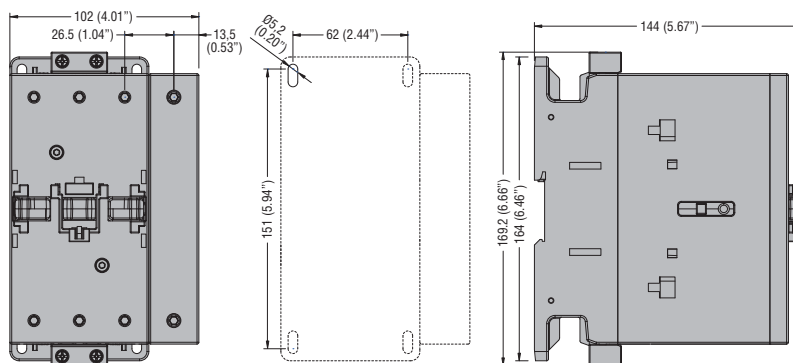
**BF65 T4 E... - BF80 T4 E... - BF80 T2 E...** four poles



**BF95 00E... - BF115 00E... - BF150 00E...** three poles with **RF110** thermal relay



**BF95 T4E... - BF115 T4E... - BF150 T4E... - BFD150 T4E...** four poles

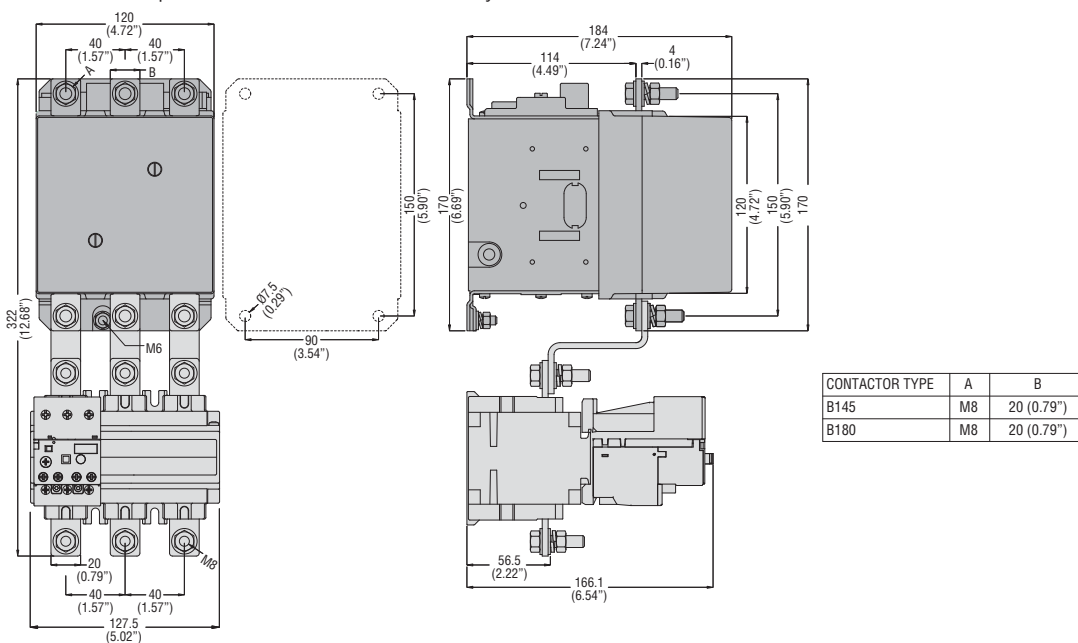


## 2 Contactors

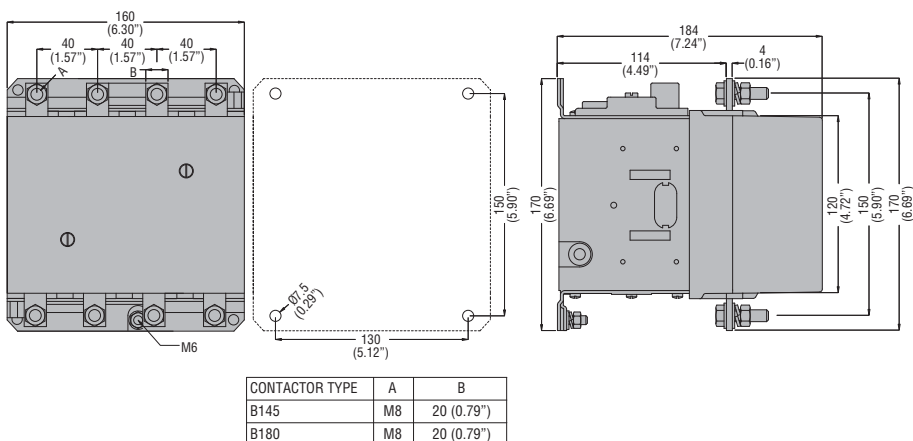
Dimensions [mm (in)]

B... CONTACTORS WITH AC OR DC SUPPLY VOLTAGE

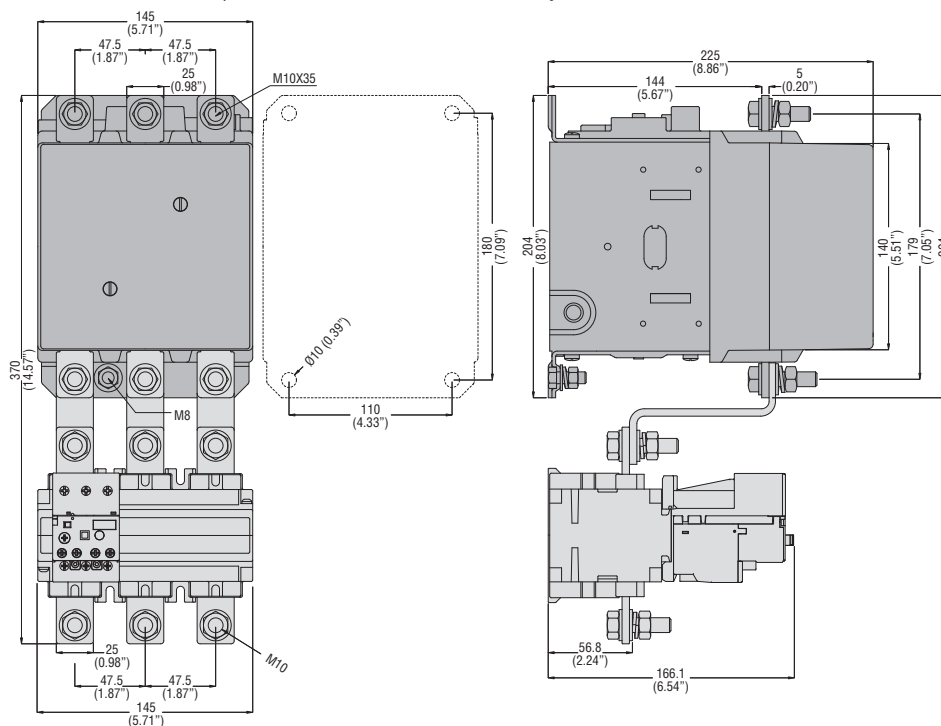
**B145 - B180** three poles with **RF...200** thermal overload relay



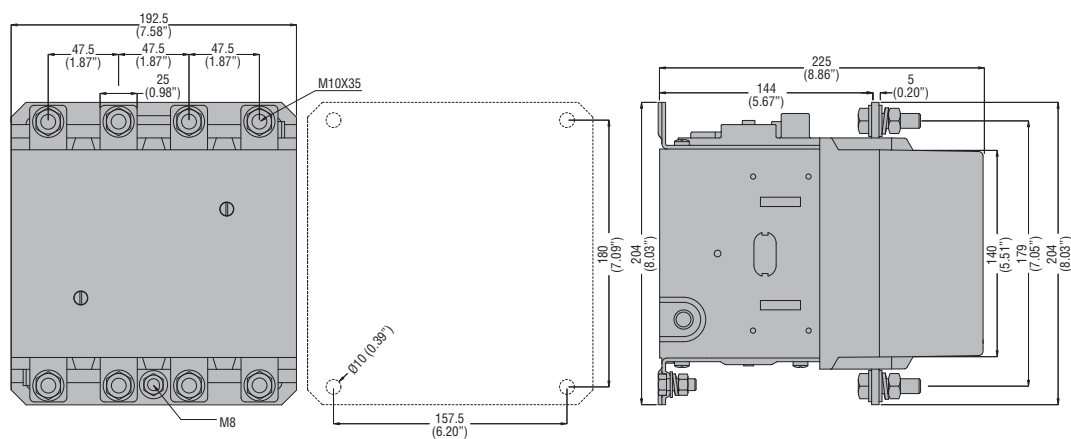
**B145 4 - B180 4** four poles



**B250 - B310 - B400** three poles with **RF...420** thermal overload relay



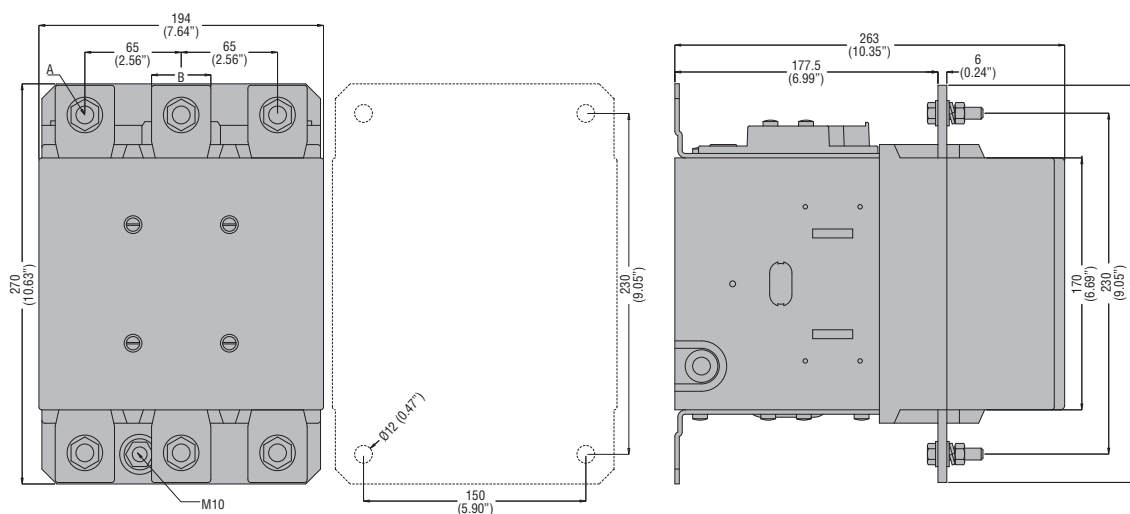
**B250 4 - B310 4 - B400 4** four poles



## 2 Contactors

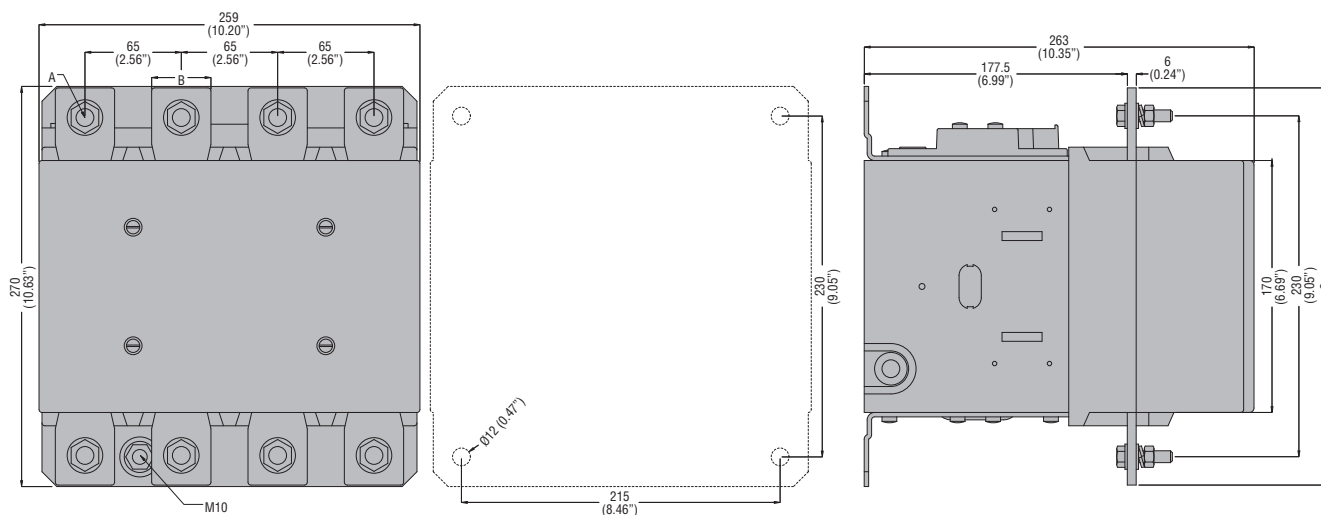
Dimensions [mm (in)]

### B500 - B630 three poles



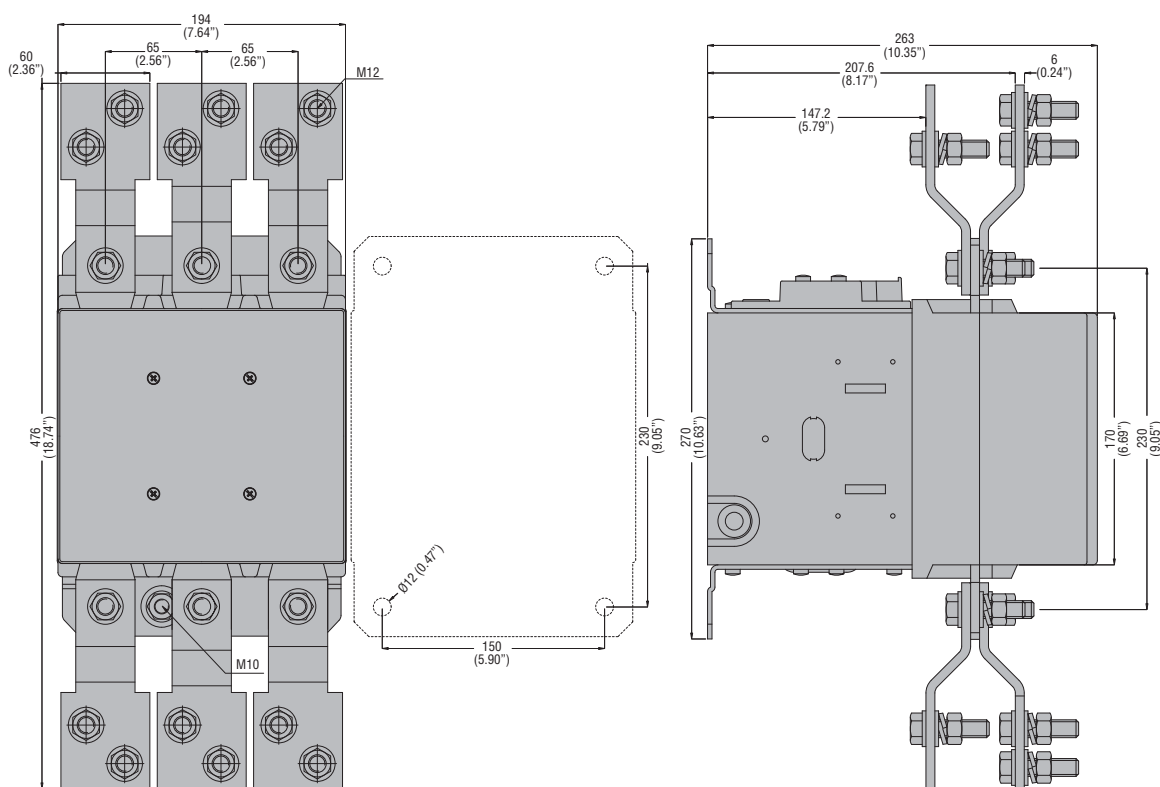
| CONTACTOR TYPE | A   | B          | C            |
|----------------|-----|------------|--------------|
| B500           | M10 | 35 (1.38") | 265 (10.43") |
| B630           | M12 | 40 (1.57") | 270 (10.63") |

### B500 4 - B630 4 four poles

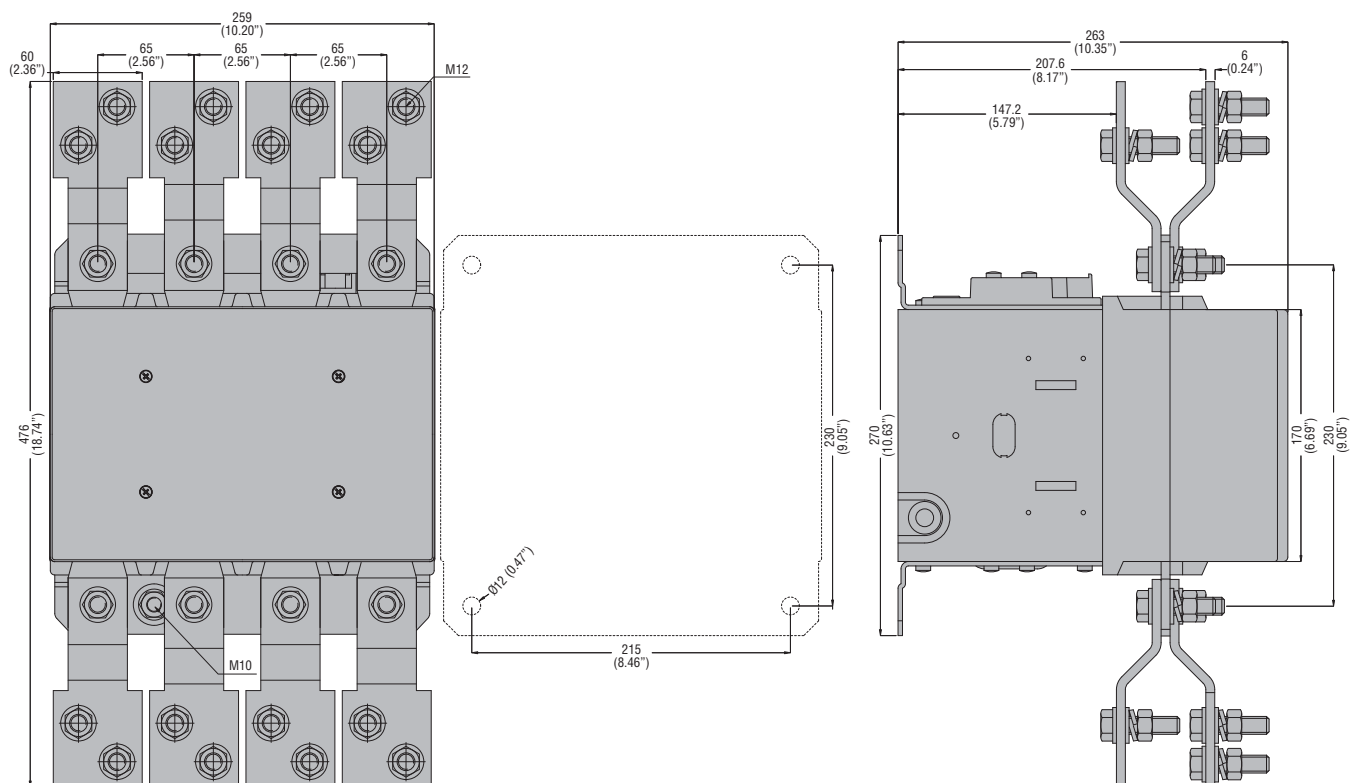


| CONTACTOR TYPE | A   | B          | C            |
|----------------|-----|------------|--------------|
| B500           | M10 | 35 (1.38") | 265 (10.43") |
| B630           | M12 | 40 (1.57") | 270 (10.63") |

### B630 1000 three poles



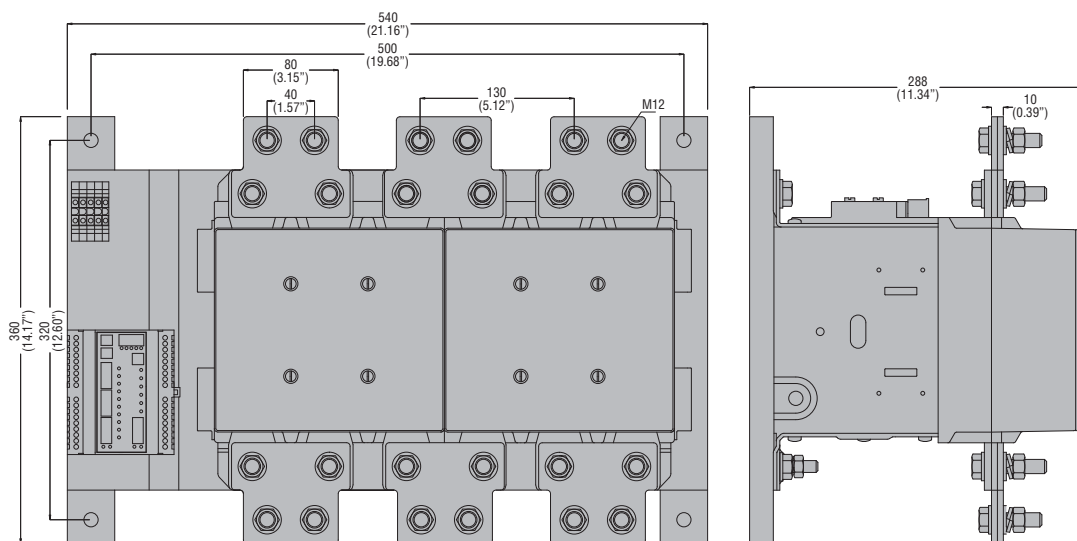
### B630 1000 4 four poles



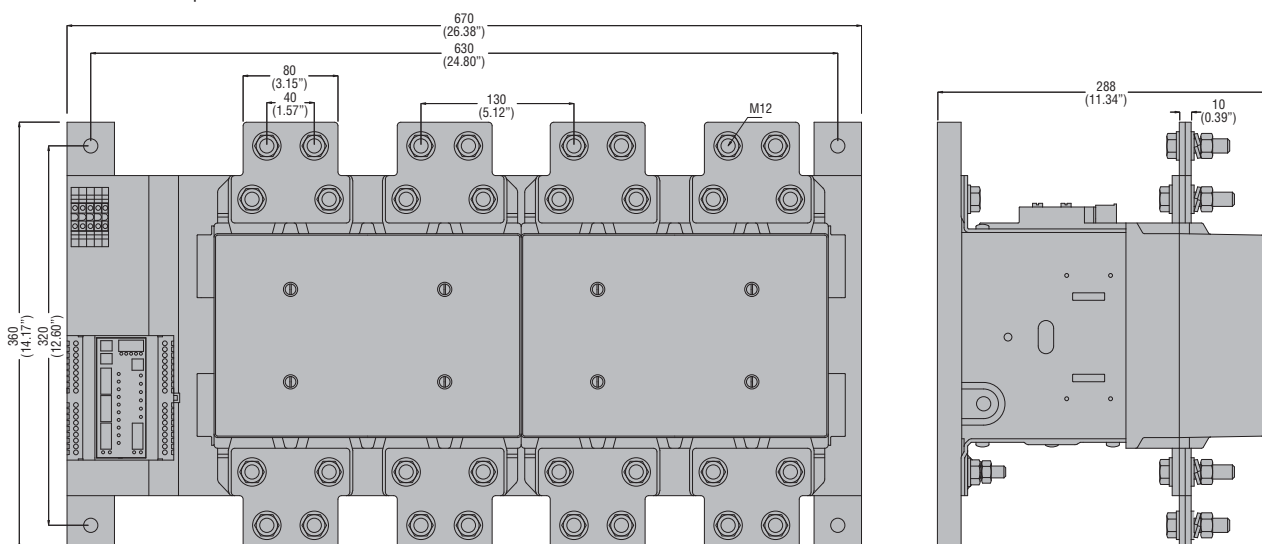
## 2 Contactors

Dimensions [mm (in)]

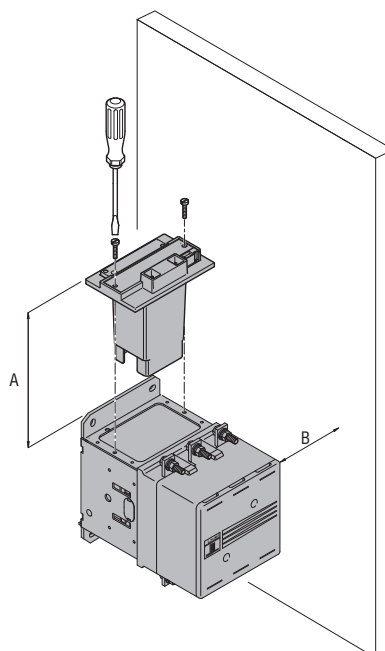
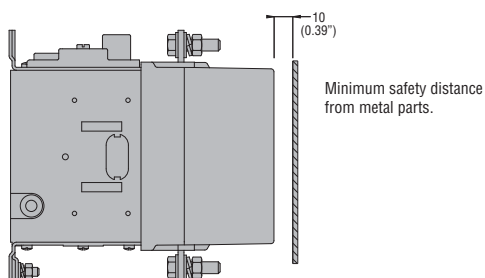
### B1250 - B1600 three poles



### B1250 4 - B1600 four poles



### B145 - B180 - B250 - B310 - B400 - B500 - B630 - B630 1000 - B1250 - B1600



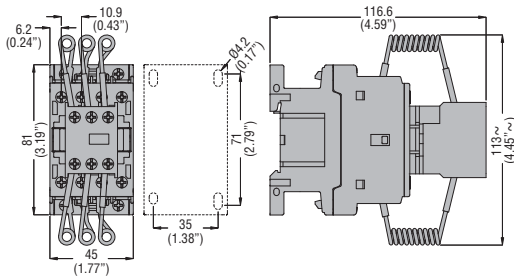
Minimum space needed to replace the coil.

|   | B145-B180   | B250-B310-B400 | B500-B630 1000 |
|---|-------------|----------------|----------------|
| A | 120 (4.72") | 145 (5.71")    | 170 (6.69")    |
| B | 100 (3.94") | 110 (4.33")    | 160 (6.30")    |

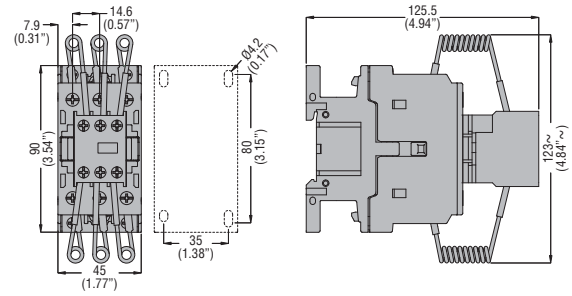
If dimension B is respected, coil replacement is possible without removing power wiring.

## CONTACTORS FOR POWER FACTOR CORRECTION

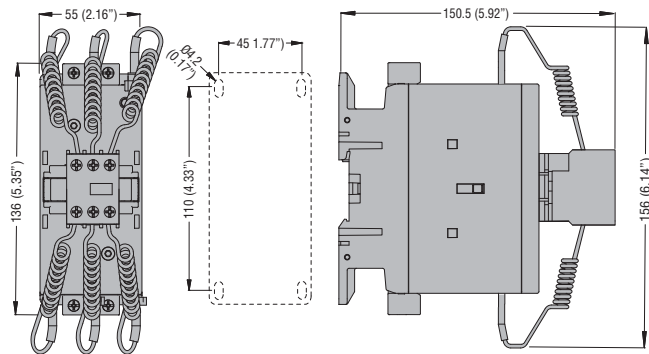
### BFK09 10A - BFK12 10A - BFK18 10A



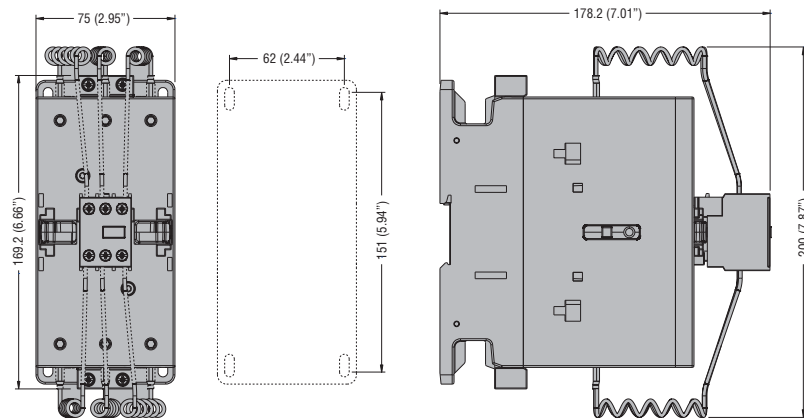
### BFK26 00A - BFK32 00A - BFK38 00A



### BFK50 - BFK65 - BFK80

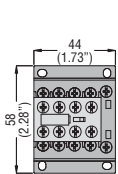


### BFK95 - BFK115 - BFK150



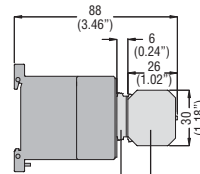
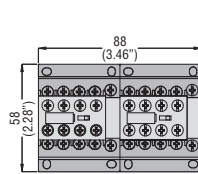
## ADD-ON BLOCKS WITH BG MINI-CONTACTORS

### BGX10... - BGSF10... auxiliary contacts



Valid for BGX11... contacts as well when mounted on left-hand contactor of BGT or BGC assembly (p. 4 and 5).

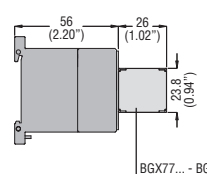
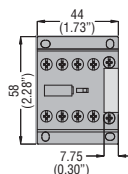
### BGX50 00 interlock with BGSF10... contacts and BGSF77... or BGSF78... or BGSF79... suppressor



BGX50 00

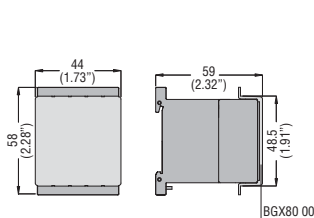
BGSF10... - BGSF77...  
BGSF78... - BGSF79...  
BGSF10...

### BGSF77..., BGSF78... or BGSF79... suppressor only

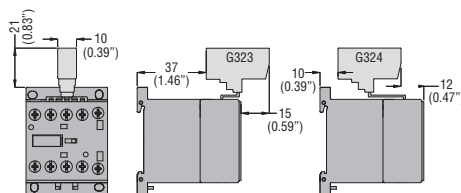


BGSF77... - BGSF78...  
BGSF79...

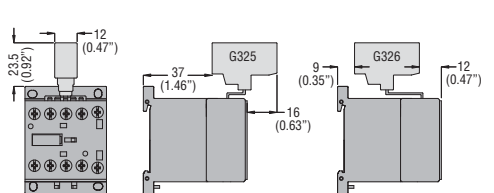
### BGSF80 00 shroud



### Paralleling links G323, G324



### G325, G326

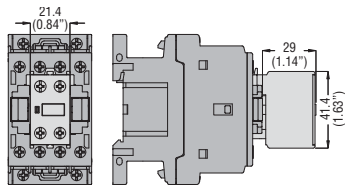


## 2 Contactors

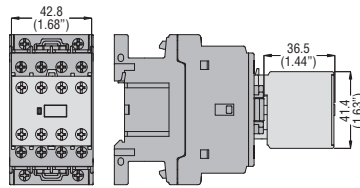
Dimensions [mm (in)]

### ADD-ON BLOCKS WITH BF CONTACTORS

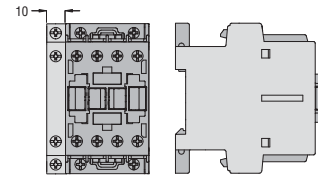
Auxiliary contacts **BFX10...**  
w/2 contacts



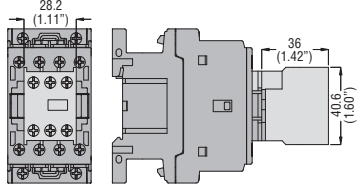
**BFX10...** w/4 contacts



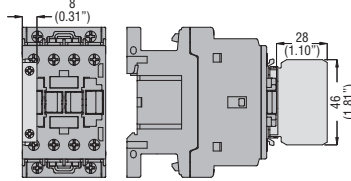
**BFX12...**



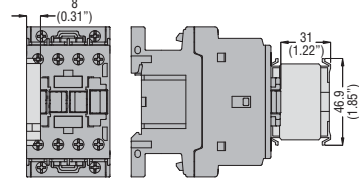
**G484...**



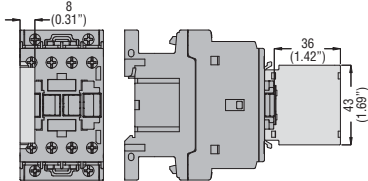
**G418...**



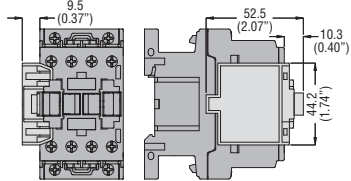
**G218**



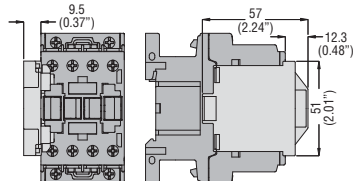
**G481..., G482**



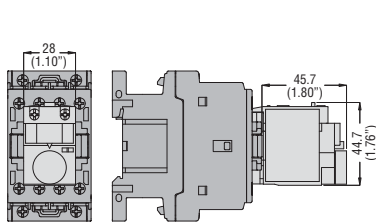
**G280 with G218**



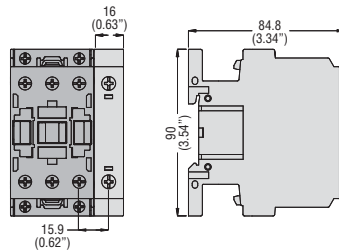
**G419, with G418..., G428..., G483 with G481... or G482**



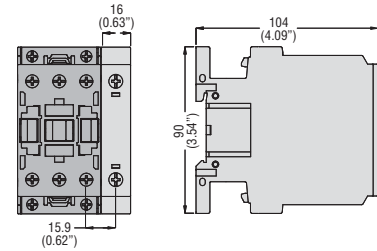
**G485..., G486..., G487 delayed contacts**



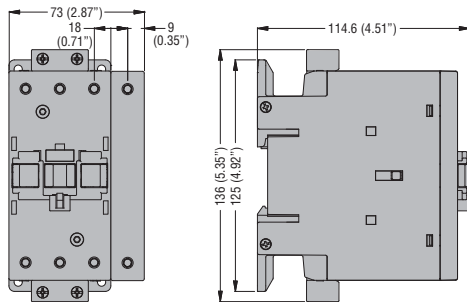
Fourth pole  
**BFX42**



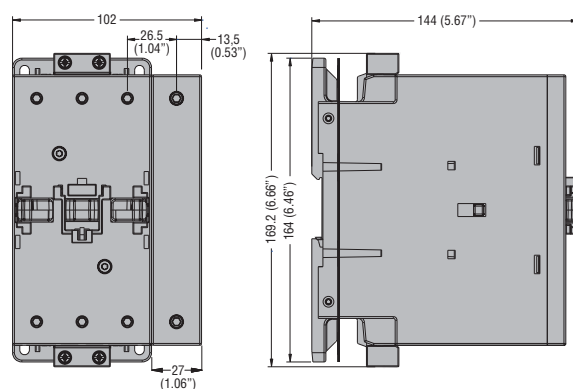
**BFXD42**



**BFX43**

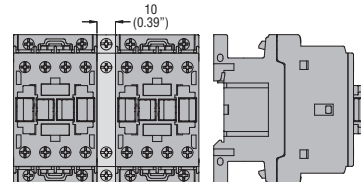


**BFX44**

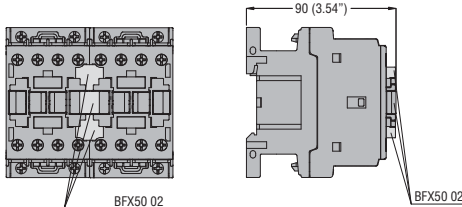


Interlocks

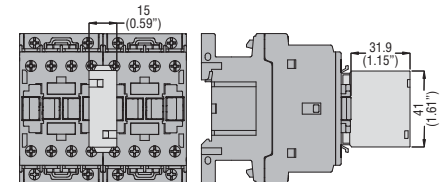
**BFX50 00, BFX50 01, BFX53 00, BFX53 01,  
BFX54 00, BFX54 01**



**BFX50 02**

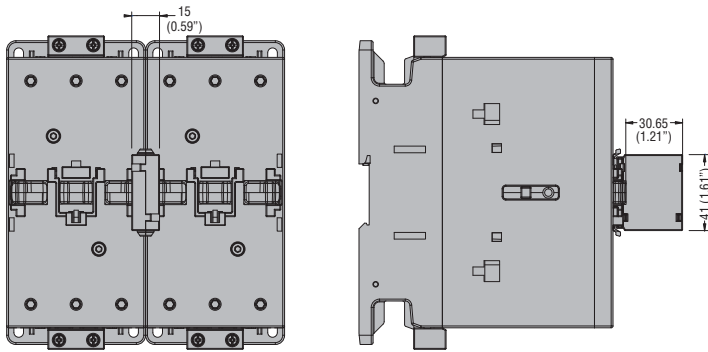


**BFX50 03, BFX53 03, BFX54 03**

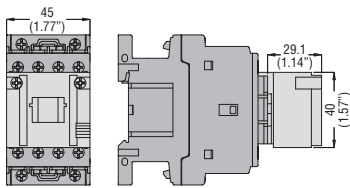


## Interlocks

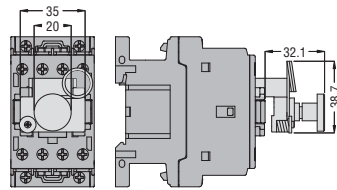
**BFX53 03 - BFX54 03**



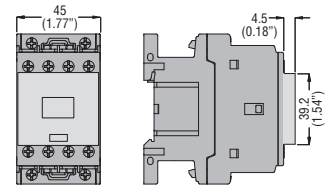
### G222, G272, BFX64 1 mechanical latch



### G454, G455, BF64 2 manual closing

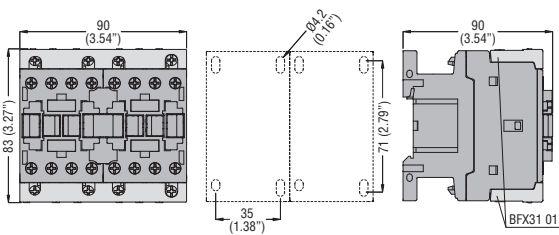


**BFX80** sealing cover



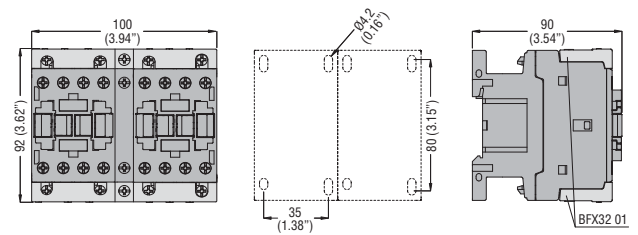
Rigid connecting kit

BFX31 01

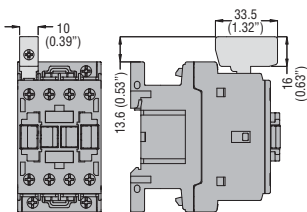


Rigid connecting kit

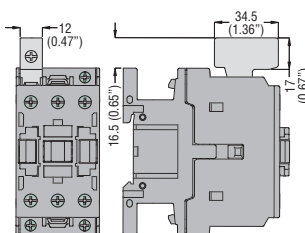
90mm (3.54") with **BFX5000** and **BFX5001**  
100mm (3.94") with **BFX5002** and **BFX5003**



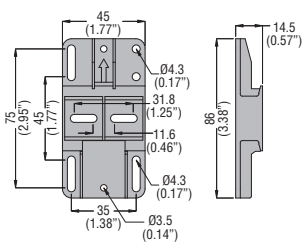
**G231** terminal  
1-pole



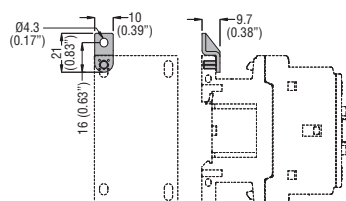
**G232** terminal  
1-pole



**BFX89 01** fixing base



**BFX89 02** fixing brackets

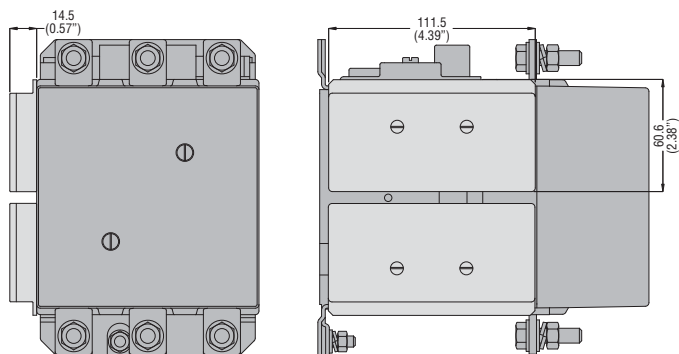


## 2 Contactors

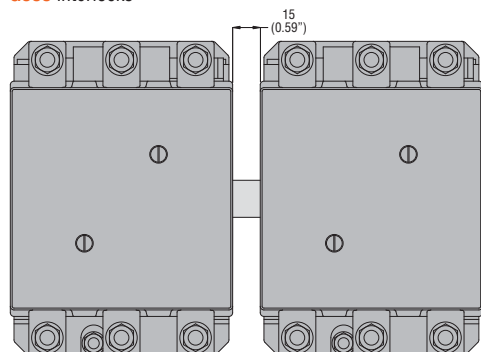
Dimensions [mm (in)]

### ADD-ON BLOCKS WITH B CONTACTORS

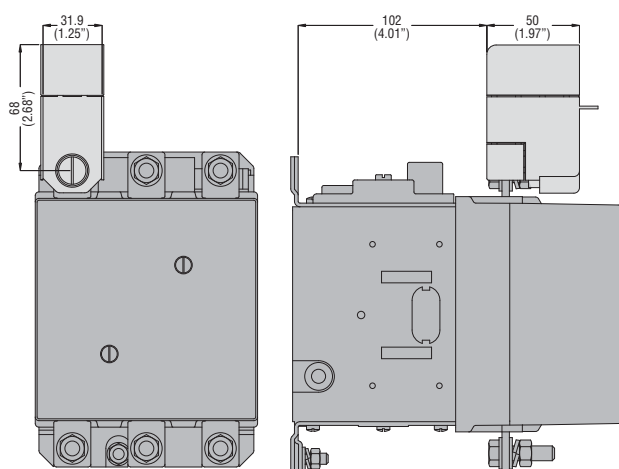
Auxiliary contacts **G350, G354**



**G355** interlocks

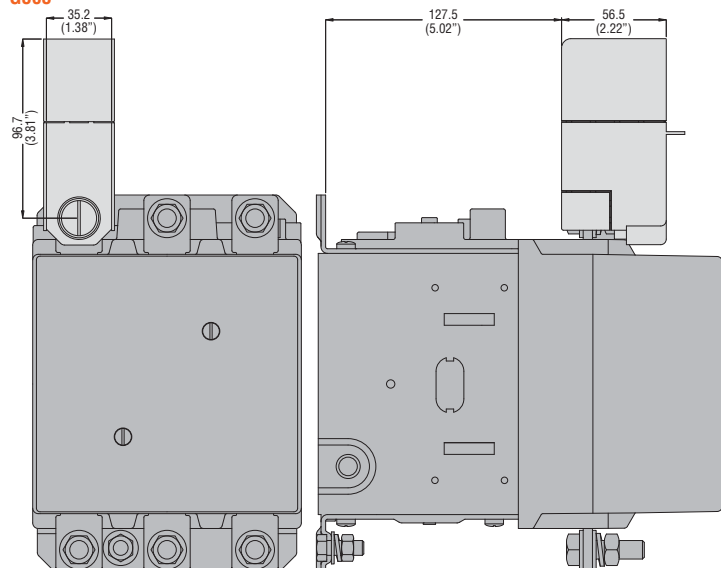


Terminal protection **G361**

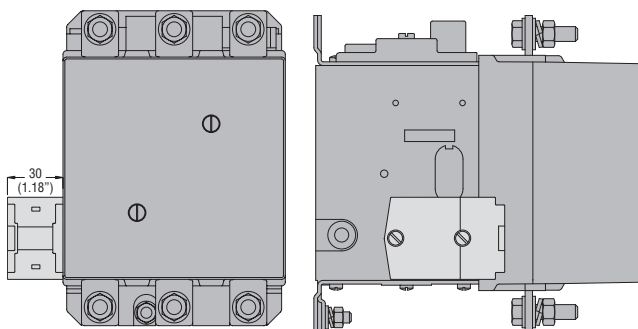


Terminal protection

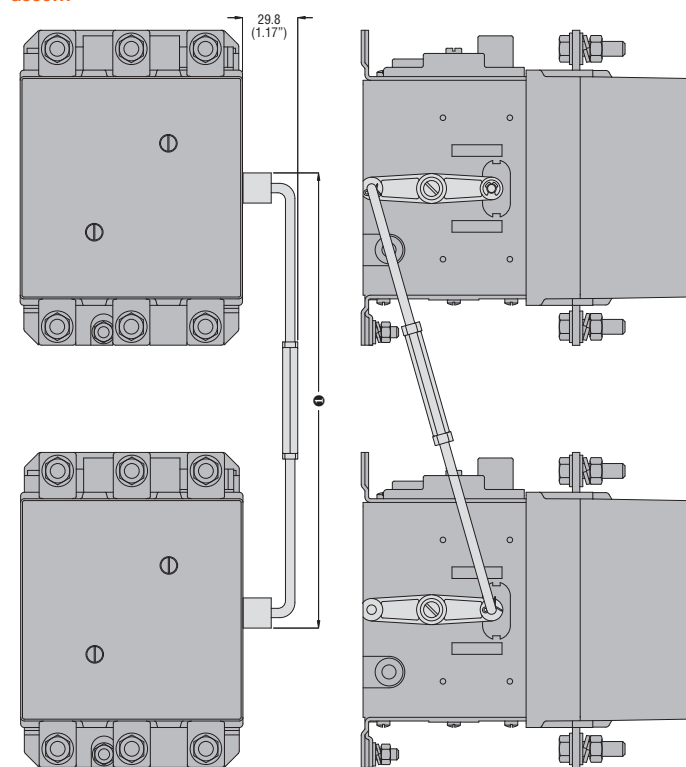
**G363**



**G358** adapter

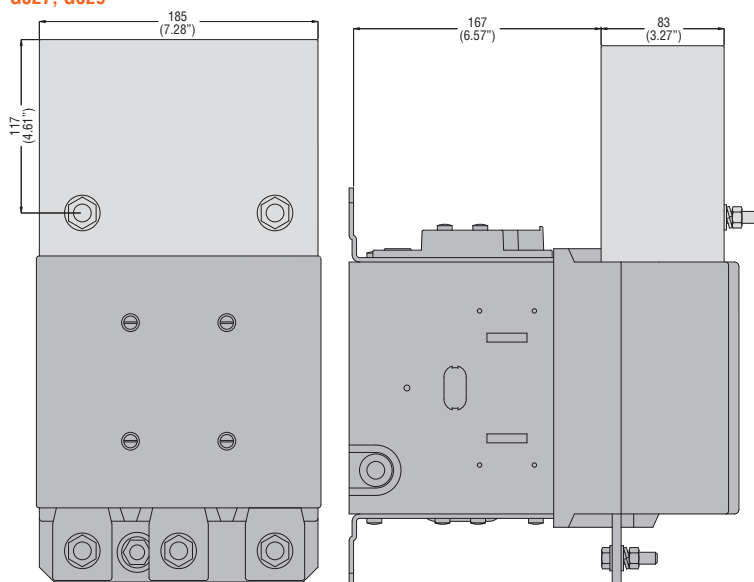


**G356...**

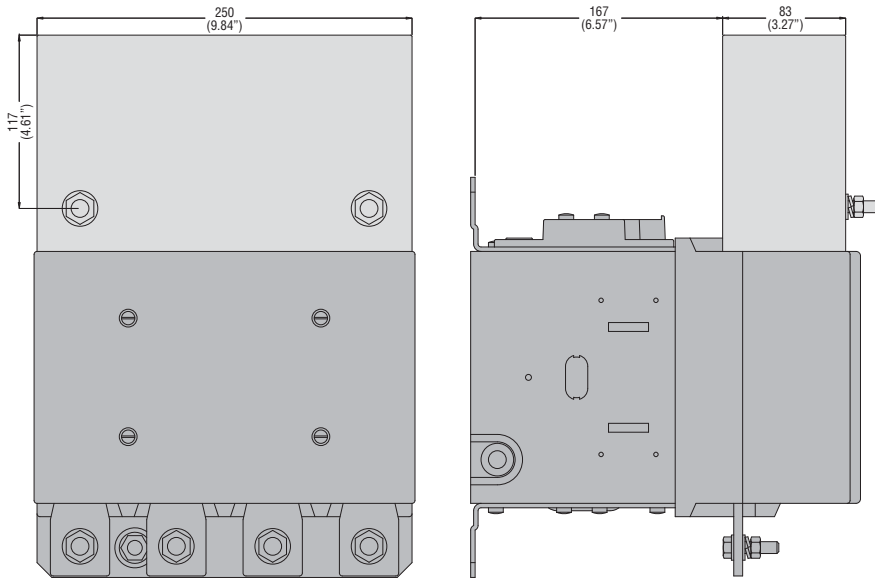


❶ For dimensions, refer to page 2-68.

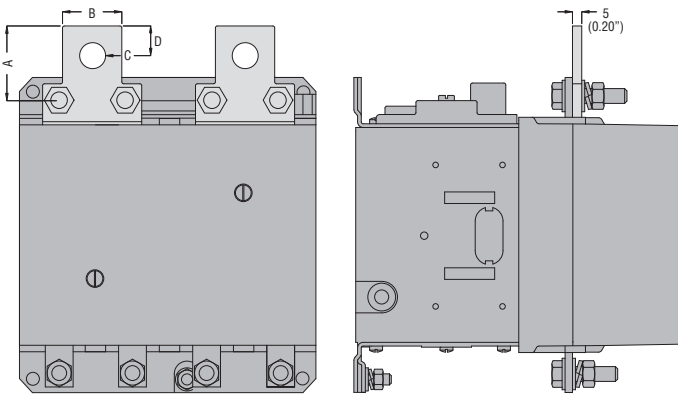
**G527, G529**



### G528, G530

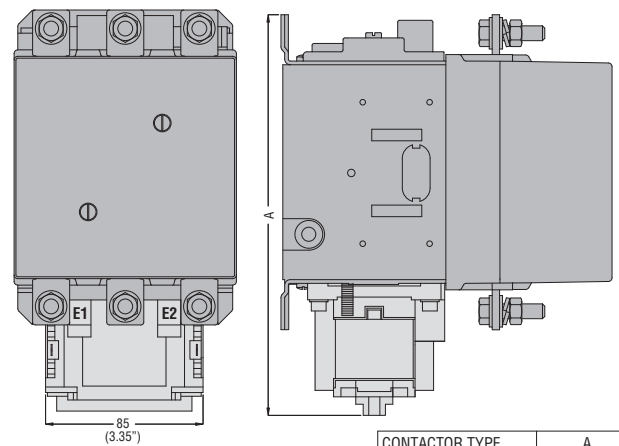


### BA1594, BA1720 parallel 2-pole bar



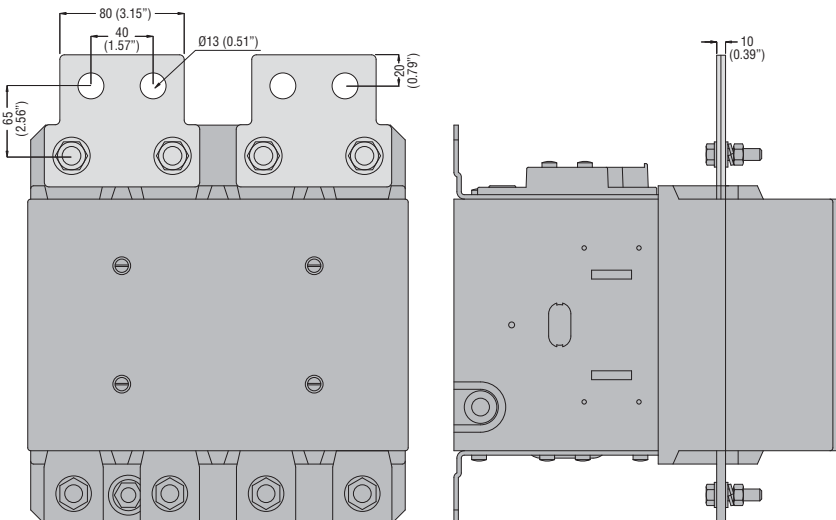
| PARALLEL POLE BAR | A          | B          | C           | D          |
|-------------------|------------|------------|-------------|------------|
| BA1594            | 45 (1.77") | 32 (1.26") | Ø14 (0.55") | 16 (0.63") |
| BA1720            | 53 (2.09") | 50 (1.97") | Ø18 (0.71") | 20 (0.79") |

### G495 mechanical latch



| CONTACTOR TYPE | A            |
|----------------|--------------|
| B145 - B180    | 221 (8.70")  |
| B250 - B400    | 255 (8.86")  |
| B500 - B630    | 300 (11.81") |

### BA1845



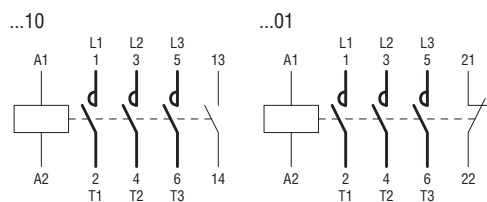
## 2 Contactors

### Wiring diagrams

#### THREE-POLE CONTACTORS IN AC

**BG06 A - BG09 A - BGF09 A - BGP09 A - BG12 A**

**BF09 A - BF12 A - BF18 A - BF25 A**

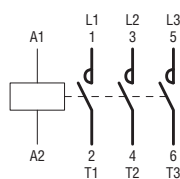


**BF26 A - BF32 A - BF38 A**

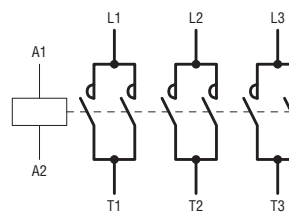
**BF40 A - BF50 A - BF65 A - BF80 A**

**BF94 A - BF95 A - BF115 A - BF150 A**

**B145...B630**



**B1250 24 - B1600 24... ①**

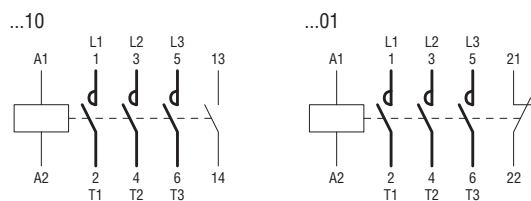


① The input electronic circuit of the contactor coil is designed and tested according to IEEEC 62.41 standards and can withstand a 10kV impulse voltage (1.2/50μs) with 50 Joule energy. The use of an auxiliary reduced voltage transformer is recommended for higher values.

#### THREE-POLE CONTACTORS IN DC (AC/DC for BF40E...BF150E)

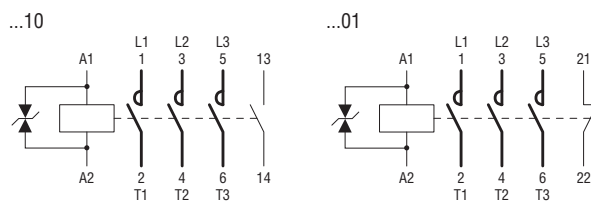
**BG06 D - BG09 D - BGF09 D - BGP09 D - BG12 D**

**BG06 L - BG09 L - BGF09 L - BGP09 L - BG12 L**



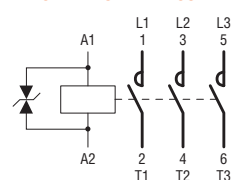
**BF09 D - BF12 D - BF18 D - BF25 D**

**BF09 L - BF12 L - BF18 L - BF25 L**



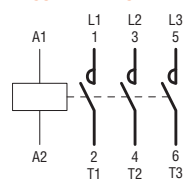
**BF26 D - BF32 D - BF38 D**

**BF26 L - BF32 L - BF38 L**



**BF40 E - BF50 E - BF65 E - BF80 E - BF94 E**

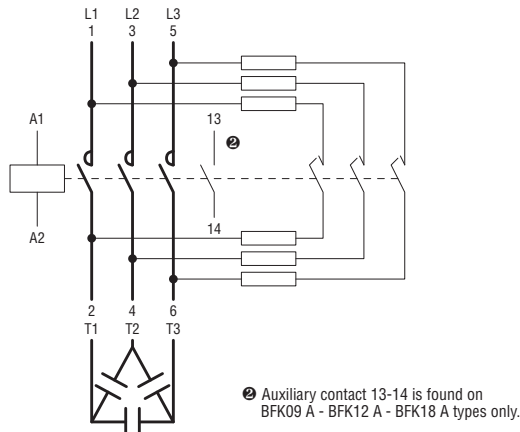
**BF95 E - BF115 E - BF150 E**



#### CONTACTORS FOR POWER FACTOR CORRECTION

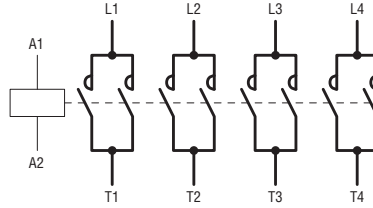
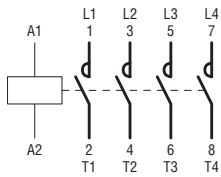
**BFK09 A - BFK12 A - BFK18 A**

**BFK26 A - BFK32 A - BFK38 A - BFK50 A - BFK65 A - BFK80 A - BFK95 A - BFK115 A - BFK150 A**



**FOUR-POLE CONTACTORS IN AC**  
**BG09 T4 A - BGF09 T4 A - BGP09 T4 A**  
**BF09 T4 A - BF38 T4 A**  
**BF50 T4 A - BF65 T4 A - BF80 T4 A**  
**BF95 T4 A - BF115 T4 A - BF150 T4 A**  
**BFD80 T4 A**  
**B145...B630 4**

**B1250 4 - B1600 4**

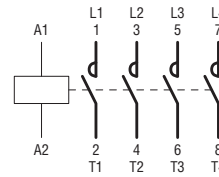
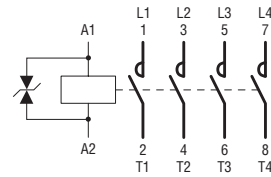
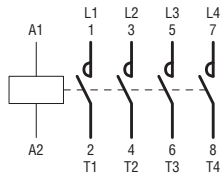


**FOUR-POLE CONTACTORS IN DC (AC/DC for BF40E...BF150E)**

**BG09 T4 D - BGF09 T4 D - BGP09 T4 D**

**BF09 T4 D - BF38 T4 D**  
**BF09 T4 L - BF38 T4 L**

**BF65 T4 E - BF80 T4 E - BF95 T4 E - BF150 T4 E - BFD150 T4 E**



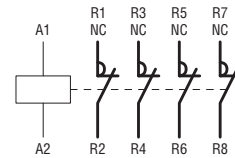
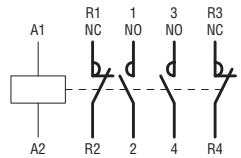
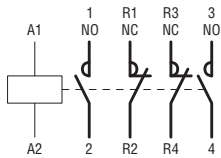
**FOUR-POLE CONTACTORS IN AC WITH 2NO AND 2NC POLES**

**BG09 T2 A**

**BF09 T2 A - BF18 T2 A - BF26 T2 A - BF38 T2 A**  
**BF09 T2 L**

**WITH NC FOUR-POLES**

**BF18 T0 A - BF26 T0 A**



**FOUR-POLE CONTACTORS IN DC (AC/DC for BF80T2E) WITH 2NO AND 2NC POLES**

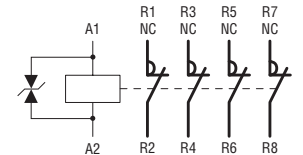
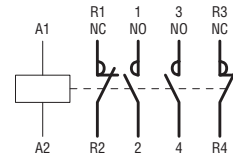
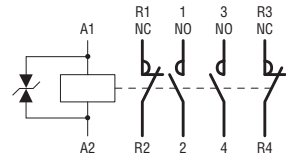
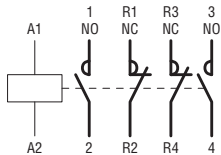
**BG09 T2 D**

**BF18 T2 D - BF26 T2 D - BF38 T2 D - BF80 T2 E**  
**BF18 T2 L - BF26 T2 L - BF38 T2 L**

**BF80 T2 E**

**WITH NC FOUR-POLES**

**BF18 T0 D - BF26 T0 D**  
**BF18 T0 L**



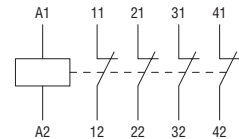
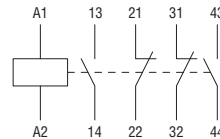
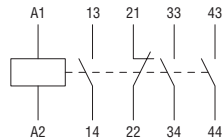
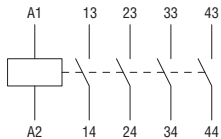
**CONTROL RELAY IN AC**

**BG00 40 A - BGF00 40 A**  
**BF00 40 A**

**BG00 31 A - BGF00 31 A**  
**BF00 31 A**

**BG00 22 A - BGF00 22 A**  
**BF00 22 A**

**BF00 04 A**



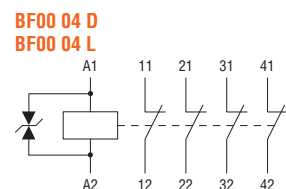
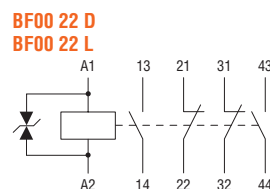
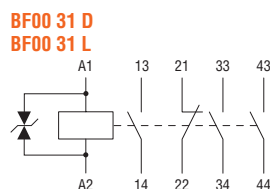
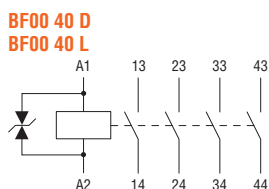
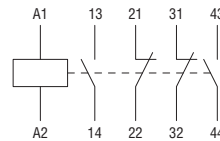
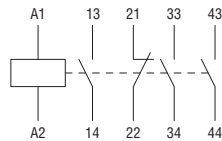
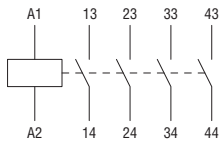
**CONTROL RELAY IN DC**

**BG00 40 D - BGF00 40 D**  
**BG00 40 L - BGF00 40 L**

**BG00 31 D - BGF00 31 D**  
**BG00 31 L - BGF00 31 L**

**BG00 22 D - BGF00 22 D**  
**BG00 22 L - BGF00 22 L**

**BF00 04 D**  
**BF00 04 L**

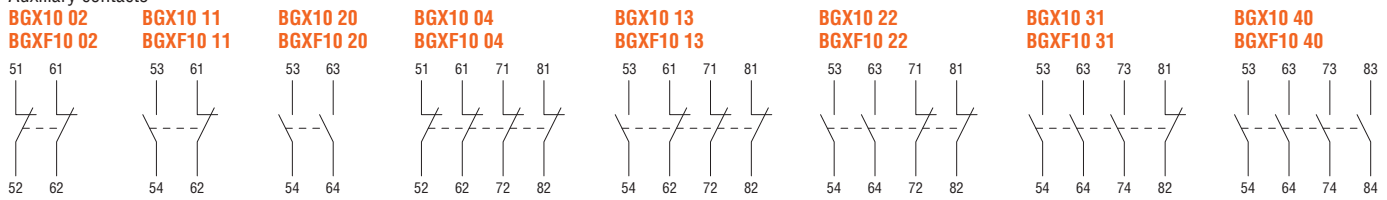


## 2 Contactors

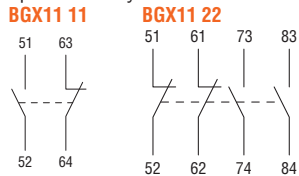
### Wiring diagrams

#### ADD-ON BLOCKS FOR BG MINI-CONTACTORS

##### Auxiliary contacts

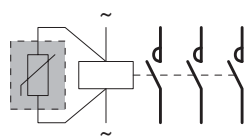


##### Special auxiliary contacts

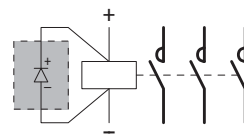


##### Surge suppressor

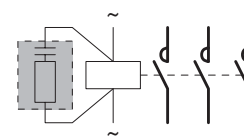
##### BGX77...



##### BGX78...

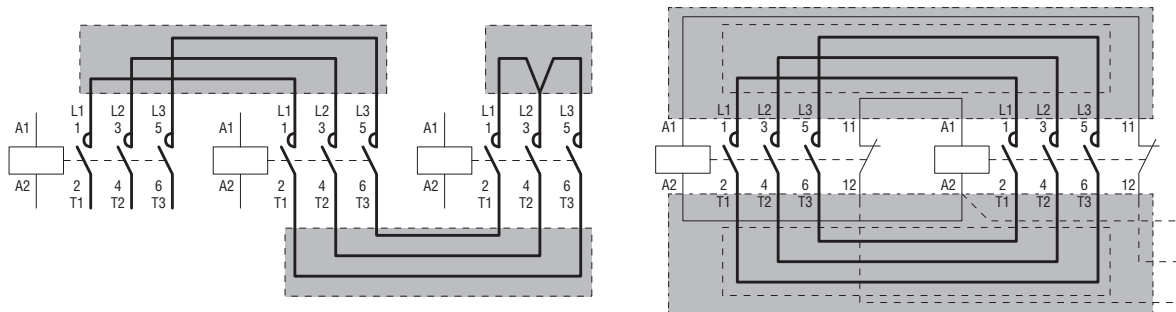


##### BGX79...



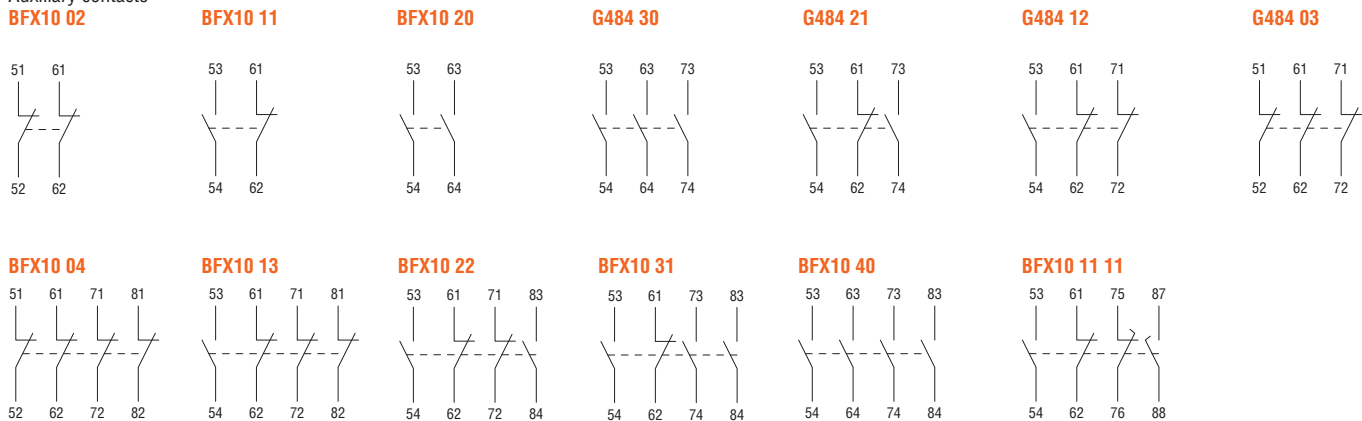
#### Rigid connections

##### SMX90 21



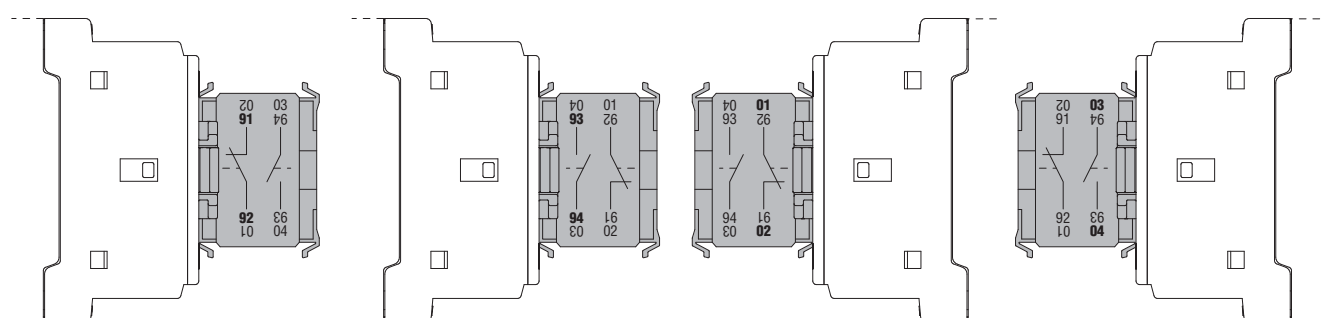
#### ADD-ON BLOCKS FOR BF CONTACTORS

##### Auxiliary contacts



##### Auxiliary contact

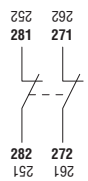
##### G218



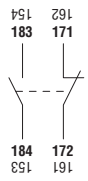
The termination of the G218 auxiliary contact has more than one numbering due to the fact that the block can assume various mounting positions. See the numbering in boldface for a correct interpretation.

### Auxiliary contacts

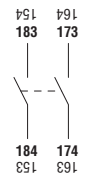
#### BFX12 02



#### BFX12 11



#### BFX12 20



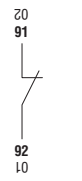
#### G418 10 G428 10



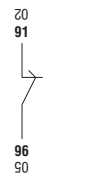
#### G418 10A G428 10A



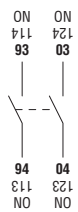
#### G418 01 G428 01



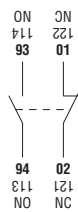
#### G418 01D G428 01D



#### G481 20



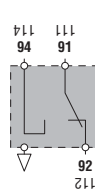
#### G481 11



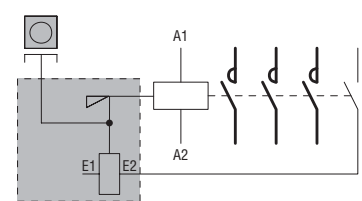
#### G481 02



#### G482



### Mechanical latch G222... - G272...



The termination of the BFX12... / G418... / G481... / G482 auxiliary contacts has more than one numbering due to the fact that the block can assume various mounting positions. See the numbering in boldface when the block is mounted on the left side of the contactor.

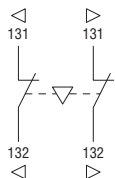
### 4th pole

#### BFX42 BFXD42



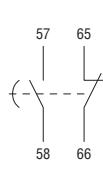
### Interlock

#### BFX50 01

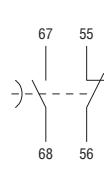


### Delayed auxiliary contacts

#### G485...

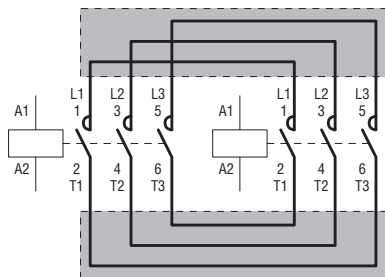


#### G486... - G487

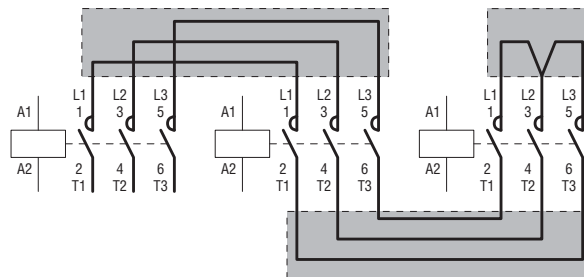


### Rigid connecting kits

#### BFX31 01 - BFX31 02 - BFX32 01



#### BFX31 31 - BFX32 31 - BFX32 32

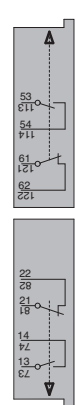


### ADD-ON BLOCKS FOR B CONTACTORS

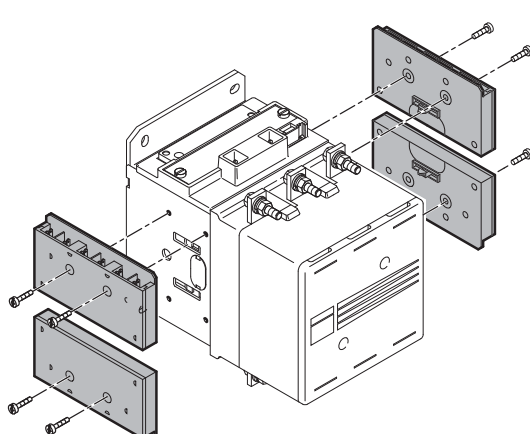
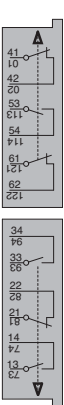
#### Auxiliary contacts

#### G350 - G354

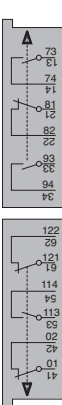
##### G354



##### G350



##### G350

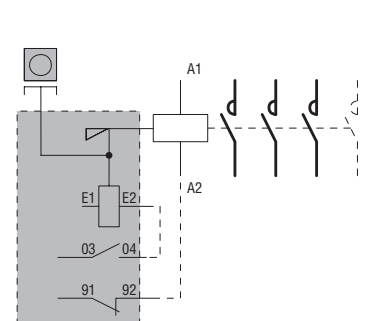


##### G354



### Mechanical latch

#### G495



## 2 Contactors

### Technical characteristics

#### MOUNTING POSITION OF CONTACTORS

##### ON VERTICAL PLANE

The performances given in this catalogue have been established with contactors mounted on a vertical plane with line terminals facing upwards and load terminals facing downwards.

All contactors can be mounted with a  $\pm 30^\circ$  inclination to the vertical axis of the contactor without any derating.

For BF series contactors, this inclination can reach  $\pm 90^\circ$ , that is when the terminals are facing towards left and right.

For BG mini-contactors:

- Position A, with coil terminals A1-A2 facing downwards, is not recommended.
- The position with coil terminals A1-A2 facing upwards is not recommended for mini-contactors with NC contacts.

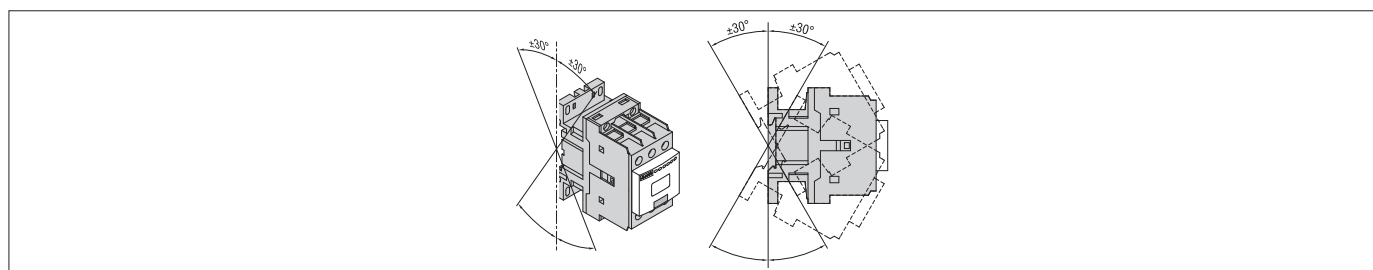


##### ON VERTICAL PLANE WITH 30° INCLINATION

All contactors can be mounted on a plane which varies in respect to the vertical up to  $\pm 30^\circ$  angle.

On the average, a 5% increase of the minimum pick-up voltage in  $-30^\circ$  position can be noted.

This inclination is greater than the one prescribed by main naval registers.



##### ON HORIZONTAL PLANE (FOR BF SERIES CONTACTORS)

Considerable performance variations can be noted.

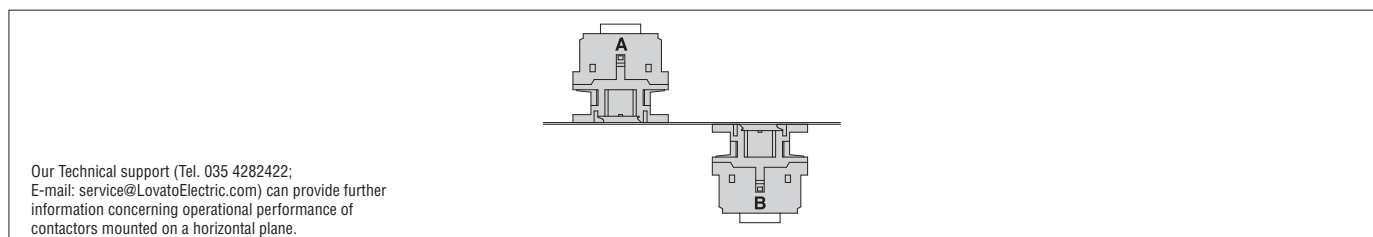
It is necessary to check the two possible mounting positions:

- when the contactor is energised, the movable equipment moves upwards.
  - when the contactor is energised, the movable equipment moves downwards.
- In the first case, it is difficult to close the contactor while in the second, to open it.

The variables which could influence the contactor performance, in addition to the two mounting positions, are:

- type of contactor
- type of control
- contact configuration
- number and type of add-on blocks
- permissible tolerance of auxiliary voltage variation
- ambient temperature.

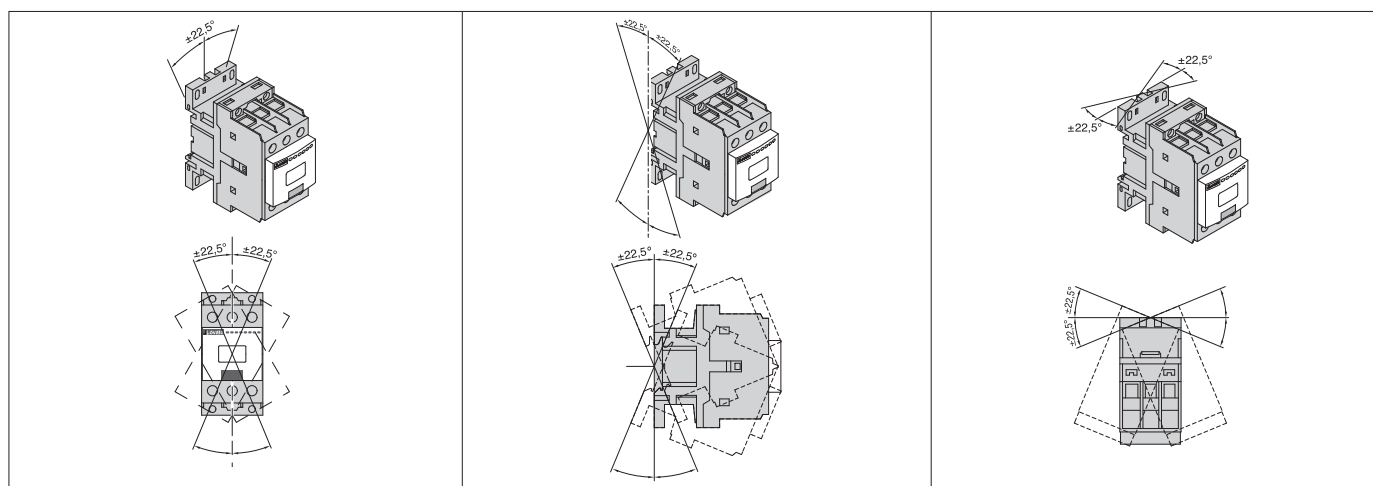
NOTE: Position B is not recommendable.



Our Technical support (Tel. 035 4282422;  
E-mail: service@LovatoElectric.com) can provide further  
information concerning operational performance of  
contactors mounted on a horizontal plane.

#### DYNAMIC TYPE TESTS

Our contactors have sustained dynamic testing, with contactor mounting position rotated  $\pm 22.5^\circ$  in respect to the three orthogonal axes.



### IEC UTILISATION CATEGORY AC3

#### POLE CHARACTERISTICS

Squirrel-cage induction motors; breaking at rated motor current.

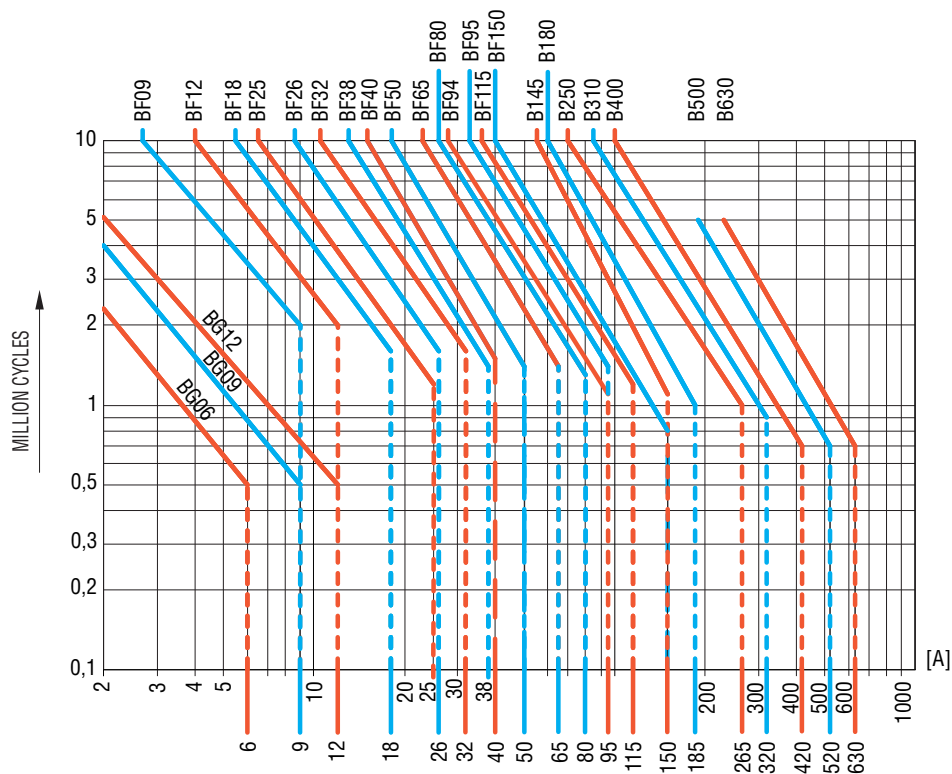
MAXIMUM IEC OPERATIONAL POWER at ambient temperature  $\leq 55^{\circ}\text{C}$ .

| Contactor type | IEC operational current<br>( $I_e \leq 440\text{V}$ )<br>[A] | IEC operational power |                  |              |              |              |                  |               | Maximum horsepower ratings (60Hz) |              |              |              |
|----------------|--------------------------------------------------------------|-----------------------|------------------|--------------|--------------|--------------|------------------|---------------|-----------------------------------|--------------|--------------|--------------|
|                |                                                              | 220/230V<br>[kW]      | 380/400V<br>[kW] | 415V<br>[kW] | 440V<br>[kW] | 500V<br>[kW] | 660/690V<br>[kW] | 1000V<br>[kW] | Three phase<br>200-208V<br>[HP]   | 240V<br>[HP] | 480V<br>[HP] | 600V<br>[HP] |
| BG06           | 6                                                            | 1.5                   | 2.2              | 2.4          | 2.5          | 3            | 3                | -             | 1½                                | 2            | 3            | 3            |
| BG09           | 9                                                            | 2.2                   | 4.0              | 4.3          | 4.5          | 5            | 5                | -             | 2                                 | 3            | 5            | 5            |
| BG12           | 12                                                           | 3.2                   | 5.7              | 6.2          | 5.5          | 5            | 5                | -             | 3                                 | 3            | 7½           | 10           |
| BF09           | 9                                                            | 2.2                   | 4.2              | 4.5          | 4.8          | 5.5          | 7.5              | -             | 3                                 | 3            | 5            | 7 ½          |
| BF12           | 12                                                           | 3.2                   | 5.7              | 6.2          | 6.2          | 7.5          | 10               | -             | 5                                 | 5            | 7½           | 10           |
| BF18           | 18                                                           | 4                     | 7.5              | 9            | 9            | 10           | 10               | -             | 5                                 | 5            | 10           | 15           |
| BF25           | 25                                                           | 7.0                   | 12.5             | 13.4         | 13.4         | 15           | 18               | -             | 7½                                | 7½           | 15           | 15           |
| BF26           | 26                                                           | 7.3                   | 13               | 14           | 14           | 15.6         | 18.5             | -             | 7½                                | 7½           | 15           | 20           |
| BF32           | 32                                                           | 8.8                   | 16               | 17           | 17           | 20           | 22               | -             | 10                                | 10           | 20           | 25           |
| BF38           | 38                                                           | 11                    | 18.5             | 18.5         | 18.5         | 20           | 22               | -             | 10                                | 15           | 30           | 30           |
| BF40           | 40                                                           | 11                    | 18.5             | 22           | 22           | 22           | 30               | 18            | 10                                | 15           | 30           | 30           |
| BF50           | 50                                                           | 15                    | 22               | 30           | 30           | 30           | 37               | 22            | 15                                | 20           | 40           | 40           |
| BF65           | 65                                                           | 18.5                  | 30               | 37           | 37           | 37           | 45               | 30            | 20                                | 25           | 50           | 60           |
| BF80           | 80                                                           | 22                    | 45               | 45           | 45           | 55           | 55               | 37            | 25                                | 30           | 60           | 75           |
| BF94           | 95                                                           | 30                    | 55               | 55           | 55           | 55           | 55               | 37            | 25                                | 30           | 60           | 75           |
| BF95           | 95                                                           | 30                    | 55               | 55           | 55           | 75           | 90               | 45            | 30                                | 30           | 60           | 75           |
| BF115          | 115                                                          | 37                    | 55               | 55           | 55           | 75           | 110              | 55            | 40                                | 40           | 75           | 100          |
| BF150          | 150                                                          | 45                    | 75               | 75           | 75           | 90           | 110              | 55            | 50                                | 50           | 100          | 125          |
| B145           | 150                                                          | 46                    | 80               | 88           | 93           | 100          | 120              | 75            | 50                                | 50           | 100          | 125          |
| B180           | 185                                                          | 57                    | 100              | 108          | 115          | 123          | 144              | 103           | 60                                | 75           | 150          | 150          |
| B250           | 265                                                          | 83                    | 140              | 155          | 164          | 176          | 212              | 156           | 75                                | 100          | 200          | 250          |
| B310           | 320                                                          | 100                   | 170              | 188          | 200          | 213          | 256              | 180           | 100                               | 125          | 250          | 300          |
| B400           | 420                                                          | 130                   | 225              | 247          | 263          | 271          | 352              | 208           | 125                               | 150          | 350          | 400          |
| B500           | 520                                                          | 156                   | 290              | 306          | 328          | 367          | 416              | 312           | 150 ❶                             | 200 ❶        | 400 ❶        | 450 ❶        |
| B630           | 630                                                          | 198                   | 335              | 368          | 368          | 368          | 440              | 368           | 200 ❶                             | 250 ❶        | 500 ❶        | 500 ❶        |

❶ No UL/CSA ratings; data given for indication and reference purposes only.

### ELECTRICAL IEC LIFE FOR MOTOR CONTROL AC3 $\leq 440\text{V}$

Electrical life of contactors



## 2 Contactors

### Technical characteristics

#### IEC DC UTILISATION CATEGORY POLE CHARACTERISTICS

##### MAXIMUM OPERATIONAL CURRENT

| IEC Voltage<br>Ue | Contactor<br><br>Type | IEC Maximum current Ie [A] in categories:<br>DC1 with L/R ≤ 1ms<br>and poles in series |     |     |     | DC3 - DC5 with L/R ≤ 15ms<br>and poles in series |     |     |     |
|-------------------|-----------------------|----------------------------------------------------------------------------------------|-----|-----|-----|--------------------------------------------------|-----|-----|-----|
|                   |                       | 1                                                                                      | 2   | 3   | 4   | 1                                                | 2   | 3   | 4   |
| ≤ 24V             | <b>BG06</b>           | 9                                                                                      | 12  | 14  | –   | 6                                                | 7   | 9   | –   |
|                   | <b>BG09</b>           | 12                                                                                     | 15  | 16  | 16  | 7                                                | 8   | 10  | 10  |
|                   | <b>BG12</b>           | 12                                                                                     | 15  | 16  | –   | 7                                                | 8   | 10  | –   |
|                   | <b>BF09</b>           | 15                                                                                     | 18  | 20  | 20  | 10                                               | 13  | 15  | 15  |
|                   | <b>BF12</b>           | 17                                                                                     | 20  | 22  | 20  | 12                                               | 15  | 18  | 15  |
|                   | <b>BF18</b>           | 17                                                                                     | 20  | 22  | 22  | 12                                               | 15  | 18  | 18  |
|                   | <b>BF25</b>           | 20                                                                                     | 23  | 23  | –   | 15                                               | 18  | 22  | –   |
|                   | <b>BF26</b>           | 25                                                                                     | 28  | 28  | 28  | 18                                               | 20  | 25  | 30  |
|                   | <b>BF32</b>           | 30                                                                                     | 32  | 32  | –   | 20                                               | 25  | 30  | –   |
|                   | <b>BF38</b>           | 35                                                                                     | 36  | 36  | 36  | 24                                               | 28  | 32  | 32  |
|                   | <b>BF40</b>           | 40                                                                                     | 48  | 48  | –   | 27                                               | 32  | 40  | –   |
|                   | <b>BF50</b>           | 45                                                                                     | 60  | 60  | 60  | 30                                               | 35  | 50  | 55  |
|                   | <b>BF65</b>           | 50                                                                                     | 70  | 70  | 70  | 35                                               | 45  | 55  | 60  |
|                   | <b>BF80</b>           | 70                                                                                     | 100 | 100 | 100 | 40                                               | 60  | 80  | 90  |
|                   | <b>BF94</b>           | 77                                                                                     | 110 | 110 | 115 | 45                                               | 65  | 86  | 96  |
|                   | <b>BF95</b>           | 140                                                                                    | 140 | 140 | 140 | 140                                              | 140 | 140 | 140 |
|                   | <b>BF115</b>          | 160                                                                                    | 160 | 160 | 160 | 160                                              | 160 | 160 | 160 |
|                   | <b>BF150</b>          | 165                                                                                    | 165 | 165 | 165 | 165                                              | 165 | 165 | 165 |
| 48V               | <b>BG06</b>           | 8                                                                                      | 11  | 14  | –   | 5                                                | 7   | 9   | –   |
|                   | <b>BG09</b>           | 10                                                                                     | 14  | 16  | 16  | 6                                                | 8   | 10  | 10  |
|                   | <b>BG12</b>           | 10                                                                                     | 14  | 16  | –   | 6                                                | 8   | 10  | –   |
|                   | <b>BF09</b>           | 13                                                                                     | 18  | 20  | 20  | 9                                                | 11  | 15  | 15  |
|                   | <b>BF12</b>           | 15                                                                                     | 20  | 22  | 20  | 11                                               | 13  | 18  | 15  |
|                   | <b>BF18</b>           | 15                                                                                     | 20  | 22  | 22  | 11                                               | 13  | 18  | 18  |
|                   | <b>BF25</b>           | 18                                                                                     | 23  | 23  | –   | 13                                               | 18  | 22  | –   |
|                   | <b>BF26</b>           | 21                                                                                     | 28  | 28  | 28  | 15                                               | 20  | 25  | 30  |
|                   | <b>BF32</b>           | 26                                                                                     | 32  | 32  | –   | 17                                               | 22  | 28  | –   |
|                   | <b>BF38</b>           | 30                                                                                     | 34  | 34  | 34  | 20                                               | 25  | 28  | 28  |
|                   | <b>BF40</b>           | 35                                                                                     | 48  | 48  | –   | 23                                               | 30  | 40  | –   |
|                   | <b>BF50</b>           | 40                                                                                     | 60  | 60  | 60  | 25                                               | 35  | 50  | 55  |
|                   | <b>BF65</b>           | 50                                                                                     | 70  | 70  | 70  | 25                                               | 40  | 50  | 60  |
|                   | <b>BF80</b>           | 60                                                                                     | 100 | 100 | 100 | 30                                               | 50  | 70  | 90  |
|                   | <b>BF94</b>           | 66                                                                                     | 110 | 110 | 115 | 33                                               | 55  | 75  | 95  |
|                   | <b>BF95</b>           | 140                                                                                    | 140 | 140 | 140 | 44                                               | 63  | 115 | 110 |
|                   | <b>BF115</b>          | 160                                                                                    | 160 | 160 | 160 | 50                                               | 72  | 150 | 120 |
|                   | <b>BF150</b>          | 165                                                                                    | 165 | 165 | 165 | 60                                               | 82  | 195 | 130 |
| 75V               | <b>BG06</b>           | 4                                                                                      | 7   | 8   | –   | 2                                                | 4   | 5   | –   |
|                   | <b>BG09</b>           | 4                                                                                      | 9   | 10  | 10  | 2                                                | 5   | 6   | 6   |
|                   | <b>BG12</b>           | 4                                                                                      | 9   | 10  | –   | 2                                                | 5   | 6   | –   |
|                   | <b>BF09</b>           | 12                                                                                     | 17  | 20  | 20  | 8                                                | 10  | 13  | 15  |
|                   | <b>BF12</b>           | 13                                                                                     | 18  | 20  | 20  | 10                                               | 12  | 15  | 15  |
|                   | <b>BF18</b>           | 15                                                                                     | 20  | 20  | 20  | 11                                               | 13  | 16  | 16  |
|                   | <b>BF25</b>           | 18                                                                                     | 23  | 23  | –   | 13                                               | 16  | 18  | –   |
|                   | <b>BF26</b>           | 18                                                                                     | 25  | 25  | 25  | 13                                               | 18  | 20  | 25  |
|                   | <b>BF32</b>           | 22                                                                                     | 28  | 32  | –   | 15                                               | 20  | 28  | –   |
|                   | <b>BF38</b>           | 23                                                                                     | 29  | 33  | 33  | 17                                               | 22  | 28  | 28  |
|                   | <b>BF40</b>           | 30                                                                                     | 45  | 48  | –   | 19                                               | 27  | 38  | –   |
|                   | <b>BF50</b>           | 40                                                                                     | 60  | 60  | 60  | 22                                               | 30  | 45  | 55  |
|                   | <b>BF65</b>           | 50                                                                                     | 70  | 70  | 70  | 25                                               | 40  | 50  | 60  |
|                   | <b>BF80</b>           | 60                                                                                     | 100 | 100 | 100 | 30                                               | 50  | 70  | 90  |
|                   | <b>BF94</b>           | 66                                                                                     | 110 | 110 | 115 | 33                                               | 55  | 75  | 95  |
|                   | <b>BF95</b>           | 100                                                                                    | 140 | 155 | 155 | 36                                               | 60  | 90  | 110 |
|                   | <b>BF115</b>          | 120                                                                                    | 160 | 160 | 160 | 40                                               | 65  | 100 | 120 |
|                   | <b>BF150</b>          | 150                                                                                    | 165 | 165 | 165 | 44                                               | 70  | 110 | 130 |

### POLE CHARACTERISTICS

### MAXIMUM OPERATIONAL CURRENT

| IEC Voltage<br>U <sub>e</sub> | Contactor<br>Type | IEC Maximum current I <sub>e</sub> [A] in categories:<br>DC1 with L/R ≤ 1ms<br>and poles in series |     |     |     | DC3 - DC5 with L/R ≤ 15ms<br>and poles in series |    |     |     |
|-------------------------------|-------------------|----------------------------------------------------------------------------------------------------|-----|-----|-----|--------------------------------------------------|----|-----|-----|
|                               |                   | 1                                                                                                  | 2   | 3   | 4   | 1                                                | 2  | 3   | 4   |
| 110V                          | <b>BG06</b>       | 3                                                                                                  | 6   | 8   | –   | 1                                                | 3  | 4   | –   |
|                               | <b>BG09</b>       | 3                                                                                                  | 8   | 10  | 10  | 1                                                | 4  | 5   | 5   |
|                               | <b>BG12</b>       | 3                                                                                                  | 8   | 10  | –   | 1                                                | 4  | 5   | –   |
|                               | <b>BF09</b>       | 6                                                                                                  | 12  | 15  | 16  | 2                                                | 7  | 11  | 12  |
|                               | <b>BF12</b>       | 6                                                                                                  | 13  | 16  | 16  | 2                                                | 8  | 12  | 16  |
|                               | <b>BF18</b>       | 6                                                                                                  | 13  | 16  | 18  | 2                                                | 8  | 12  | 13  |
|                               | <b>BF25</b>       | 6                                                                                                  | 16  | 18  | –   | 2                                                | 10 | 15  | –   |
|                               | <b>BF26</b>       | 6                                                                                                  | 22  | 24  | 24  | 2                                                | 13 | 18  | 20  |
|                               | <b>BF32</b>       | 8                                                                                                  | 25  | 27  | –   | 2,5                                              | 15 | 20  | –   |
|                               | <b>BF38</b>       | 8                                                                                                  | 32  | 34  | 34  | 2,5                                              | 18 | 23  | 23  |
|                               | <b>BF40</b>       | 8                                                                                                  | 42  | 44  | –   | 3                                                | 22 | 27  | –   |
|                               | <b>BF50</b>       | 8                                                                                                  | 50  | 55  | 60  | 3                                                | 25 | 30  | 45  |
|                               | <b>BF65</b>       | 8                                                                                                  | 60  | 60  | 70  | 3                                                | 30 | 35  | 50  |
|                               | <b>BF80</b>       | 8                                                                                                  | 80  | 85  | 100 | 3                                                | 40 | 60  | 75  |
|                               | <b>BF94</b>       | 8                                                                                                  | 90  | 93  | 110 | 3                                                | 43 | 64  | 80  |
|                               | <b>BF95</b>       | 10                                                                                                 | 110 | 120 | 140 | 6                                                | 55 | 85  | 105 |
|                               | <b>BF115</b>      | 10                                                                                                 | 130 | 140 | 160 | 6                                                | 65 | 100 | 125 |
|                               | <b>BF150</b>      | 10                                                                                                 | 150 | 160 | 165 | 6                                                | 80 | 120 | 150 |
| 220V                          | <b>BG06</b>       | –                                                                                                  | –   | 1   | –   | –                                                | –  | 0,5 | –   |
|                               | <b>BG09</b>       | –                                                                                                  | –   | 2   | 2   | –                                                | –  | 0,8 | 0,8 |
|                               | <b>BG12</b>       | –                                                                                                  | –   | 2   | –   | –                                                | –  | 0,8 | –   |
|                               | <b>BF09</b>       | –                                                                                                  | 1   | 10  | 12  | –                                                | 2  | 6   | 7   |
|                               | <b>BF12</b>       | –                                                                                                  | 1   | 11  | 12  | –                                                | 2  | 6   | 7   |
|                               | <b>BF18</b>       | –                                                                                                  | 1   | 11  | 13  | –                                                | 2  | 6   | 8   |
|                               | <b>BF25</b>       | –                                                                                                  | 1   | 12  | –   | –                                                | 2  | 8   | –   |
|                               | <b>BF26</b>       | –                                                                                                  | 2   | 20  | 26  | –                                                | 3  | 19  | 15  |
|                               | <b>BF32</b>       | –                                                                                                  | 3   | 23  | –   | –                                                | 3  | 23  | –   |
|                               | <b>BF38</b>       | –                                                                                                  | 4   | 30  | 38  | –                                                | 3  | 25  | 15  |
|                               | <b>BF40</b>       | –                                                                                                  | 5   | 56  | 70  | –                                                | 5  | 32  | 40  |
|                               | <b>BF50</b>       | –                                                                                                  | 7   | 75  | 90  | –                                                | 5  | 40  | 50  |
|                               | <b>BF65</b>       | –                                                                                                  | 9   | 90  | 110 | –                                                | 5  | 52  | 65  |
|                               | <b>BF80</b>       | –                                                                                                  | 9   | 95  | 115 | –                                                | 5  | 64  | 80  |
|                               | <b>BF94</b>       | –                                                                                                  | 9   | 95  | 115 | –                                                | 5  | 64  | 80  |
|                               | <b>BF95</b>       | –                                                                                                  | 12  | 125 | 140 | –                                                | 7  | 76  | 95  |
|                               | <b>BF115</b>      | –                                                                                                  | 14  | 145 | 160 | –                                                | 7  | 92  | 115 |
|                               | <b>BF150</b>      | –                                                                                                  | 14  | 150 | 165 | –                                                | 7  | 120 | 150 |

## 2 Contactors

Technical characteristics

### IEC DC UTILISATION CATEGORY POLE CHARACTERISTICS

#### MAXIMUM OPERATIONAL CURRENT

| IEC Voltage<br>Ue | Contactor<br>Type | IEC Maximum current Ie [A] in categories:<br>DC1 with L/R ≤ 1ms<br>and poles in series |     |     |     | DC3 - DC5 with L/R ≤ 15ms<br>and poles in series |     |     |     |
|-------------------|-------------------|----------------------------------------------------------------------------------------|-----|-----|-----|--------------------------------------------------|-----|-----|-----|
|                   |                   | 1                                                                                      | 2   | 3   | 4   | 1                                                | 2   | 3   | 4   |
| 75V               | <b>B145</b>       | 220                                                                                    | 220 | 220 | 220 | 160                                              | 160 | 160 | 160 |
|                   | <b>B180</b>       | 260                                                                                    | 260 | 260 | 260 | 180                                              | 180 | 180 | 180 |
|                   | <b>B250</b>       | 350                                                                                    | 350 | 350 | 350 | 280                                              | 280 | 280 | 280 |
|                   | <b>B310</b>       | 375                                                                                    | 375 | 375 | 375 | 310                                              | 310 | 310 | 310 |
|                   | <b>B400</b>       | 400                                                                                    | 400 | 400 | 400 | 350                                              | 350 | 350 | 350 |
|                   | <b>B500</b>       | 650                                                                                    | 650 | 650 | 650 | 550                                              | 550 | 550 | 550 |
|                   | <b>B630</b>       | 800                                                                                    | 800 | 800 | 800 | 800                                              | 800 | 800 | 800 |
| 110V              | <b>B145</b>       | 110                                                                                    | 150 | 150 | 150 | 80                                               | 120 | 140 | 140 |
|                   | <b>B180</b>       | 120                                                                                    | 170 | 170 | 170 | 90                                               | 140 | 160 | 160 |
|                   | <b>B250</b>       | 160                                                                                    | 300 | 300 | 300 | 150                                              | 250 | 280 | 280 |
|                   | <b>B310</b>       | 195                                                                                    | 350 | 350 | 350 | 170                                              | 290 | 310 | 310 |
|                   | <b>B400</b>       | 250                                                                                    | 400 | 400 | 400 | 200                                              | 350 | 350 | 350 |
|                   | <b>B500</b>       | 320                                                                                    | 550 | 600 | 600 | 320                                              | 550 | 550 | 550 |
|                   | <b>B630</b>       | 460                                                                                    | 800 | 800 | 800 | 460                                              | 800 | 800 | 800 |
| 220V              | <b>B145</b>       | -                                                                                      | 130 | 150 | 150 | -                                                | 90  | 120 | 140 |
|                   | <b>B180</b>       | -                                                                                      | 150 | 170 | 170 | -                                                | 100 | 140 | 160 |
|                   | <b>B250</b>       | -                                                                                      | 250 | 300 | 300 | -                                                | 200 | 250 | 280 |
|                   | <b>B310</b>       | -                                                                                      | 300 | 350 | 350 | -                                                | 230 | 290 | 310 |
|                   | <b>B400</b>       | -                                                                                      | 350 | 400 | 400 | -                                                | 280 | 350 | 350 |
|                   | <b>B500</b>       | -                                                                                      | 450 | 600 | 600 | -                                                | 450 | 550 | 550 |
|                   | <b>B630</b>       | -                                                                                      | 700 | 800 | 800 | -                                                | 700 | 800 | 800 |
| 330V              | <b>B145</b>       | -                                                                                      | -   | 130 | 150 | -                                                | -   | 90  | 140 |
|                   | <b>B180</b>       | -                                                                                      | -   | 150 | 170 | -                                                | -   | 100 | 160 |
|                   | <b>B250</b>       | -                                                                                      | -   | 250 | 300 | -                                                | -   | 200 | 280 |
|                   | <b>B310</b>       | -                                                                                      | -   | 300 | 350 | -                                                | -   | 230 | 310 |
|                   | <b>B400</b>       | -                                                                                      | -   | 350 | 400 | -                                                | -   | 280 | 350 |
|                   | <b>B500</b>       | -                                                                                      | -   | 450 | 600 | -                                                | -   | 450 | 550 |
|                   | <b>B630</b>       | -                                                                                      | -   | 700 | 750 | -                                                | -   | 650 | 700 |
| 460V              | <b>B145</b>       | -                                                                                      | -   | -   | 130 | -                                                | -   | -   | 90  |
|                   | <b>B180</b>       | -                                                                                      | -   | -   | 150 | -                                                | -   | -   | 100 |
|                   | <b>B250</b>       | -                                                                                      | -   | -   | 250 | -                                                | -   | -   | 200 |
|                   | <b>B310</b>       | -                                                                                      | -   | -   | 300 | -                                                | -   | -   | 230 |
|                   | <b>B400</b>       | -                                                                                      | -   | -   | 350 | -                                                | -   | -   | 280 |
|                   | <b>B500</b>       | -                                                                                      | -   | -   | 450 | -                                                | -   | -   | 450 |
|                   | <b>B630</b>       | -                                                                                      | -   | -   | 700 | -                                                | -   | -   | 700 |

#### IEC UTILISATION CATEGORIES DC1, DC3 AND DC5.

##### POLE CHARACTERISTICS

###### CHOICE CRITERIA

The elements to be considered for the contactor choice are:

- Rated operational current  $I_e$
- Rated operational voltage  $U_e$
- Utilisation category and L/R time constant
- Eventual verification of electrical life.

###### OPERATING CONDITIONS

Indicated current is valid for:

- Ambient temperature  $\leq 55^\circ\text{C}$
- Operating cycles: up to 120 cy/h with 60% on-load factor  
up to 250 cy/h with 30% on-load factor.

###### POLES IN SERIES

It is important to use contactors with the indicated number of poles in series depending on operating voltage.

The poles in series can be connected to one single polarity or divided between the two polarities of the circuit indifferently.

NOTE. For voltages lower than 30V, the diagrams given in figures 3 and 4 are not recommendable since voltage drops can take place. In these cases, it is better to use poles in parallel considering the notes given in the following section.

Examples of poles in series:

1 POLE

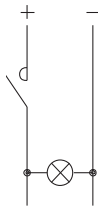


Fig. 1

2 POLES

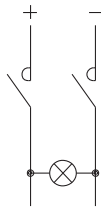


Fig. 2

3 POLES

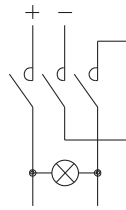


Fig. 3

4 POLES

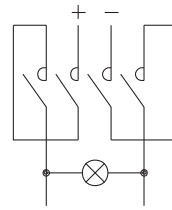


Fig. 4

###### POLES IN PARALLEL

It is possible to increase the electrical life by placing poles in series when using voltages which require 1 or 2 poles in parallel.

Poles in parallel do not increase the maximum operational current given in the previous pages; that is, if one pole has a maximum operational current in DC5 of 8A, two poles in parallel, it will always be 8A.

With poles in parallel, it is possible to increase the rated contact capacity ( $I_{th}$ ) only if the contactor opens and closes in no-load conditions or when used as resistance shunts.

In this case, the contact capacity can be increased.

The value can be obtained by multiplying the rated current of one pole by the K factor given below; e.g.: if one pole carries 10A, three poles in parallel can carry  $10 \times 2.2 = 22\text{A}$ .

Therefore, the operating current is the one indicated in the tables, multiplied by the K factor given below which takes into consideration the unequal current division on the various poles.

2 POLES in parallel  $K = 1.6$

3 POLES in parallel  $K = 2.2$

4 POLES in parallel  $K = 2.8$

Examples of poles in parallel:

1 POLE in series and  
2 POLES in parallel



Fig. 5

1 POLE in series and  
3 POLES in parallel

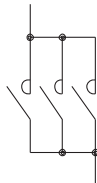


Fig. 6

1 POLE in series and  
4 POLES in parallel

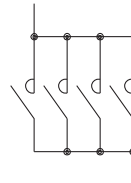


Fig. 7

2 POLES in series and  
2 POLES in parallel

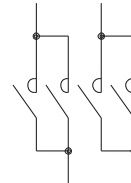


Fig. 8

###### MAXIMUM OPERATIONAL CURRENT

See tables on pages 2-50 to 2-52.

###### OTHER CONDITIONS

For different operating conditions or voltage not included among those indicated in the tables, on pages 2-50 to 2-52, consult Technical support (Tel. 035 4282422; E-mail: service@LovatoElectric.com).

## 2 Contactors

### Technical characteristics

#### IEC SELECTION GUIDE FOR LIGHTING CIRCUIT SWITCHING

##### GENERAL INFORMATION

The elements which are to be considered for the contactor choice are:

- Type of lamp
- Power factor ( $\cos\varphi$ )
- With or without power factor correction
- Value of current when switching on and in running conditions.

Depending on the number and type of lamps, it is also important to bear in mind the main discriminating characteristics given below for the contactor choice:

- Incandescent lamps → contactor making capacity
- Lamps not corrected → rated contactor current in AC1
- Lamps corrected → rated contactor current in AC3

The table below summarises the major characteristics depending on the more commonly used type of lamps:

| Type of lamps                | Switching on<br>Multiple of $I_n$ ❶ | $\cos\varphi$ | Switching off<br>Multiple of $I_n$ ❶ | $\cos\varphi$                              |
|------------------------------|-------------------------------------|---------------|--------------------------------------|--------------------------------------------|
| Incandescent                 | 15                                  | 1             | 1                                    | 1                                          |
| Mixed light                  | 1.3                                 | 1             | 1                                    | 1                                          |
| Fluorescent                  | 1.15 - 1.3                          | 0.2           | 1                                    | 0.3 - 0.5 (not corrected)<br>1 (corrected) |
| High-pressure mercury vapour | 1.5 - 1.75                          | 0.2           | 1                                    | 0.45 - 0.7 (not corrected)                 |
| High-pressure sodium vapour  | 1.3 - 1.5                           | 0.2           | 1                                    | 0.3 - 0.5 (not corrected)                  |
| Low-pressure sodium vapour   | 1                                   | 0.2 - 0.5     | 1                                    | 0.2 - 0.5 (not corrected)                  |
| Metal halide                 | 1.7 - 2.1                           | 0.2           | 1                                    | 0.4 - 0.5 (not corrected)                  |
| LED                          | 20...40 ❷                           | 0.6...0.95    | 1                                    | 0.6...0.95                                 |

| Lamp features                  |                                  | Lamp power<br>[W] | Rated current<br>[A] | Capacitor capacity<br>[μF] | Maximum number [n] of lamps for each contactor pole ❸ |      |      |      |      |      |      |      |      |       |      |      |  |  |
|--------------------------------|----------------------------------|-------------------|----------------------|----------------------------|-------------------------------------------------------|------|------|------|------|------|------|------|------|-------|------|------|--|--|
|                                |                                  |                   |                      |                            | BG06                                                  | BF09 |      |      |      |      | BF65 |      |      |       |      |      |  |  |
|                                |                                  |                   |                      |                            | BG09                                                  | BF12 | BF26 | BF38 | BF40 | BF50 | BF80 | BF94 | BF95 | BF115 | B145 | B180 |  |  |
| LED                            | 220...240V 50/60Hz               | See note ❹        |                      |                            | Each pole can carry 67% of the rated current AC3 ❺    |      |      |      |      |      |      |      |      |       |      |      |  |  |
| INCANDESCENT                   | 220...240V                       | 60                | 0.27                 | -                          | 30                                                    | 48   | 92   | 118  | 129  | 203  | 240  | 296  | 370  | 425   | 462  |      |  |  |
|                                |                                  | 100               | 0.45                 | -                          | 18                                                    | 28   | 55   | 71   | 77   | 122  | 144  | 177  | 222  | 255   | 277  |      |  |  |
|                                |                                  | 200               | 0.91                 | -                          | 8                                                     | 14   | 27   | 35   | 38   | 60   | 71   | 87   | 109  | 126   | 137  |      |  |  |
|                                |                                  | 300               | 1.4                  | -                          | 5                                                     | 9    | 17   | 22   | 25   | 39   | 46   | 57   | 71   | 82    | 89   |      |  |  |
|                                |                                  | 500               | 2.3                  | -                          | 3                                                     | 5    | 10   | 13   | 15   | 23   | 28   | 34   | 43   | 50    | 54   |      |  |  |
|                                |                                  | 1000              | 4.6                  | -                          | 1                                                     | 2    | 5    | 6    | 7    | 11   | 14   | 17   | 21   | 25    | 27   |      |  |  |
| MIXED LIGHT                    | 220...240V                       | 100               | 0.45                 | -                          | 20                                                    | 33   | 57   | 77   | 88   | 122  | 144  | 177  | 244  | 311   | 377  |      |  |  |
|                                |                                  | 160               | 0.72                 | -                          | 12                                                    | 20   | 36   | 48   | 55   | 76   | 90   | 111  | 152  | 194   | 236  |      |  |  |
|                                |                                  | 250               | 1.13                 | -                          | 8                                                     | 13   | 23   | 30   | 35   | 48   | 57   | 70   | 97   | 123   | 150  |      |  |  |
|                                |                                  | 500               | 2.3                  | -                          | 4                                                     | 6    | 11   | 15   | 17   | 23   | 28   | 34   | 47   | 60    | 73   |      |  |  |
|                                |                                  | 1000              | 4.6                  | -                          | 1                                                     | 3    | 5    | 7    | 8    | 11   | 14   | 17   | 23   | 30    | 36   |      |  |  |
| ELECTRONIC BALLAST FLUORESCENT | Single mounting                  | 16 / 18           | 0.1                  | (6.8) ❻                    | 48                                                    | 80   | 160  | 220  | 220  | 400  | 450  | 500  | 750  | 1050  | 1200 |      |  |  |
|                                |                                  | 32 / 36           | 0.18                 | (6.8) ❻                    | 27                                                    | 44   | 88   | 122  | 122  | 222  | 250  | 277  | 416  | 583   | 666  |      |  |  |
|                                |                                  | 50 / 58           | 0.27                 | (10) ❻                     | 17                                                    | 29   | 59   | 82   | 82   | 148  | 166  | 185  | 277  | 388   | 444  |      |  |  |
|                                | Dual mounting                    | 2x16 / 18         | 0.18                 | (10) ❻                     | 26                                                    | 44   | 88   | 122  | 122  | 222  | 250  | 277  | 416  | 583   | 666  |      |  |  |
|                                |                                  | 2x32 / 36         | 0.35                 | (10) ❻                     | 13                                                    | 22   | 45   | 62   | 62   | 114  | 128  | 142  | 214  | 300   | 342  |      |  |  |
|                                |                                  | 2x50 / 58         | 0.52                 | (22) ❻                     | 9                                                     | 15   | 30   | 42   | 42   | 76   | 86   | 96   | 144  | 201   | 230  |      |  |  |
| STANDARD FLUORESCENT           | Not corrected<br>Single mounting | 15                | 0.35                 | -                          | 25                                                    | 42   | 74   | 100  | 114  | 157  | 185  | 228  | 314  | 400   | 485  |      |  |  |
|                                |                                  | 20                | 0.37                 | -                          | 24                                                    | 40   | 70   | 94   | 108  | 148  | 175  | 216  | 297  | 378   | 459  |      |  |  |
|                                |                                  | 40                | 0.44                 | -                          | 20                                                    | 34   | 59   | 79   | 90   | 125  | 147  | 181  | 250  | 318   | 386  |      |  |  |
|                                |                                  | 65                | 0.7                  | -                          | 12                                                    | 21   | 37   | 50   | 57   | 78   | 92   | 114  | 157  | 200   | 242  |      |  |  |
|                                |                                  | 115               | 1.5                  | -                          | 6                                                     | 10   | 17   | 23   | 26   | 36   | 43   | 53   | 73   | 93    | 113  |      |  |  |
|                                | Corrected<br>Single mounting     | 15                | 0.11                 | 4.5                        | 24                                                    | 40   | 62   | 94   | 94   | 200  | 200  | 200  | 533  | 533   | 533  |      |  |  |
|                                |                                  | 20                | 0.16                 | 4.5                        | 24                                                    | 40   | 62   | 94   | 94   | 200  | 200  | 200  | 533  | 533   | 533  |      |  |  |
|                                |                                  | 40                | 0.24                 | 4.5                        | 24                                                    | 40   | 62   | 94   | 94   | 200  | 200  | 200  | 458  | 500   | 520  |      |  |  |
|                                |                                  | 65                | 0.4                  | 7                          | 15                                                    | 25   | 40   | 50   | 57   | 125  | 128  | 128  | 275  | 300   | 312  |      |  |  |
|                                |                                  | 115               | 0.7                  | 18                         | 6                                                     | 10   | 15   | 23   | 23   | 50   | 50   | 50   | 133  | 133   | 133  |      |  |  |
|                                | DUO circuit                      | 140               | 0.7                  | 18                         | 6                                                     | 10   | 15   | 23   | 23   | 50   | 50   | 50   | 133  | 133   | 133  |      |  |  |
|                                |                                  | 2 x 20            | 0.26 ❶               | -                          | 54                                                    | 57   | 100  | 153  | 153  | 211  | 250  | 307  | 423  | 538   | 653  |      |  |  |
|                                |                                  | 2 x 40            | 0.46 ❶               | -                          | 19                                                    | 32   | 56   | 86   | 86   | 119  | 141  | 173  | 239  | 304   | 369  |      |  |  |
|                                |                                  | 2 x 65            | 0.7 ❶                | -                          | 12                                                    | 21   | 37   | 57   | 57   | 78   | 92   | 114  | 157  | 200   | 242  |      |  |  |
|                                |                                  | 2 x 115           | 1.3 ❶                | -                          | 6                                                     | 11   | 20   | 30   | 30   | 42   | 50   | 61   | 84   | 107   | 130  |      |  |  |
|                                |                                  | 2 x 140           | 1.5 ❶                | -                          | 6                                                     | 10   | 17   | 26   | 26   | 36   | 43   | 53   | 73   | 93    | 113  |      |  |  |

❶  $I_n$  = Rated lamp current.

❷ For 220/240V circuits, either single-phase (between phase and neutral) or 2-wire (between phase and phase), the maximum number of lamps is as per the table.

For three-phase circuits with neutral 380/415V or 220/240V, the maximum number of lamps controlled by the same contactor is  $n \cdot 3$ .

For three-phase 380/415V circuits without neutral, the maximum number of lamps controlled by the same contactor is  $n \cdot \sqrt{3}$ .

Electrical life is 100,000 cycles up to 55°C.

❸ Incorporated capacitor.

❹ Total.

❺ With reference to the AC side of the power supplies.

❻ Usually, each light has its own power supply. If a power supply controls several lights, the number of power supplies must be factored into the calculation. The sum of the rated currents of the power supplies connected to each pole of the contact must not exceed 67% of the rated current AC-3 of the contactor indicated on page 2-4.

e.g. BF18 has a rated current AC-3 of 18A; it can control  $18 \times 0.67 = 12.06A$  per pole at most.

| Lamp<br>features                                 |                                                 | Lamp<br>power | Rated<br>current | Capacitor<br>capacity | Maximum number [n] of lamps for each contactor pole❶ |      |      |      |      |      |      |      |       |       |      |      |  |  |
|--------------------------------------------------|-------------------------------------------------|---------------|------------------|-----------------------|------------------------------------------------------|------|------|------|------|------|------|------|-------|-------|------|------|--|--|
|                                                  |                                                 |               |                  |                       | BG06                                                 | BF09 |      |      |      |      |      |      |       |       |      |      |  |  |
|                                                  |                                                 |               |                  |                       | BG09                                                 | BF12 | BF26 | BF32 | BF38 | BF40 | BF65 | BF80 | BF95  | BF115 | B145 | B180 |  |  |
|                                                  |                                                 | [W]           | [A]              | [μF]                  | BG12                                                 | BF18 | BF25 | BF32 | BF38 | BF50 | BF94 | BF95 | BF150 | B145  | B180 |      |  |  |
| HIGH-PRESSURE MERCURY VAPOUR<br>220/240V 50/60Hz | Not corrected                                   | 50            | 0.61             | -                     | 10                                                   | 16   | 26   | 36   | 44   | 65   | 73   | 82   | 122   | 172   | 196  |      |  |  |
|                                                  |                                                 | 80            | 0.8              | -                     | 7                                                    | 12   | 20   | 27   | 33   | 50   | 56   | 62   | 93    | 131   | 150  |      |  |  |
|                                                  |                                                 | 125           | 1.2              | -                     | 5                                                    | 8    | 13   | 18   | 22   | 33   | 37   | 41   | 62    | 87    | 100  |      |  |  |
|                                                  |                                                 | 250           | 2.2              | -                     | 3                                                    | 4    | 7    | 10   | 12   | 18   | 20   | 22   | 34    | 47    | 54   |      |  |  |
|                                                  |                                                 | 400           | 3.4              | -                     | 2                                                    | 3    | 5    | 6    | 7    | 11   | 13   | 14   | 22    | 30    | 35   |      |  |  |
|                                                  |                                                 | 700           | 5.5              | -                     |                                                      | 1    | 3    | 4    | 4    | 7    | 8    | 9    | 13    | 19    | 21   |      |  |  |
|                                                  |                                                 | 1000          | 8                | -                     |                                                      | 1    | 2    | 2    | 3    | 5    | 5    | 6    | 9     | 13    | 15   |      |  |  |
|                                                  | Corrected                                       | 50            | 0.29             | 7                     | 15                                                   | 25   | 40   | 60   | 60   | 128  | 128  | 128  | 258   | 342   | 342  |      |  |  |
|                                                  |                                                 | 80            | 0.42             | 8                     | 13                                                   | 22   | 35   | 52   | 53   | 95   | 107  | 112  | 178   | 250   | 285  |      |  |  |
|                                                  |                                                 | 125           | 0.7              | 10                    | 8                                                    | 14   | 22   | 31   | 35   | 57   | 64   | 71   | 107   | 150   | 171  |      |  |  |
|                                                  |                                                 | 250           | 1.3              | 18                    | 4                                                    | 7    | 12   | 16   | 19   | 30   | 34   | 38   | 57    | 80    | 92   |      |  |  |
|                                                  |                                                 | 400           | 2.1              | 25                    | 2                                                    | 4    | 7    | 10   | 11   | 19   | 21   | 23   | 35    | 50    | 57   |      |  |  |
|                                                  |                                                 | 700           | 3.6              | 40                    | -                                                    | 2    | 4    | 6    | 6    | 11   | 12   | 13   | 20    | 29    | 33   |      |  |  |
|                                                  |                                                 | 1000          | 5.3              | 60                    | -                                                    | 1    | 3    | 4    | 4    | 7    | 8    | 9    | 14    | 19    | 22   |      |  |  |
|                                                  | 380/415V 50/60Hz                                | Not corrected | 2000             | 8                     | -                                                    |      | -    | 1    | 2    | 2    | 3    | 3    | 4     | 5     | 8    | 9    |  |  |
|                                                  |                                                 | Corrected     | 2000             | 5.5                   | 35                                                   |      | -    | 1    | 2    | 2    | 4    | 5    | 5     | 8     | 11   | 13   |  |  |
|                                                  | HIGH-PRESSURE SODIUM VAPOUR<br>220/240V 50/60Hz | Not corrected | 150              | 1.8                   | -                                                    | 3    | 5    | 8    | 12   | 15   | 22   | 25   | 27    | 41    | 58   | 66   |  |  |
|                                                  |                                                 |               | 250              | 3                     | -                                                    | 2    | 3    | 5    | 7    | 9    | 13   | 15   | 16    | 25    | 35   | 40   |  |  |
| 400                                              |                                                 |               | 4.7              | -                     | 1                                                    | 2    | 3    | 4    | 5    | 8    | 9    | 10   | 15    | 22    | 25   |      |  |  |
| 600                                              |                                                 |               | 7.1              | -                     | -                                                    | 1    | 2    | 3    | 3    | 5    | 6    | 6    | 10    | 15    | 16   |      |  |  |
| 1000                                             |                                                 |               | 10.4             | -                     |                                                      | -    | 1    | 2    | 2    | 3    | 4    | 4    | 7     | 10    | 11   |      |  |  |
| Corrected                                        |                                                 | 150           | 0.83             | 20                    | -                                                    | 9    | 14   | 19   | 21   | 45   | 45   | 45   | 90    | 120   | 120  |      |  |  |
|                                                  |                                                 | 250           | 1.5              | 36                    | -                                                    | 5    | 7    | 10   | 11   | 25   | 25   | 25   | 50    | 66    | 66   |      |  |  |
|                                                  |                                                 | 400           | 2.4              | 48                    | -                                                    | 3    | 5    | 6    | 7    | 16   | 18   | 18   | 31    | 43    | 50   |      |  |  |
|                                                  |                                                 | 600           | 3.5              | 68                    | -                                                    | 2    | 3    | 4    | 4    | 10   | 12   | 12   | 20    | 28    | 34   |      |  |  |
|                                                  |                                                 | 1000          | 6.3              | 120                   | -                                                    | 1    | 1    | 2    | 2    | 6    | 7    | 7    | 11    | 16    | 19   |      |  |  |
| LOW-PRESSURE SODIUM VAPOUR<br>220/240V 50/60Hz   | Not corrected                                   | 35            | 1.5              | -                     | 4                                                    | 6    | 10   | 14   | 18   | 26   | 30   | 33   | 50    | 70    | 80   |      |  |  |
|                                                  |                                                 | 55            | 1.5              | -                     | 4                                                    | 6    | 10   | 14   | 18   | 26   | 30   | 33   | 50    | 70    | 80   |      |  |  |
|                                                  |                                                 | 90            | 2.4              | -                     | 3                                                    | 4    | 6    | 9    | 11   | 16   | 18   | 20   | 31    | 43    | 50   |      |  |  |
|                                                  |                                                 | 135           | 3.1              | -                     | 2                                                    | 3    | 5    | 7    | 8    | 12   | 14   | 16   | 24    | 33    | 38   |      |  |  |
|                                                  |                                                 | 150           | 3.2              | -                     | 2                                                    | 3    | 5    | 6    | 8    | 12   | 14   | 15   | 23    | 32    | 37   |      |  |  |
|                                                  |                                                 | 180           | 3.3              | -                     | 2                                                    | 3    | 4    | 6    | 8    | 12   | 13   | 15   | 22    | 31    | 36   |      |  |  |
|                                                  | Corrected                                       | 35            | 0.31             | 20                    | -                                                    | 6    | 10   | 14   | 18   | 45   | 45   | 45   | 120   | 120   | 120  |      |  |  |
|                                                  |                                                 | 55            | 0.42             | 20                    | -                                                    | 6    | 10   | 14   | 18   | 45   | 45   | 45   | 120   | 120   | 120  |      |  |  |
|                                                  |                                                 | 90            | 0.63             | 30                    | -                                                    | 4    | 6    | 9    | 11   | 30   | 30   | 30   | 80    | 80    | 80   |      |  |  |
|                                                  |                                                 | 135           | 0.94             | 40                    | -                                                    | 3    | 5    | 7    | 8    | 22   | 22   | 22   | 60    | 60    | 60   |      |  |  |
| METAL HALIDE<br>220/240V 50/60Hz                 | Not corrected                                   | 35            | 0.3              | -                     | -                                                    | 28   | 50   | 66   | 80   | 100  | 150  | 167  | 250   | 330   | 400  |      |  |  |
|                                                  |                                                 | 70            | 0.5              | -                     | -                                                    | 16   | 28   | 40   | 50   | 60   | 90   | 100  | 150   | 200   | 240  |      |  |  |
|                                                  |                                                 | 150           | 1                | -                     | -                                                    | 8    | 14   | 20   | 25   | 30   | 45   | 50   | 75    | 100   | 120  |      |  |  |
|                                                  |                                                 | 250           | 3                | -                     | -                                                    | 3    | 5    | 7    | 9    | 13   | 15   | 16   | 25    | 35    | 40   |      |  |  |
|                                                  |                                                 | 400           | 3.5              | -                     | -                                                    | 2    | 4    | 6    | 7    | 11   | 12   | 14   | 21    | 30    | 34   |      |  |  |
|                                                  |                                                 | 1000          | 10               | -                     | -                                                    | 1    | 1    | 2    | 2    | 4    | 4    | 5    | 7     | 10    | 12   |      |  |  |
|                                                  |                                                 | 2000          | 17               | -                     |                                                      | -    | -    | 1    | 1    | 2    | 2    | 2    | 4     | 6     | 7    |      |  |  |
|                                                  | Corrected                                       | 35            | 0.17             | 6                     | -                                                    | 33   | 60   | 65   | 65   | 200  | 240  | 260  | 400   | 420   | 440  |      |  |  |
|                                                  |                                                 | 70            | 0.28             | 12                    | -                                                    | 20   | 36   | 40   | 40   | 120  | 145  | 155  | 240   | 255   | 265  |      |  |  |
|                                                  |                                                 | 150           | 0.6              | 20                    | -                                                    | 9    | 17   | 18   | 18   | 56   | 68   | 74   | 112   | 118   | 120  |      |  |  |
| 380/415V 50/60Hz                                 | Not corrected                                   | 250           | 1.5              | 32                    | -                                                    | 5    | 7    | 8    | 10   | 26   | 28   | 28   | 46    | 50    | 53   |      |  |  |
|                                                  |                                                 | 400           | 2                | 35                    | -                                                    | 4    | 5    | 6    | 7    | 20   | 22   | 25   | 35    | 37    | 40   |      |  |  |
|                                                  |                                                 | 1000          | 5.8              | 95                    | -                                                    | 1    | 1    | 2    | 2    | 6    | 7    | 8    | 12    | 12    | 13   |      |  |  |
|                                                  |                                                 | 2000          | 11.5             | 148                   | -                                                    | -    | -    | 1    | 1    | 3    | 3    | 4    | 6     | 6     | 6    |      |  |  |
|                                                  |                                                 | 2000          | 10.3             | -                     | -                                                    | -    | -    | 1    | 1    | 2    | 2    | 3    | 4     | 6     | 7    |      |  |  |
|                                                  |                                                 | 3500          | 18               | -                     | -                                                    | -    | -    | -    | 1    | 1    | 1    | 2    | 3     | 4     |      |      |  |  |
|                                                  |                                                 | Corrected     | 2000             | 6.6                   | 60                                                   | -    | -    | 1    | 1    | 1    | 3    | 3    | 4     | 6     | 7    | 7    |  |  |
|                                                  | 3500                                            |               | 11.6             | 100                   | -                                                    | -    | -    | -    | -    | 2    | 2    | 2    | 3     | 3     | 4    |      |  |  |

❶ For 220/240V circuits, either single-phase (between phase and neutral) or 2-wire (between phase and phase), the maximum number of lamps is as per the table.  
 For three-phase circuits with neutral 380/415V or 220/240V, the maximum number of lamps controlled by the same contactor is  $n \cdot 3$ .  
 For three-phase 380/415V circuits without neutral, the maximum number of lamps controlled by the same contactor is  $n \cdot \sqrt{3}$ .  
 Electrical life is 100,000 cycles up to 55°C.

## 2 Contactors

### Technical characteristics

#### POWER FACTOR CORRECTION CAPACITORS

##### CHOICE CRITERIA

The contactor during the closing transition is influenced by electrical currents having high frequencies and high amplitudes. The frequencies of these currents range between 1 and 10kHz; the amplitudes must have values lower than the maximum permissible current peak of the contactor to be used.

##### AMBIENT OPERATING CONDITIONS

Ambient temperature:  $\leq 50^{\circ}\text{C}$ .

For temperatures higher than  $50^{\circ}\text{C}$  up to  $70^{\circ}\text{C}$ , stated maximum operational power ratings are to be reduced by a percentage equal to the difference between the ambient temperature and  $50^{\circ}\text{C}$ .

Operating cycle:  $\leq 120$  cy/h

Electrical life:  $\geq 100,000$  cycles.

| Contactor      | IEC rated current $\leq 400\text{V}$ | Maximum permissible peak current | IEC maximum operational voltage | Fuse | IEC maximum operational power (AC-6b) |              |              |                  |
|----------------|--------------------------------------|----------------------------------|---------------------------------|------|---------------------------------------|--------------|--------------|------------------|
|                |                                      |                                  |                                 |      | 220V<br>230V<br>240V                  | 380V<br>400V | 415V<br>440V | 500V<br>660/690V |
| Type           | [A]                                  | [A]                              | [V]                             | [A]  | [kvar]                                | [kvar]       | [kvar]       | [kvar]           |
| <b>BF09 A</b>  | 12                                   | 500                              | 690                             | 16   | 4.5                                   | 7.5          | 9            | 10               |
| <b>BF12 A</b>  | 18                                   | 550                              | 690                             | 25   | 7                                     | 12.5         | 12           | 14               |
| <b>BF18 A</b>  | 23                                   | 1000                             | 690                             | 32   | 9                                     | 15           | 16           | 18               |
| <b>BF25 A</b>  | 23                                   | 1000                             | 690                             | 32   | 9                                     | 15           | 16           | 18               |
| <b>BF26 A</b>  | 30                                   | 1400                             | 690                             | 40   | 11                                    | 20           | 22           | 22               |
| <b>BF32 A</b>  | 36                                   | 1700                             | 690                             | 50   | 14                                    | 25           | 27           | 30               |
| <b>BF38 A</b>  | 43                                   | 1900                             | 690                             | 63   | 17                                    | 30           | 30           | 34               |
| <b>BF40 A</b>  | 50                                   | 2500                             | 1000                            | 100  | 20                                    | 35           | 40           | 45               |
| <b>BF50 A</b>  | 58                                   | 2500                             | 1000                            | 80   | 22                                    | 40           | 41           | 45               |
| <b>BF65 A</b>  | 65                                   | 2500                             | 1000                            | 100  | 26                                    | 45           | 50           | 52               |
| <b>BF80 A</b>  | 75                                   | 2500                             | 1000                            | 125  | 30                                    | 50           | 56           | 70               |
| <b>BF94 A</b>  | 75                                   | 2500                             | 1000                            | 125  | 30                                    | 50           | 56           | 70               |
| <b>BF95 A</b>  | 90                                   | 3000                             | 1000                            | 125  | 34                                    | 60           | 75           | 80               |
| <b>BF115 A</b> | 115                                  | 3000                             | 1000                            | 160  | 45                                    | 75           | 85           | 135              |
| <b>BF150 A</b> | 144                                  | 3000                             | 1000                            | 160  | 50                                    | 100          | 115          | 150              |
| <b>B145</b>    | 150                                  | 3400                             | 1000                            | 200  | 57                                    | 100          | 108          | 130              |
| <b>B180</b>    | 170                                  | 3600                             | 1000                            | 250  | 65                                    | 112          | 122          | 150              |
| <b>B250</b>    | 240                                  | 5100                             | 1000                            | 315  | 91                                    | 158          | 172          | 210              |
| <b>B310</b>    | 265                                  | 5900                             | 1000                            | 315  | 105                                   | 184          | 200          | 245              |
| <b>B400</b>    | 320                                  | 7500                             | 1000                            | 400  | 122                                   | 211          | 230          | 280              |
| <b>B500</b>    | 500                                  | 9000                             | 1000                            | 630  | 190                                   | 330          | 360          | 430              |
| <b>B630</b>    | 610                                  | 11000                            | 1000                            | 800  | 230                                   | 400          | 432          | 520              |

The use of contactors with the above operational powers is allowable only when the peak current, in the installation point of the power factor correction board, is lower than the values stated in the table.

If this condition is not verified, it is necessary to use limiting inductances or specific contactors stated on page 2-14. Consult Technical support (see contact details on inside front cover) to obtain detailed information on the correct use of contactors without limiting inductances.

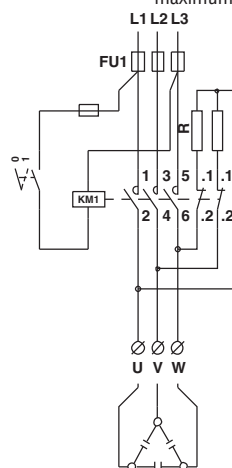
##### LIMITING INDUCTANCES

The use of limiting inductances is imperative when the system inductances (line transformer and cables), upstream of the power factor correction panel, are not able to maintain the maximum connecting current within the limit value of the contactor used.

##### FAST DISCHARGE RESISTANCES OF CAPACITORS

The use of the contactor, according to the wiring diagram given, allows the fast discharge of the capacitors as well as the instantaneous disconnection of the capacitors from the mains when the coil is de-energised.

The resistances, indicated in the following table, guarantee the discharge within a maximum time of 2 seconds.



| Capacitor power<br>[kvar] | Voltage 220...230V |     | Voltage 380...500V |     |
|---------------------------|--------------------|-----|--------------------|-----|
|                           | [ $\Omega$ ]       | [W] | [ $\Omega$ ]       | [W] |
| 2.5-5                     | 3900               | 12  | 8200               | 12  |
| 10-15                     | 1800               | 25  | 4300               | 25  |
| 20-50                     | 1000               | 50  | 2200               | 50  |

#### SPECIAL CONTACTORS FOR POWER FACTOR CORRECTION CAPACITORS

##### GENERAL CHARACTERISTICS

These contactors are equipped with early-make contacts. This special type of contact has the purpose of connecting for a very brief interval, 2-3ms, during the contactor closing, resistors which limit the connecting current of the capacitors. These resistors are then excluded when the closing operation is complete and the current capacity is conveyed to the main contacts. With this type of circuit, it is possible to obtain minor wear of all the components of the system especially fuses and capacitors ensuring a longer life and better reliability. The contactors are particularly suitable for use in automatic power factor correction panels since there is no need of limiting inductances and a source of heat has been eliminated. In this way, these modular electric switchboards can be more compact.

The BFK version, figure 1, is designed for three-phase switching. The peculiarity of this type is in the contacts, suitable to connect limiting resistors, which close only for the time needed to limit any in-rush current peak and then reopen to avoid eventual flow of residual currents through the resistors.

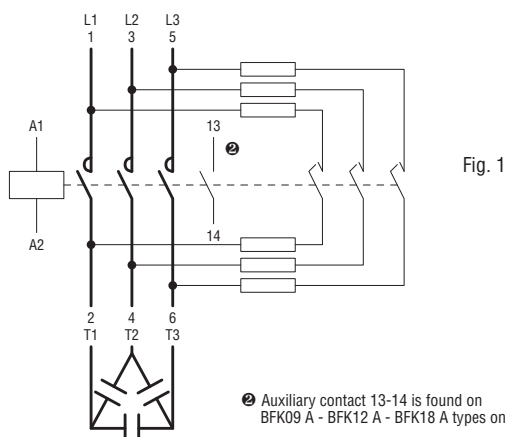
##### AMBIENT OPERATING CONDITIONS

Ambient temperature:  $\leq 50^{\circ}\text{C}$

For ambient temperature higher than  $50^{\circ}\text{C}$  up to  $70^{\circ}\text{C}$ , maximum operational power ratings, indicated in the table, are to be reduced by a percentage equal to the difference between the ambient temperature and  $50^{\circ}\text{C}$ .

Operating cycles:  $\leq 120$  cy/h.

Electrical life:  $\geq 400,000$  cycles.



| Contactor       | Built-in auxiliary contacts NO | IEC rated operational current $\leq 440\text{V}$ | IEC fuse gG | Maximum IEC power at $\leq 50^{\circ}\text{C}$ (AC6b) ① |              |              |              |
|-----------------|--------------------------------|--------------------------------------------------|-------------|---------------------------------------------------------|--------------|--------------|--------------|
|                 |                                |                                                  |             | 220V<br>230V<br>240V                                    | 380V<br>400V | 415V<br>440V | 500V<br>690V |
| Type            | n°                             | [A]                                              | [A]         | [kvar]                                                  | [kvar]       | [kvar]       | [kvar]       |
| <b>BFK09 A</b>  | 1                              | 12                                               | 16          | 4.5                                                     | 7.5          | 9            | 10           |
| <b>BFK12 A</b>  | 1                              | 18                                               | 25          | 7                                                       | 12.5         | 14           | 16           |
| <b>BFK18 A</b>  | 1                              | 23                                               | 40          | 9                                                       | 15           | 17           | 20           |
| <b>BFK26 A</b>  | —                              | 30                                               | 40          | 11                                                      | 20           | 22           | 25           |
| <b>BFK32 A</b>  | —                              | 36                                               | 63          | 14                                                      | 25           | 27.5         | 30           |
| <b>BFK38 A</b>  | —                              | 43                                               | 63          | 17                                                      | 30           | 33           | 36           |
| <b>BFK50 A</b>  | —                              | 58                                               | 80          | 22                                                      | 40           | 41           | 46           |
| <b>BFK65 A</b>  | —                              | 65                                               | 100         | 26                                                      | 45           | 50           | 56           |
| <b>BFK80 A</b>  | —                              | 75                                               | 125         | 30                                                      | 50           | 56           | 65           |
| <b>BFK95 A</b>  | —                              | 90                                               | 125         | 34                                                      | 60           | 75           | 80           |
| <b>BFK115 A</b> | —                              | 115                                              | 160         | 45                                                      | 75           | 85           | 135          |
| <b>BFK150 A</b> | —                              | 144                                              | 160         | 50                                                      | 100          | 115          | 150          |

NOTE: See page 2-14 for order codes.

① Consult Technical support (Tel. 035 4282422; E-mail: service@LovatoElectric.com) for the use of contactors to switch within delta connection.

#### CHOICE OF CONTACTORS TYPE BFK/BF..K ACCORDING TO cULus LISTING

| Contactor       | Built-in auxiliary contacts NO (SPST) | UL/CSA rated current $\leq 440\text{V}$ | UL/CSA protection fuse SC/gG | Maximum UL/CSA operational power at voltage: |        |        |
|-----------------|---------------------------------------|-----------------------------------------|------------------------------|----------------------------------------------|--------|--------|
|                 |                                       |                                         |                              | 240V                                         | 480V   | 600V   |
| Type            | n°                                    | [A]                                     | [A]                          | [kvar]                                       | [kvar] | [kvar] |
| <b>BFK09 A</b>  | 1                                     | 12                                      | 16                           | 4.5                                          | 9      | 10     |
| <b>BFK12 A</b>  | 1                                     | 18                                      | 25                           | 7                                            | 14     | 16     |
| <b>BFK18 A</b>  | 1                                     | 23                                      | 40                           | 9                                            | 17     | 20     |
| <b>BFK26 A</b>  | —                                     | 30                                      | 40                           | 11                                           | 22     | 27.5   |
| <b>BFK32 A</b>  | —                                     | 36                                      | 63                           | 14                                           | 27.5   | 32     |
| <b>BFK38 A</b>  | —                                     | 43                                      | 63                           | 17                                           | 33     | 36     |
| <b>BFK50 A</b>  | —                                     | 58                                      | 80                           | 22                                           | 41     | 46     |
| <b>BFK65 A</b>  | —                                     | 70                                      | 100                          | 26                                           | 50     | 56     |
| <b>BFK80 A</b>  | —                                     | 75                                      | 125                          | 30                                           | 60     | 75     |
| <b>BFK95 A</b>  | —                                     | 100                                     | 125                          | 40                                           | 80     | 100    |
| <b>BFK115 A</b> | —                                     | 115                                     | 160                          | 45                                           | 90     | 120    |
| <b>BFK150 A</b> | —                                     | 121                                     | 160                          | 50                                           | 100    | 125    |

NOTE: See page 2-14 for order codes.

## 2 Contactors

### Technical characteristics

#### IEC OPERATIONAL CHARACTERISTICS BG00 AND BF00

| TYPE                                                                                                                                       |  | BG00                           |  | BF00 A                    |  | BF00 D         |  | BF00 L  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------|--|---------------------------|--|----------------|--|---------|--|
| POLE CONTACT CHARACTERISTICS                                                                                                               |  |                                |  |                           |  |                |  |         |  |
| Poles❶                                                                                                                                     |  | n°                             |  | 4                         |  |                |  |         |  |
| Conventional free air thermal current Ith (≤40°C)                                                                                          |  | A                              |  | 10                        |  |                |  |         |  |
| Rated insulation voltage Ui                                                                                                                |  | V                              |  | 690                       |  |                |  |         |  |
| Frequency limit                                                                                                                            |  | Hz                             |  | 25...400 ❷                |  |                |  |         |  |
| UL/CSA and IEC/EN 60947-5-1 auxiliary contact designation                                                                                  |  | AC                             |  | A600                      |  |                |  |         |  |
|                                                                                                                                            |  | DC                             |  | Q600                      |  | P600           |  |         |  |
| <div>Terminals</div> <div></div> <div>Quick-connect</div> |  | A                              |  | 7.5                       |  | 8.3            |  |         |  |
|                                                                                                                                            |  | B                              |  | 4                         |  | 3.5            |  |         |  |
|                                                                                                                                            |  | Screw                          |  | M3                        |  | M3.5           |  |         |  |
|                                                                                                                                            |  | Phillips                       |  | 2                         |  | 2              |  |         |  |
|                                                                                                                                            |  | Faston                         |  | 1x6.35 - 2x2.8            |  | —              |  |         |  |
| Tightening torque for contact terminals min-max                                                                                            |  | Nm                             |  | 0.8...1                   |  | 1.5...1.8      |  |         |  |
|                                                                                                                                            |  | lbft                           |  | 0.59-0...74               |  | 1.03...1.33    |  |         |  |
| Tightening torque for coil terminals min-max                                                                                               |  | Nm                             |  | 0.8...1                   |  |                |  |         |  |
|                                                                                                                                            |  | lbft                           |  | 0.59...0.74               |  |                |  |         |  |
|                                                                                                                                            |  | Phillips                       |  | 2                         |  |                |  |         |  |
| Conductor section connectable with 1 or 2 wires min ... max                                                                                |  | AWG stranded                   |  | n°                        |  | 18...12        |  | 16...10 |  |
|                                                                                                                                            |  | Flexible w/o lug               |  | mm²                       |  | 0.75...2.5     |  | 1...6   |  |
|                                                                                                                                            |  | Flexible c/w boot-lace ferrule |  | mm²                       |  | 2x1.5 or 1x2.5 |  | 1...4   |  |
|                                                                                                                                            |  | Flexible c/w spade lug         |  | mm²                       |  | 2x1.5 or 1x2.5 |  | 1...4   |  |
| Terminal protection according to IEC/EN 60529                                                                                              |  |                                |  | IP20❸                     |  |                |  |         |  |
| AMBIENT CONDITIONS                                                                                                                         |  |                                |  |                           |  |                |  |         |  |
| Operating temperature                                                                                                                      |  | °C                             |  | -40...+60                 |  | -50...+70      |  |         |  |
| Storage temperature                                                                                                                        |  | °C                             |  | -55...+70                 |  | -60...+80      |  |         |  |
| Maximum altitude                                                                                                                           |  | m                              |  | 3000                      |  |                |  |         |  |
| Operation position                                                                                                                         |  | Normal                         |  | On vertical plane         |  |                |  |         |  |
|                                                                                                                                            |  | Allowable                      |  | ±30°                      |  |                |  |         |  |
| Fixing                                                                                                                                     |  |                                |  | Screw or on 35mm DIN rail |  |                |  |         |  |

❶ The built-in auxiliary contacts are high-conductivity

❷ Derating for use at 61-400 Hz. Consult Technical support for information (Tel. 035 4282422; E-mail: service@LovatoElectric.com).

❸ IP20 protection warranted by wired equipment; minimum 0.75mm² conductor section for BG00 or 1mm² for BF00.

#### ELECTRICAL RATINGS BASED ON IEC/EN 60947-5-1 UTILIZATION CATEGORIES AND UL508/CSA C22.2 n°14

| IEC/EN designation  | IEC/EN utilization category | Conventional enclosed thermal current I <sub>the</sub> | Rated operational current I <sub>e</sub> [A] at rated operational voltage U <sub>e</sub> |       |                  |                   |                   |                   |        |       |        |       | VA rating  |       |
|---------------------|-----------------------------|--------------------------------------------------------|------------------------------------------------------------------------------------------|-------|------------------|-------------------|-------------------|-------------------|--------|-------|--------|-------|------------|-------|
| UL designation      | —                           | Thermal continuous test current                        | Maximum Amperes (AC) 60Hz                                                                |       |                  |                   |                   |                   |        |       |        |       | Maximum VA |       |
|                     |                             |                                                        | 120VAC                                                                                   |       | 240VAC           |                   | 380VAC            |                   | 480VAC |       | 600VAC |       |            |       |
| Alternating current |                             | [A]                                                    | Make                                                                                     | Break | Make             | Break             | Make              | Break             | Make   | Break | Make   | Break | Make       | Break |
| A600                | AC-15                       | 10                                                     | 60                                                                                       | 6     | 30               | 3                 | 19                | 1.9               | 15     | 1.5   | 12     | 1.2   | 7200       | 720   |
| Direct current      |                             |                                                        | Maximum Amperes (DC) Make or Break                                                       |       |                  |                   |                   |                   |        |       |        |       |            |       |
|                     |                             |                                                        | 125VDC                                                                                   |       | 250VDC           |                   | 301VDC            |                   | 400VDC |       | 500VDC |       | 600VDC     |       |
| P600                | DC-13                       | 5                                                      | 1.1                                                                                      | 0.55  | 0.2 <sup>❹</sup> | 0.31 <sup>❹</sup> | 0.27 <sup>❹</sup> | 0.27 <sup>❹</sup> | 0.2    | 0.2   | 0.2    | 0.2   | 138        | 138   |
| Q600                | DC-13                       | 2.5                                                    | 0.55                                                                                     | 0.27  | 0.1 <sup>❹</sup> | 0.15 <sup>❹</sup> | 0.13 <sup>❹</sup> | 0.13 <sup>❹</sup> | 0.1    | 0.1   | 0.1    | 0.1   | 69         | 69    |

❹ Value at 301V is valid for UL/CSA up to 600VDC; the others are valid for IEC/EN.

❺ Voltage valid for UL/CSA only.

| TYPE                                           |      |            |            | BG00       |         | BF00 A   |         | BF00 D   |          | BF00 L   |          |          |  |
|------------------------------------------------|------|------------|------------|------------|---------|----------|---------|----------|----------|----------|----------|----------|--|
| AC CONTROL                                     |      |            |            |            |         |          |         |          |          |          |          |          |  |
| Rated control voltage at 50/60Hz or 60Hz       |      |            |            | V          |         | 12...575 |         | 12...600 |          | —        |          |          |  |
| Operating voltage limits                       |      |            |            |            |         |          |         |          |          |          |          |          |  |
| 50/60Hz coil<br>powered at                     | 50Hz | pick-up    | % Us       | 75...115   |         | 80...110 |         | —        |          | —        |          |          |  |
|                                                |      | drop-out   | % Us       | 20...55    |         | 20...55  |         | —        |          | —        |          |          |  |
|                                                | 60Hz | pick-up    | % Us       | 80...115   |         | 80...110 |         | —        |          | —        |          |          |  |
|                                                |      | drop-out   | % Us       | 20...55    |         | 20...55  |         | —        |          | —        |          |          |  |
| 60Hz coil<br>powered at                        | 60Hz | pick-up    | % Us       | 75...115   |         | 80...110 |         | —        |          | —        |          |          |  |
|                                                |      | drop-out   | % Us       | 20...55    |         | 20...55  |         | —        |          | —        |          |          |  |
| Average coil consumption at ≤20°C              |      |            |            |            |         |          |         |          |          |          |          |          |  |
| 50/60Hz coil<br>powered at                     | 50Hz | in-rush    | VA         | 30         |         | 75       |         | —        |          | —        |          |          |  |
|                                                |      | holding    | VA         | 4          |         | 9        |         | —        |          | —        |          |          |  |
|                                                | 60Hz | in-rush    | VA         | 25         |         | 70       |         | —        |          | —        |          |          |  |
|                                                |      | holding    | VA         | 3          |         | 6.5      |         | —        |          | —        |          |          |  |
| 60Hz coil<br>powered at                        | 60Hz | in-rush    | VA         | 30         |         | 75       |         | —        |          | —        |          |          |  |
|                                                |      | holding    | VA         | 4          |         | 9        |         | —        |          | —        |          |          |  |
| Dissipation at holding ≤20°C                   |      |            | 50Hz       | W          | 0.95    |          | 2.5     |          | —        |          | —        |          |  |
| DC CONTROL                                     |      |            |            |            |         |          |         |          |          |          |          |          |  |
| Rated control voltage                          |      |            |            | V          |         | 6...250  |         | —        |          | 6...415  |          | 6...415  |  |
| Operating voltage limits                       |      |            |            | pick-up    | % Us    | 75...115 |         | —        |          | 70...125 |          | 80...110 |  |
|                                                |      |            |            | drop-out   | % Us    | 10...20  |         | —        |          | 10...40  |          | 10...40  |  |
| Average consumption at ≤20°C (in-rush/holding) |      |            |            | W          |         | 3.2❶     |         | —        |          | 5.4      |          | 2.4      |  |
| OPERATING TIMES                                |      |            |            |            |         |          |         |          |          |          |          |          |  |
| Average time for Us<br>control in              |      | AC         | closing NO | ms         | 12...21 |          | 8...24  |          | —        |          | —        |          |  |
|                                                |      |            | opening NO | ms         | 9...18  |          | 10...20 |          | —        |          | —        |          |  |
|                                                |      |            | closing NC | ms         | 17...26 |          | 17...30 |          | —        |          | —        |          |  |
|                                                |      |            | opening NC | ms         | 7...17  |          | 7...18  |          | —        |          | —        |          |  |
|                                                |      | DC         | closing NO | ms         | 18...25 |          | —       |          | 54...66  |          | 75...91  |          |  |
|                                                |      |            | opening NO | ms         | 2...3   |          | —       |          | 14...17  |          | 15...19  |          |  |
|                                                |      |            | closing NC | ms         | 3...5   |          | —       |          | 24...30❷ |          | 24...30❸ |          |  |
|                                                |      |            | opening NC | ms         | 11...17 |          | —       |          | 47...57❷ |          | 67...81❸ |          |  |
| LIFE                                           |      |            |            |            |         |          |         |          |          |          |          |          |  |
| Mechanical                                     |      | AC control | cycles     | 20 million |         |          |         |          |          |          |          |          |  |
|                                                |      | DC control | cycles     | 20 million |         |          |         |          |          |          |          |          |  |
| MAXIMUM OPERATING RATE                         |      |            |            |            |         |          |         |          |          |          |          |          |  |
| Mechanical operations                          |      |            |            | cycles/h   | 3600    |          |         |          |          |          |          |          |  |

❶ 2.3W for low-consumption BG00...L version.

❷ NC closing time for BF00 04D is 23...29ms while NC opening time is 40...49ms.

❸ NC closing time for BF00 04L is 25...31ms while NC opening time is 56...68ms.

## 2 Contactors

### Technical characteristics

#### IEC OPERATIONAL CHARACTERISTICS BG06..., BG09... AND BG12...

| TYPE                                                      |                                                                                   | BG06                           |                                    | BG09           |             | BG12       |  |     |                |  |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------|------------------------------------|----------------|-------------|------------|--|-----|----------------|--|
| POLE CHARACTERISTICS                                      |                                                                                   |                                |                                    |                |             |            |  |     |                |  |
| Power poles                                               |                                                                                   | n°                             | 3                                  | 3-4            |             | 3          |  |     |                |  |
| Rated insulation voltage Ui                               |                                                                                   | V                              | 690                                | 690 ❶          |             | 690        |  |     |                |  |
| Rated impulse withstand voltage Uimp                      |                                                                                   | kV                             | 6                                  | 6              |             | 6          |  |     |                |  |
| Operational frequency                                     |                                                                                   | Hz                             | 25...400 ❷                         | 25...400 ❷     |             | 25...400 ❷ |  |     |                |  |
| Operational current                                       | Conventional free air thermal Ith (≤40°C)                                         | A                              | 16                                 | 20             |             | 20         |  |     |                |  |
|                                                           | AC3 (≤440V ≤55°C)                                                                 | A                              | 6                                  | 9              |             | 12         |  |     |                |  |
|                                                           | AC4 (400V) ❸                                                                      | A                              | 3.3                                | 4.0            |             | 4.8        |  |     |                |  |
| Short-time allowable current for 10s (IEC/EN 60947-1)     |                                                                                   | A                              | 96                                 | 96             |             | 96         |  |     |                |  |
| Maximum fuse size coordination Type 2 - 400V - 50kA       | gG                                                                                | A                              | 16                                 | 20             |             | 20         |  |     |                |  |
|                                                           | aM                                                                                | A                              | 6                                  | 10             |             | 16         |  |     |                |  |
| Making capacity (RMS value)                               |                                                                                   | A                              | 92                                 | 92             |             | 120        |  |     |                |  |
| Breaking capacity at voltage                              | ≤ 440V                                                                            | A                              | 72                                 | 72             |             | 96         |  |     |                |  |
|                                                           | 500V                                                                              | A                              | 72                                 | 72             |             | 72         |  |     |                |  |
|                                                           | 690V                                                                              | A                              | 72                                 | 72             |             | 72         |  |     |                |  |
| Consumption per pole and resistance (average values)      |                                                                                   | mΩ                             | 10                                 | 10             |             | 10         |  |     |                |  |
|                                                           | Ith                                                                               | W                              | 2.6                                | 4              |             | 4          |  |     |                |  |
|                                                           | AC3                                                                               | W                              | 0.36                               | 0.81           |             | 1.44       |  |     |                |  |
| Terminals                                                 |  | A [mm]                         | 7.5                                | 7.5            |             | 7.5        |  |     |                |  |
|                                                           |                                                                                   | B [mm]                         | 4                                  | 4              |             | 4          |  |     |                |  |
|                                                           |                                                                                   | screw                          | M3                                 | M3             |             | M3         |  |     |                |  |
|                                                           |                                                                                   | Phillips                       | 2                                  | 2              |             | 2          |  |     |                |  |
|                                                           | Quick-connect                                                                     | Faston                         | —                                  | 1x6.35 - 2x2.8 |             | —          |  |     |                |  |
|                                                           | Solder                                                                            | —                              | PIN for PCB❹                       |                | —           |            |  |     |                |  |
|                                                           | Tightening torque for pole and coil terminals min-max                             | Nm                             | 0.8...1                            | 0.8...1        |             | 0.8...1    |  |     |                |  |
| lbft                                                      |                                                                                   | 0.59...0.74                    | 0.59...0.74                        |                | 0.59...0.74 |            |  |     |                |  |
| Phillips                                                  |                                                                                   | 2                              | 2                                  |                | 2           |            |  |     |                |  |
| Conductor section connectable with 1 or 2 wires min...max |                                                                                   |                                |                                    |                |             |            |  |     |                |  |
|                                                           |                                                                                   | AWG stranded                   |                                    |                |             |            |  | N°  | 18...12        |  |
|                                                           |                                                                                   | Flexible w/o lug               |                                    |                |             |            |  | mm² | 0.75...2.5     |  |
|                                                           |                                                                                   | Flexible c/w boot-lace ferrule |                                    |                |             |            |  | mm² | 2x1.5 or 1x2.5 |  |
|                                                           |                                                                                   | Flexible c/w spade lug         |                                    |                |             |            |  | mm² | 2x1.5 or 1x2.5 |  |
| Terminal protection to IEC/EN 60529                       |                                                                                   |                                | IP20❺                              |                |             |            |  |     |                |  |
| AUXILIARY CONTACT CHARACTERISTICS                         |                                                                                   |                                |                                    |                |             |            |  |     |                |  |
| Type of contact                                           |                                                                                   | n°                             | 1-NO or NC based on configuration❽ |                |             |            |  |     |                |  |
| Thermal current Ith                                       |                                                                                   | A                              | 10                                 |                |             |            |  |     |                |  |
| IEC/EN 60947-5-1 designation                              |                                                                                   | AC                             | A600                               |                |             |            |  |     |                |  |
|                                                           |                                                                                   | DC                             | Q600                               |                |             |            |  |     |                |  |
| AMBIENT CONDITIONS                                        |                                                                                   |                                |                                    |                |             |            |  |     |                |  |
| Operating temperature                                     |                                                                                   | °C                             | -40...+60                          |                |             |            |  |     |                |  |
| Storage temperature                                       |                                                                                   | °C                             | -55...+70                          |                |             |            |  |     |                |  |
| Maximum altitude                                          |                                                                                   | m                              | 3000                               |                |             |            |  |     |                |  |
| Operating position                                        | Normal                                                                            |                                | On vertical plane                  |                |             |            |  |     |                |  |
|                                                           | Allowable                                                                         |                                | ± 30°                              |                |             |            |  |     |                |  |
| Fixing                                                    |                                                                                   |                                | Screw or on 35mm DIN rail          |                |             |            |  |     |                |  |

❶ Rated voltage  $U_i$  for BGP... types is 500V.

❷ Derating for use at 61-400Hz. Consult Technical support for information (Tel. 035 4282422; E-mail: service@LovatoElectric.com).

❸ Current values guarantee an electrical life of about 50,000 cycles.

❹ Dimensions and drilling distances are given on page 2-32.

❺ IP20 protection warranted by wired equipment; minimum 0.75mm² conductor section.

❻ NO or NC auxiliary is highly conductive.

Other characteristics are the same as the mechanical characteristics of the poles.

| TYPE                                           |                         |            |            | BG06     |          | BG09       |         | BG12    |         |     |  |
|------------------------------------------------|-------------------------|------------|------------|----------|----------|------------|---------|---------|---------|-----|--|
| AC CONTROL                                     |                         |            |            |          |          |            |         |         |         |     |  |
| Rated voltage at 50/60Hz, 60Hz                 |                         |            | V          |          | 12...575 |            |         |         |         |     |  |
| Operating voltage limits                       |                         |            |            |          |          |            |         |         |         |     |  |
| 50/60Hz coil<br>powered at                     | 50Hz                    | pick-up    | % Us       | 75...115 |          |            |         |         |         |     |  |
|                                                |                         | drop-out   | % Us       | 20...55  |          |            |         |         |         |     |  |
|                                                | 60Hz                    | pick-up    | % Us       | 80...115 |          |            |         |         |         |     |  |
|                                                |                         | drop-out   | % Us       | 20...55  |          |            |         |         |         |     |  |
|                                                | 60Hz coil<br>powered at | 60Hz       | pick-up    | % Us     | 75...115 |            |         |         |         |     |  |
|                                                |                         |            | drop-out   | % Us     | 20...55  |            |         |         |         |     |  |
| Average coil consumption at ≤20°C              |                         |            |            |          |          |            |         |         |         |     |  |
| 50/60Hz coil<br>powered at                     | 50Hz                    | in-rush    | VA         | 30       |          |            |         |         |         |     |  |
|                                                |                         | holding    | VA         | 4        |          |            |         |         |         |     |  |
|                                                | 60Hz                    | in-rush    | VA         | 25       |          |            |         |         |         |     |  |
|                                                |                         | holding    | VA         | 3        |          |            |         |         |         |     |  |
| 60Hz coil<br>powered at                        | 60Hz                    | in-rush    | VA         | 30       |          |            |         |         |         |     |  |
|                                                |                         | holding    | VA         | 4        |          |            |         |         |         |     |  |
| Dissipation at ≤20°C                           |                         | at 50Hz    |            | W        | 0.95     |            |         |         |         |     |  |
| DC CONTROL                                     |                         |            |            |          |          |            |         |         |         |     |  |
| Rated control voltage                          |                         |            | V          |          | 6...250  |            |         |         |         |     |  |
| Operating voltage limits                       |                         | pick-up    |            | % Us     |          | 75...115   |         |         |         |     |  |
|                                                |                         | drop-out   |            | % Us     |          | 10...25    |         |         |         |     |  |
| Average consumption at ≤20°C (in rush-holding) |                         |            |            | W        |          | 3.2        |         | 3.2❶    |         | 3.2 |  |
| OPERATING TIMES                                |                         |            |            |          |          |            |         |         |         |     |  |
| Average time for Us<br>control in              |                         | AC         | closing NO | ms       | 12...21  |            | 12...21 |         | 12...21 |     |  |
|                                                |                         |            | opening NO | ms       | 9...18   |            | 9...18  |         | 9...18  |     |  |
|                                                |                         |            | closing NC | ms       | 17...26  |            | 17...26 |         | 17...26 |     |  |
|                                                |                         |            | opening NC | ms       | 7...17   |            | 7...17  |         | 7...17  |     |  |
|                                                | DC                      | closing NO | ms         | 18...25  |          | 18...25    |         | 18...25 |         |     |  |
|                                                |                         | opening NO | ms         | 2...3    |          | 2...3      |         | 2...3   |         |     |  |
|                                                |                         | closing NC | ms         | 3...5    |          | 3...5      |         | 3...5   |         |     |  |
|                                                |                         | opening NC | ms         | 11...17  |          | 11...17    |         | 11...17 |         |     |  |
| LIFE                                           |                         |            |            |          |          |            |         |         |         |     |  |
| Mechanical                                     |                         | AC control |            | cycles   |          | 20 million |         |         |         |     |  |
|                                                |                         | DC control |            | cycles   |          | 20 million |         |         |         |     |  |
| Electrical (Ie at 400V AC3)                    |                         |            |            | cycles   |          | 500,000    |         |         |         |     |  |
| MAXIMUM OPERATING RATE                         |                         |            |            |          |          |            |         |         |         |     |  |
| Mechanical operations                          |                         |            |            | cy/h     |          | 3600       |         |         |         |     |  |

❶ 2.3W for low-consumption type BG09...L.

### ELECTRICAL RATINGS BASED ON IEC/EN 60947-5-1 UTILIZATION CATEGORIES AND UL508/CSA C22.2 n°14

| IEC/EN designation  | IEC/EN utilization category | Conventional enclosed thermal current Ithe | Rated operational current Ie [A] at rated operational voltage Ue |        |        |        |        |        |        |       |        |       | VA rating  |       |
|---------------------|-----------------------------|--------------------------------------------|------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------|--------|-------|------------|-------|
| UL designation      | —                           | Thermal continuous test current            | Maximum Amperes (AC) 60Hz                                        |        |        |        |        |        |        |       |        |       | Maximum VA |       |
| Alternating current |                             |                                            | 120VAC                                                           |        | 240VAC |        | 380VAC |        | 480VAC |       | 600VAC |       |            |       |
|                     |                             |                                            | Make                                                             | Break  | Make   | Break  | Make   | Break  | Make   | Break | Make   | Break | Make       | Break |
| A600                | AC-15                       | 10                                         | 60                                                               | 6      | 30     | 3      | 19     | 1.9    | 15     | 1.5   | 12     | 1.2   | 7200       | 720   |
| Direct current      |                             |                                            | Maximum Amperes (DC) Make or Break                               |        |        |        |        |        |        |       |        |       |            |       |
|                     |                             |                                            | 125VDC                                                           | 250VDC | 301VDC | 400VDC | 500VDC | 600VDC |        |       |        |       |            |       |
| Q600                | DC-13                       | 2.5                                        | 0.55                                                             | 0.27   | 0.1❷   | 0.15❷  | 0.13❷  | 0.1    |        |       |        |       | 69         | 69    |

❷ Value at 301V is valid for UL/CSA up to 600VDC; the others are valid for IEC/EN.

❸ Voltage valid for UL/CSA only.

## 2 Contactors

### Technical characteristics

#### IEC OPERATIONAL CHARACTERISTICS BF09-BF38

| TYPE                                                                                                              |                                             |           | BF09                  | BF12              | BF18              | BF25              | BF26              | BF32              | BF38                 |
|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-----------|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------------|
| POLE CHARACTERISTICS                                                                                              |                                             |           |                       |                   |                   |                   |                   |                   |                      |
| Power poles                                                                                                       |                                             | n°        | 3-4                   | 3-4               | 3-4               | 3                 | 3-4               | 3                 | 3-4                  |
| Rated insulation voltage Ui                                                                                       |                                             | V         | 690                   |                   |                   |                   |                   |                   |                      |
| Rated impulse withstand votage Uimp                                                                               |                                             | kV        | 6                     |                   |                   |                   |                   |                   |                      |
| Operational frequency                                                                                             |                                             | Hz        | 25...400 <sup>①</sup> |                   |                   |                   |                   |                   |                      |
| Operational current                                                                                               | Conventional free air thermal Ith (≤40°C)   | A         | 25                    | 28                | 32                | 32                | 45                | 56                | 56(60 <sup>⑤</sup> ) |
|                                                                                                                   | AC3 (≤440V ≤55°C)                           | A         | 9                     | 12                | 18                | 25                | 26                | 32                | 38                   |
|                                                                                                                   | AC4 (400V) <sup>②</sup>                     | A         | 4.9                   | 7.9               | 8.5               | 10                | 11.5              | 13.5              | 15.5                 |
| Short-time allowable current for 10s (IEC/EN 60947-1)                                                             |                                             | A         | 150                   | 150               | 200               | 200               | 210               | 320               | 320                  |
| Max fuse size coordination<br>Type 2 - 400V - 50kA                                                                | gG                                          | A         | 25                    | 32                | 32                | 50                | 50                | 63                | 63                   |
|                                                                                                                   | aM                                          | A         | 10                    | 12                | 20                | 25                | 32                | 32                | 40                   |
| Making capacity (RMS value)                                                                                       |                                             | A         | 90                    | 120               | 180               | 250               | 260               | 320               | 380                  |
| Breaking capacity<br>at voltage                                                                                   | ≤440V                                       | A         | 72                    | 96                | 144               | 200               | 208               | 256               | 304                  |
|                                                                                                                   | 500V                                        | A         | 72                    | 96                | 120               | 184               | 184               | 240               | 240                  |
|                                                                                                                   | 690V                                        | A         | 71                    | 94                | 94                | 102               | 168               | 192               | 192                  |
| Consumption and<br>resistance per pole<br>(average values)                                                        |                                             | mΩ        | 2.5                   | 2.5               | 2.5               | 2.5               | 2.0               | 2.0               | 2.0                  |
|                                                                                                                   | Ith                                         | W         | 1.6                   | 2.0               | 2.6               | 2.6               | 4.0               | 6.0               | 6.0                  |
|                                                                                                                   | AC3                                         | W         | 0.2                   | 0.4               | 0.8               | 1.6               | 1.4               | 2.0               | 2.9                  |
| <div>Terminals</div> <div></div> |                                             | Type      | Clamp-screw           |                   |                   |                   |                   |                   |                      |
|                                                                                                                   |                                             | A         | 9.5                   | 9.5               | 9.5               | 9.5               | 13                | 13                | 13                   |
|                                                                                                                   |                                             | B         | 4.5                   | 4.5               | 4.5               | 4.5               | 5.5               | 5.5               | 5.5                  |
|                                                                                                                   |                                             | Screw     | M3.5                  | M3.5              | M3.5              | M3.5              | M4                | M4                | M4                   |
|                                                                                                                   |                                             | Phillips  | 2                     | 2                 | 2                 | 2                 | 2                 | 2                 | 2                    |
| Tightening torque<br>for pole terminal min-max                                                                    | Nm                                          | 1.5...1.8 | 1,5...1.8             | 1.5...1.8         | 1.5...1.8         | 2.5...3           | 2.5...3           | 2.5...3           |                      |
|                                                                                                                   | lbft                                        | 1.1...1.5 | 1.1...1.5             | 1.1...1.5         | 1.1...1.5         | 1.8...2.2         | 1.8...2.2         | 1.8...2.2         |                      |
| Tightening torque<br>for coil terminals min-max                                                                   | Nm                                          | 0.8-1     | 0.8-1                 | 0.8-1             | 0.8-1             | 0.8-1             | 0.8-1             | 0.8-1             |                      |
|                                                                                                                   | lbft                                        | 0.59-0.74 | 0.59-0.74             | 0.59-0.74         | 0.59-0.74         | 0.59-0.74         | 0.59-0.74         | 0.59-0.74         |                      |
|                                                                                                                   | Phillips                                    | 2         | 2                     | 2                 | 2                 | 2                 | 2                 | 2                 |                      |
| Conductor section connectable<br>with 1 or 2 wires min...max                                                      |                                             |           |                       |                   |                   |                   |                   |                   |                      |
|                                                                                                                   | AWG stranded                                | n°        | 16...10               | 16...10           | 16...10           | 16...10           | 14...6            | 14...6            | 14...6               |
|                                                                                                                   | Flexible w/o lug                            | mm²       | 1...6                 | 1...6             | 1...6             | 1...6             | 2.5...16          | 2.5...16          | 2.5...16             |
|                                                                                                                   | Flexible c/w insulated<br>boot-lace ferrule | mm²       | 1...4                 | 1...4             | 1...4             | 1...4             | 1...10            | 1...10            | 1...10               |
|                                                                                                                   | Flexible c/w insulated<br>spade lug         | mm²       | 1...4                 | 1...4             | 1...4             | 1...4             | 1...10            | 1...10            | 1...10               |
| Power terminal protection<br>according to IEC/EN 60529                                                            |                                             |           | IP20 <sup>③</sup>     | IP20 <sup>③</sup> | IP20 <sup>③</sup> | IP20 <sup>③</sup> | IP20 <sup>④</sup> | IP20 <sup>④</sup> | IP20 <sup>④</sup>    |



#### AUXILIARY CONTACT CHARACTERISTICS

|                              |    |                                                |   |
|------------------------------|----|------------------------------------------------|---|
| Type of contact              | n° | 1-NO or NC based on configuration <sup>⑥</sup> | — |
| Thermal current Ith          | A  | 10                                             | — |
| IEC/EN 60947-5-1 designation | AC | A600                                           | — |
|                              | DC | P600                                           | — |

#### AMBIENT CONDITIONS

|                       |           |                           |
|-----------------------|-----------|---------------------------|
| Operating temperature | °C        | -50...+70                 |
| Storage temperature   | °C        | -60...+80                 |
| Maximum altitude      | m         | 3000                      |
| Operating position    | Normal    | On vertical plane         |
|                       | Allowable | ± 30°                     |
| Fixing                |           | Screw or on 35mm DIN rail |

Products certified by UL / CSA as Elevator Equipment.

| Type               | Maximum horsepower ratings |       |                      |       |       |       |
|--------------------|----------------------------|-------|----------------------|-------|-------|-------|
|                    | Single phase 120V          |       | Three phase 200-208V |       |       |       |
|                    | 240V                       | 240V  | 240V                 | 480V  | 600V  | 600V  |
|                    | [HP]                       | [HP]  | [HP]                 | [HP]  | [HP]  | [HP]  |
| BF12 <sup>⑦</sup>  | 1/2                        | 1 1/2 | 3                    | 3     | 7 1/2 | 7 1/2 |
| BF25 <sup>⑦</sup>  | 1 1/2                      | 3     | 5                    | 7 1/2 | 15    | 15    |
| BF38 <sup>⑦</sup>  | 3                          | 5     | 10                   | 10    | 20    | 20    |
| BF65 <sup>⑧</sup>  | 3                          | 10    | 15                   | 15    | 40    | 50    |
| BF95 <sup>⑧</sup>  | 7.5                        | 15    | 25                   | 30    | 60    | 75    |
| BF115 <sup>⑧</sup> | —                          | —     | 30                   | 40    | 75    | 100   |
| BF150 <sup>⑧</sup> | —                          | —     | 30                   | 40    | 75    | 100   |

① Derating for use at 61-400Hz. Consult Technical support for information; see contact details on inside front cover.

② Current values guarantee an electrical life of about 200,000 cycles.

③ IP20 protection warranted by wired equipment; minimum 1mm² conductor section.

④ IP20 protection on front.

⑤ For this other current value, use 16mm² wire with spade cable terminal.

⑥ NO or NC auxiliary is highly conductive. Other characteristics are the same as the mechanical characteristics of the poles.

⑦ Elevator equipment by CSA (file LR54332-23) 500,000 operations.

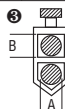
⑧ Elevator equipment by cULus (file E93602) 500,000 operations.

| TYPE                                                                                                                                                                                                                                                                                                                                                              |                                      |                                            |                                                                  |          | BF09     | BF12  | BF18   | BF25  | BF26   | BF32    | BF38   |       |            |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------------|------------------------------------------------------------------|----------|----------|-------|--------|-------|--------|---------|--------|-------|------------|-------|
| AC CONTROL                                                                                                                                                                                                                                                                                                                                                        |                                      |                                            |                                                                  |          |          |       |        |       |        |         |        |       |            |       |
| Rated voltage at 50/60Hz, 60Hz                                                                                                                                                                                                                                                                                                                                    |                                      |                                            |                                                                  | V        | 12...600 |       |        |       |        |         |        |       |            |       |
| Operating voltage limits                                                                                                                                                                                                                                                                                                                                          |                                      |                                            |                                                                  |          |          |       |        |       |        |         |        |       |            |       |
| 50/60Hz coil powered at                                                                                                                                                                                                                                                                                                                                           | 50Hz                                 | pick-up                                    | % Us                                                             | 80...110 |          |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | drop-out                                   | % Us                                                             | 20...55  |          |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   | 60Hz                                 | pick-up                                    | % Us                                                             | 85...110 |          |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | drop-out                                   | % Us                                                             | 20...55  |          |       |        |       |        |         |        |       |            |       |
| 60Hz coil powered at                                                                                                                                                                                                                                                                                                                                              | 60Hz                                 | pick-up                                    | % Us                                                             | 80...110 |          |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | drop-out                                   | % Us                                                             | 20...55  |          |       |        |       |        |         |        |       |            |       |
| Average coil consumption at ≤20°C                                                                                                                                                                                                                                                                                                                                 |                                      |                                            |                                                                  |          |          |       |        |       |        |         |        |       |            |       |
| 50/60Hz coil powered at                                                                                                                                                                                                                                                                                                                                           | 50Hz                                 | in-rush                                    | VA                                                               | 75       |          |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | holding                                    | VA                                                               | 9        |          |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   | 60Hz                                 | in-rush                                    | VA                                                               | 70       |          |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | holding                                    | VA                                                               | 6.5      |          |       |        |       |        |         |        |       |            |       |
| 60Hz coil powered at 60Hz                                                                                                                                                                                                                                                                                                                                         | 60Hz                                 | in-rush                                    | VA                                                               | 75       |          |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | holding                                    | VA                                                               | 9        |          |       |        |       |        |         |        |       |            |       |
| Dissipation at holding ≤20°C 50Hz                                                                                                                                                                                                                                                                                                                                 |                                      |                                            |                                                                  | W        | 2.5      |       |        |       |        |         |        |       |            |       |
| DC CONTROL - normal and low consumption                                                                                                                                                                                                                                                                                                                           |                                      |                                            |                                                                  |          |          |       |        |       |        |         |        |       |            |       |
| Rated control voltage                                                                                                                                                                                                                                                                                                                                             |                                      |                                            |                                                                  | V        | 6...415  |       |        |       |        |         |        |       |            |       |
| Operating limits                                                                                                                                                                                                                                                                                                                                                  |                                      |                                            |                                                                  |          |          |       |        |       |        |         |        |       |            |       |
| pick-up                                                                                                                                                                                                                                                                                                                                                           | three-pole BF...D                    | from                                       | % Us                                                             | 70       |          |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | to                                         | % Us                                                             | 125      |          |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   | four-pole BF...D                     | from                                       | %Us                                                              | 70       |          |       |        | 80    |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | to                                         | %Us                                                              | 125      |          |       |        | 125   |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   | three and four pole BF...L           | from                                       | % Us                                                             | 80       |          |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | to                                         | % Us                                                             | 110      |          |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   | drop-out                             | for all versions                           | from                                                             | %Us      | 10       |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      |                                            | to                                                               | %Us      | 40       |       |        |       |        |         |        |       |            |       |
| Average coil consumption ≤20°C (in rush-holding)                                                                                                                                                                                                                                                                                                                  |                                      | BF...D                                     | W                                                                | 5.4      |          |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | BF...L                                     | W                                                                | 2.4      |          |       |        |       |        |         |        |       |            |       |
| OPERATING TIMES                                                                                                                                                                                                                                                                                                                                                   |                                      |                                            |                                                                  |          |          |       |        |       |        |         |        |       |            |       |
| Average time for AC<br>Us control in                                                                                                                                                                                                                                                                                                                              | closing NO                           | ms                                         | 8...24                                                           |          |          |       |        |       | 8...24 |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | opening NO                                 | ms                                                               | 10...20  |          |       |        |       |        | 5...15  |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | closing NC                                 | ms                                                               | 14...28❶ |          |       |        |       |        | 9...20❷ |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | opening NC                                 | ms                                                               | 7...18❶  |          |       |        |       |        | 9...17❷ |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   | DC BF...D types                      | closing NO                                 | ms                                                               | 54...66  |          |       |        |       |        | 53...65 |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | opening NO                                 | ms                                                               | 14...17  |          |       |        |       |        | 14...18 |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | closing NC                                 | ms                                                               | 24...30❸ |          |       |        |       |        | 23...28 |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | opening NC                                 | ms                                                               | 47...57❸ |          |       |        |       |        | 46...56 |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   | DC BF...L types                      | closing NO                                 | ms                                                               | 75...91  |          |       |        |       |        | 76...92 |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | opening NO                                 | ms                                                               | 15...19  |          |       |        |       |        | 16...20 |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | closing NC                                 | ms                                                               | 24...30❹ |          |       |        |       |        | 25...31 |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | opening NC                                 | ms                                                               | 67...81❹ |          |       |        |       |        | 63...77 |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   | LIFE                                 |                                            |                                                                  |          |          |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   | Mechanical (million)                 | AC control                                 | cycles                                                           | 20       | 20       | 20    | 20     | 20    | 20     | 20      | 20     |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      | DC control                                 | cycles                                                           | 20       | 20       | 20    | 20     | 20    | 20     | 20      | 20     |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   | Electrical (Ie at 400VAC3) (million) |                                            | cycles                                                           | 2.0      | 2.0      | 1.6   | 1.2    | 1.6   | 1.6    | 1.6     | 1.4    |       |            |       |
| MAXIMUM OPERATING RATE                                                                                                                                                                                                                                                                                                                                            |                                      |                                            |                                                                  |          |          |       |        |       |        |         |        |       |            |       |
| Mechanical operations                                                                                                                                                                                                                                                                                                                                             |                                      |                                            | cy/h                                                             | 3600     |          |       |        |       |        |         |        |       |            |       |
| ❶ NC closing time for BF...TOA types is 9...25ms while NC opening time is 9...15ms.      ❷ NC closing time for BF...TOD types is 23...29ms while NC opening time is 40...49ms.<br>❷ NC closing time for BF...TOA types is 11...29ms while NC opening time is 6...14ms.      ❸ NC closing time for BF...TOL types is 25...31ms while NC opening time is 56...68ms. |                                      |                                            |                                                                  |          |          |       |        |       |        |         |        |       |            |       |
| ELECTRICAL RATINGS BASED ON IEC/EN 60947-5-1 UTILIZATION CATEGORIES AND UL508/CSA C22.2 n°14                                                                                                                                                                                                                                                                      |                                      |                                            |                                                                  |          |          |       |        |       |        |         |        |       |            |       |
| IEC/EN designation                                                                                                                                                                                                                                                                                                                                                | IEC/EN utilization category          | Conventional enclosed thermal current Ithe | Rated operational current Ie [A] at rated operational voltage Ue |          |          |       |        |       |        |         |        |       | VA rating  |       |
| UL designation                                                                                                                                                                                                                                                                                                                                                    | —                                    | Thermal continuous test current            | Maximum Amperes (AC) 60Hz                                        |          |          |       |        |       |        |         |        |       | Maximum VA |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      |                                            | 120VAC                                                           |          | 240VAC   |       | 380VAC |       | 480VAC |         | 600VAC |       |            |       |
| Alternating current                                                                                                                                                                                                                                                                                                                                               |                                      | [A]                                        | Make                                                             | Break    | Make     | Break | Make   | Break | Make   | Break   | Make   | Break | Make       | Break |
| A600                                                                                                                                                                                                                                                                                                                                                              | AC-15                                | 10                                         | 60                                                               | 6        | 30       | 3     | 19     | 1.9   | 15     | 1.5     | 12     | 1.2   | 7200       | 720   |
| Direct current                                                                                                                                                                                                                                                                                                                                                    |                                      |                                            | Maximum Amperes (DC) Make or Break                               |          |          |       |        |       |        |         |        |       |            |       |
|                                                                                                                                                                                                                                                                                                                                                                   |                                      |                                            | 125VDC                                                           |          | 250VDC   |       | 301VDC |       | 400VDC |         | 500VDC |       | 600VDC     |       |
| Q600                                                                                                                                                                                                                                                                                                                                                              | DC-13                                | 2.5                                        | 0.55                                                             | 0.27     | 0.1 ❶    |       | 0.15 ❶ |       | 0.13 ❶ |         | 0.1    |       | 69         | 69    |
| ❶ Value at 301V is valid for UL/CSA up to 600VDC; the others are valid for IEC/EN.<br>❷ Voltage valid for UL/CSA only.                                                                                                                                                                                                                                            |                                      |                                            |                                                                  |          |          |       |        |       |        |         |        |       |            |       |

## 2 Contactors

### Technical characteristics

#### IEC OPERATIONAL CHARACTERISTICS BF40...BF150...

| TYPE                                                      |                                           |                                             | BF40                                                                                                             | BF50  | BF65 | BF80 | BF94 | BF95      | BF115    | BF150 |
|-----------------------------------------------------------|-------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------|------|------|------|-----------|----------|-------|
| POLE CHARACTERISTICS                                      |                                           |                                             |                                                                                                                  |       |      |      |      |           |          |       |
| Power poles                                               |                                           | N°                                          | 3-4                                                                                                              | 3-4   | 3-4  | 3-4  | 3    | 3-4       | 3-4      | 3-4   |
| Rated insulation voltage Ui                               |                                           | V                                           | 1000                                                                                                             |       |      |      |      |           |          |       |
| Rated impulse withstand voltage Uimp                      |                                           | kV                                          | 8                                                                                                                |       |      |      |      |           |          |       |
| Operational frequency                                     |                                           | Hz                                          | 25 ... 400❶                                                                                                      |       |      |      |      |           |          |       |
| Operational current                                       | Conventional free air thermal Ith (≤40°C) | A                                           | 70                                                                                                               | 90    | 100  | 115  | 115  | 140       | 160      | 165   |
|                                                           | AC3 (≤440V ≤55°C)                         | A                                           | 40                                                                                                               | 50    | 65   | 80   | 95   | 95        | 115      | 150   |
|                                                           | AC4 (400V)❷                               | A                                           | 24                                                                                                               | 28    | 31   | 38   | 45   | 45        | 54       | 70    |
| Short-time allowable current for (IEC/EN 60947-1)         |                                           | 10s                                         | A                                                                                                                | 400   | 400  | 640  | 640  | 640       | 760      | 920   |
| Maximum fuse size coordination Type 2 - 400V - 50kA       | gG                                        | A                                           | 100                                                                                                              | 100   | 125  | 125  | 125  | 160       | 200      | 250   |
|                                                           | aM                                        | A                                           | 50                                                                                                               | 50    | 80   | 80   | 100  | 100       | 125      | 160   |
| Making capacity (RMS value)                               |                                           | A                                           | 400                                                                                                              | 500   | 650  | 800  | 950  | 1200      | 1500     | 1500  |
| Breaking capacity at voltage                              | ≤440V                                     | A                                           | 320                                                                                                              | 400   | 520  | 640  | 760  | 1100      | 1200     | 1200  |
|                                                           | 500V                                      | A                                           | 265                                                                                                              | 352   | 425  | 625  | 660  | 775       | 850      | 1025  |
|                                                           | 690V                                      | A                                           | 256                                                                                                              | 312   | 376  | 456  | 475  | 745       | 905      | 905   |
| Consumption and resistance per pole (average values)      | mΩ                                        |                                             | 0.8                                                                                                              | 0.8   | 0.8  | 0.6  | 0.6  | 0.45      | 0.45     | 0.45  |
|                                                           | Ith                                       | W                                           | 3.9                                                                                                              | 6.5   | 8.0  | 7.9  | 7.9  | 8.8       | 11.5     | 12    |
|                                                           | AC3                                       | W                                           | 1.3                                                                                                              | 2.0   | 3.4  | 3.8  | 5.4  | 4.1       | 6.0      | 10.1  |
| Terminals                                                 |                                           | Type                                        | Double lug clamp terminal ❸  |       |      |      |      |           |          |       |
|                                                           |                                           | A [mm]                                      | 9.5                                                                                                              |       |      |      |      |           | 15       |       |
|                                                           |                                           | B [mm]                                      | 11                                                                                                               |       |      |      |      |           | 14.5     |       |
|                                                           |                                           | Screw                                       | M6                                                                                                               |       |      |      |      |           | M8       |       |
|                                                           |                                           | Metric Allen                                | 4                                                                                                                |       |      |      |      |           | 4        |       |
|                                                           |                                           | Tightening torque for pole terminal min-max | Nm                                                                                                               | 4...5 |      |      |      |           |          | 6...7 |
| Tightening torque for coil terminals min-max              | lbft                                      | 2.95...3.69                                 |                                                                                                                  |       |      |      |      | 4.4...5.2 |          |       |
|                                                           | Nm                                        | 0.8...1                                     |                                                                                                                  |       |      |      |      |           |          |       |
|                                                           | lbft                                      | 0.59...0.74                                 |                                                                                                                  |       |      |      |      |           |          |       |
| Conductor section connectable with 1 or 2 wires min...max |                                           | Phillips                                    | 2                                                                                                                |       |      |      |      |           |          |       |
|                                                           | AWG                                       | N°                                          | 14...2                                                                                                           |       |      |      |      |           | 16...2/0 |       |
|                                                           | Flexible w/o lug                          | mm²                                         | 1.5...35                                                                                                         |       |      |      |      |           | 1.5...70 |       |
|                                                           | Flexible c/w lug                          | mm²                                         | 1.5...35                                                                                                         |       |      |      |      |           | 1.5...70 |       |
| Power terminal protection according to IEC/EN 60529       |                                           |                                             | IP20 front                                                                                                       |       |      |      |      |           |          |       |
| AMBIENT CONDITIONS                                        |                                           |                                             |                                                                                                                  |       |      |      |      |           |          |       |
| Operating temperature                                     |                                           | °C                                          | -50...+70❹                                                                                                       |       |      |      |      |           |          |       |
| Storage temperature                                       |                                           | °C                                          | -60...+80❺                                                                                                       |       |      |      |      |           |          |       |
| Maximum altitude                                          |                                           | m                                           | 3000                                                                                                             |       |      |      |      |           |          |       |
| Operating position                                        | Normal                                    |                                             | On vertical plane                                                                                                |       |      |      |      |           |          |       |
|                                                           | Allowable                                 |                                             | ± 30°                                                                                                            |       |      |      |      |           |          |       |
| Fixing                                                    |                                           |                                             | Screw or on 35mm DIN rail                                                                                        |       |      |      |      |           |          |       |

① Derating for use at 61-400 Hz. Consult Technical support for information; see contact details on inside front cover.

② Current values guarantee an electrical life of about 200,000 cycles.

③ As per IEC/EN 60947-1 designation. In addition to the main terminal which has dimensions as mentioned above, there is a second terminal entry 12.3x3.8mm for flexible busbars.

④ -40...+70 for BF40...150E.

⑤ -50...+80 for BF40...150E.

Products certified by UL / CSA as Elevator Equipment.  
See table on page 2-62.

| TYPE                                        |            |            |                                         | BF40                                                     | BF50 | BF65 | BF80 | BF94 | BF95                                                   | BF115 | BF150 |
|---------------------------------------------|------------|------------|-----------------------------------------|----------------------------------------------------------|------|------|------|------|--------------------------------------------------------|-------|-------|
| AC CONTROL                                  |            |            |                                         |                                                          |      |      |      |      |                                                        |       |       |
| Rated voltage at 50/60Hz, 60Hz              |            | V          |                                         | 12...600 (20...250 electronically controlled AC/DC coil) |      |      |      |      |                                                        |       |       |
| Operating voltage limits                    |            |            |                                         |                                                          |      |      |      |      |                                                        |       |       |
| 50/60Hz coil powered at                     | 50Hz       | pick-up    | % Us                                    | 80...110 ❶                                               |      |      |      |      |                                                        |       |       |
|                                             |            | drop-out   | % Us                                    | 20...55 (≤70% electronically controlled AC/DC coil)      |      |      |      |      |                                                        |       |       |
|                                             | 60Hz       | pick-up    | % Us                                    | 85...110 ❶                                               |      |      |      |      |                                                        |       |       |
|                                             |            | drop-out   | % Us                                    | 40...55 (≤70% electronically controlled AC/DC coil)      |      |      |      |      |                                                        |       |       |
| 60Hz coil powered at                        | 60Hz       | pick-up    | % Us                                    | 80...110                                                 |      |      |      |      |                                                        |       |       |
|                                             |            | drop-out   | % Us                                    | 20...55                                                  |      |      |      |      |                                                        |       |       |
| Average coil consumption at ≤20°C           |            |            |                                         |                                                          |      |      |      |      |                                                        |       |       |
| 50/60Hz coil powered at                     | 50Hz       | in-rush    | VA                                      | 210 (35...120 electronically controlled AC/DC coil)      |      |      |      |      | 300 (70...175 electronically controlled AC/DC coil)    |       |       |
|                                             |            | holding    | VA                                      | 15 (1.5...3.7 electronically controlled AC/DC coil)      |      |      |      |      | 20 (1.7...3.5 electronically controlled AC/DC coil)    |       |       |
|                                             | 60Hz       | in-rush    | VA                                      | 195 (35...120 electronically controlled AC/DC coil)      |      |      |      |      | 275 (70...175 electronically controlled AC/DC coil)    |       |       |
|                                             |            | holding    | VA                                      | 13 (1.5...3.7 electronically controlled AC/DC coil)      |      |      |      |      | 17 (1.7...3.5 electronically controlled AC/DC coil)    |       |       |
| 60Hz coil powered at                        | 60Hz       | in-rush    | VA                                      | 210                                                      |      |      |      |      | 300                                                    |       |       |
|                                             |            | holding    | VA                                      | 15                                                       |      |      |      |      | 20                                                     |       |       |
| Dissipation at ≤20°C                        | 50Hz       |            | W                                       | 5 (1...2.5 electronically controlled AC/DC coil)         |      |      |      |      | 6.5 (1.5...3 electronically controlled AC/DC coil)     |       |       |
| DC CONTROL                                  |            |            |                                         |                                                          |      |      |      |      |                                                        |       |       |
| Rated voltage                               |            | V          |                                         | 20...250                                                 |      |      |      |      |                                                        |       |       |
| Operating voltage limits                    | pick-up    | % Us       |                                         | 80...110 ❶                                               |      |      |      |      |                                                        |       |       |
|                                             | drop-up    | % Us       |                                         | ≤75% Us min                                              |      |      |      |      |                                                        |       |       |
| Average consumption ≤20°C (in rush-holding) |            | W          |                                         | 23...68 / 1.2...1.9                                      |      |      |      |      | 70...80 / 1.3...1.5                                    |       |       |
| OPERATING TIMES                             |            |            |                                         |                                                          |      |      |      |      |                                                        |       |       |
| Average time for Us control in              | AC         | closing NO | ms                                      | 12...28 (40...85 electronically controlled AC/DC coil)   |      |      |      |      | 16...32 (45...90 electronically controlled AC/DC coil) |       |       |
|                                             |            | opening NO | ms                                      | 8...22 (20...55 electronically controlled AC/DC coil)    |      |      |      |      | 9...24 (24...60 electronically controlled AC/DC coil)  |       |       |
|                                             | DC         | closing NO | ms                                      | 40...85 (electronically controlled AC/DC coil)           |      |      |      |      | 45...90 (electronically controlled AC/DC coil)         |       |       |
|                                             |            | opening NO | ms                                      | 20...55 (electronically controlled AC/DC coil)           |      |      |      |      | 24...60 (electronically controlled AC/DC coil)         |       |       |
| LIFE                                        |            |            |                                         |                                                          |      |      |      |      |                                                        |       |       |
| Mechanical (million)                        | AC control | cycles     | 15                                      | 15                                                       | 15   | 15   | 15   | 15   | 15                                                     | 15    | 15    |
|                                             | DC control | cycles     | 15                                      | 15                                                       | 15   | 15   | 15   | 15   | 15                                                     | 15    | 15    |
| Electrical (Ie at 400V in AC3) (million)    |            | cycles     | 1.5                                     | 1.4                                                      | 1.4  | 1.3  | 1.1  | 1.4  | 1.2                                                    | 0.8   |       |
| MAXIMUM OPERATING RATE                      |            |            |                                         |                                                          |      |      |      |      |                                                        |       |       |
| Mechanical operations                       |            | cy/h       | 1500 (2000 for BF40...E...BF150...E...) |                                                          |      |      |      |      |                                                        |       |       |

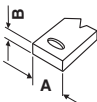
❶ For electronically controlled AC/DC coils 80% of Us min. and 110% of Us max; for 20...48V coil powered in AC 85% of Us min.

❷ Electromagnetic compatibility: BF40...94E contactors with electronic coil 20...48VAC/DC are in compliance with IEC/EN60947-1 and IEC/EN 60947-1 standards for Environment B (domestic). The other devices are in compliance for Environment A (industrial) and can be upgraded to Environment B connecting proper filters; consult Technical support for information - see contact details on inside front cover.

## 2 Contactors

### Technical characteristics

#### IEC OPERATIONAL CHARACTERISTICS B145 - B1600...

| TYPE                                                  |                                                                                    |                 | B145                                | B180           | B250             | B310            | B400            | B500          | B630            | B630<br>1000    | B1250          | B1600          |
|-------------------------------------------------------|------------------------------------------------------------------------------------|-----------------|-------------------------------------|----------------|------------------|-----------------|-----------------|---------------|-----------------|-----------------|----------------|----------------|
| POLE CHARACTERISTICS                                  |                                                                                    |                 |                                     |                |                  |                 |                 |               |                 |                 |                |                |
| Power poles                                           |                                                                                    | n°              | 3-4                                 | 3-4            | 3-4              | 3-4             | 3-4             | 3-4           | 3-4             | 3-4             | 3-4            | 3-4            |
| Rated insulation voltage Ui                           |                                                                                    | V               | 1000                                |                |                  |                 |                 |               |                 |                 |                |                |
| Rated impulse withstand votage Uimp                   |                                                                                    | kV              | 8                                   |                |                  |                 |                 |               |                 |                 |                |                |
| Operational frequency                                 |                                                                                    | Hz              | 25-400●                             |                |                  |                 |                 |               |                 |                 |                |                |
| Operational current                                   | Conventional free air thermal Ith (≤40°C)                                          | A               | 250                                 | 275            | 350              | 450             | 550             | 700           | 800             | 1000            | 1250           | 1600           |
|                                                       | AC3 (≤440V ≤55°C)                                                                  | A               | 150                                 | 185            | 265              | 320             | 420             | 520           | 630             | —               | —              | —              |
|                                                       | AC4 (400V)●                                                                        | A               | 57                                  | 65             | 92               | 110             | 133             | 175           | 210             | —               | —              | —              |
| Short-time allowable current for 10s (IEC/EN 60947-1) |                                                                                    | A               | 1300                                | 1500           | 2200             | 2900            | 3600            | 4050          | 5040            | 5600            | 6500           | 8300           |
| Maximum fuse size coordination Type 2 - 400V - 50kA   | gG                                                                                 | A               | 250                                 | 315            | 400              | 500             | 630             | 800           | 1000            | 1000            | 1250           | 1600           |
|                                                       | aM                                                                                 | A               | 160                                 | 200            | 250              | 400             | 400             | 500           | 630             | —               | —              | —              |
| Making capacity (RMS value)                           |                                                                                    | A               | 1500                                | 1850           | 2750             | 3150            | 4200            | 5000          | 6300            | 6300            | 6300           | 6300           |
| Breaking capacity at voltage                          | ≤440V                                                                              | A               | 1500                                | 1850           | 2500             | 3000            | 4000            | 5000          | 6300            | 6300            | 6300           | 6300           |
|                                                       | 500V                                                                               | A               | 1400                                | 1600           | 2250             | 2700            | 3400            | 4500          | 5600            | 5600            | 5600           | 5600           |
|                                                       | 690V                                                                               | A               | 1200                                | 1480           | 2200             | 2520            | 3360            | 4000          | 5000            | 5000            | 5000           | 5000           |
|                                                       | 1000V                                                                              | A               | 800                                 | 1000           | 1500             | 1700            | 2300            | 2700          | 3400            | 3400            | 3400           | 3400           |
| Consumption and resistance per pole (average values)  |                                                                                    | mΩ              | 0.30                                | 0.30           | 0.20             | 0.20            | 0.20            | 0.14          | 0.14            | 0.14            | 0.07           | 0.07           |
|                                                       | Ith                                                                                | W               | 14.5                                | 20.3           | 24.5             | 40.5            | 52.0            | 68.6          | 90              | 140             | 110            | 180            |
|                                                       | AC3                                                                                | W               | 6.8                                 | 9.7            | 12.5             | 20              | 32              | 35.0          | 56              | —               | —              | —              |
| Terminals                                             |  | A mm            | 20 (0.8")                           | 20 (0.8")      | 25 (1")          | 25 (1")         | 25 (1")         | 35 (1.4")     | 40 (1.6")       | 60 (2.4")       | 80 (3.1")      | 80 (3.1")      |
|                                                       |                                                                                    | B mm            | 4 (0.16")                           | 4 (0.16")      | 5 (0.2")         | 5 (0.2")        | 5 (0.2")        | 6 (0.23")     | 6 (0.23")       | 6 (0.23")       | 10 (0.39")     | 10 (0.39")     |
|                                                       |                                                                                    | Screw + hex nut | M8                                  | M8             | M10              | M10             | M10             | M10           | M12             | 2-M12           | 2-M12          | 2-M12          |
|                                                       |                                                                                    | ● mm            | 13 (0.51")                          | 13 (0.51")     | 17 (0.67")       | 17 (0.67")      | 17 (0.67")      | 17 (0.67")    | 19 (0.75")      | 19 (0.75")      | 19 (0.75")     | 19 (0.75")     |
|                                                       | Quick-connect (coil)                                                               | Faston          | 1x6.35mm (0.25") or 2x2.8mm (0.11") |                |                  |                 |                 |               |                 |                 |                |                |
|                                                       | Coil with G371●                                                                    | Phillips        | 2 (Ø7mm/0.3in)                      |                |                  |                 |                 |               |                 |                 |                |                |
| Pole tightening torque Nm                             |                                                                                    |                 | 18                                  | 18             | 35               | 35              | 35              | 35            | 55              | 55              | 55             | 55             |
|                                                       |                                                                                    | lbft            | 13.3                                | 13.3           | 25.8             | 25.8            | 25.8            | 25.8          | 40.6            | 40.6            | 40.6           | 40.6           |
| Coil tightening torque with G371● fitted              |                                                                                    | Nm              | 1                                   |                |                  |                 |                 |               |                 |                 |                |                |
|                                                       |                                                                                    | lbft            | 0.74                                |                |                  |                 |                 |               |                 |                 |                |                |
| Maximum conductor section                             |                                                                                    | mm              | 25x3 (1x0.12")                      | 25x3 (1x0.12") | 30x4 (1.2x0.16") | 30x5 (1.2x0.2") | 30x5 (1.2x0.2") | 50x5 (2x0.2") | 60x5 (2.4x0.2") | 60x5 (2.4x0.2") | 100x5 (4x0.2") | 100x5 (4x0.2") |
| 1 or 2 bars                                           |                                                                                    |                 |                                     |                |                  |                 |                 |               |                 |                 |                |                |
| N° 1 wire with lug                                    |                                                                                    | mm²             | 120                                 | 150            | 240              | —               | —               | —             | —               | —               | —              | —              |
| N° 2 wire with lug                                    |                                                                                    | mm²             | —                                   | —              | —                | 150             | 150             | 240           | 240             | —               | —              | —              |
| AMBIENT CONDITIONS                                    |                                                                                    |                 |                                     |                |                  |                 |                 |               |                 |                 |                |                |
| Operating temperature                                 |                                                                                    | °C              | -50...+70                           |                |                  |                 |                 |               |                 |                 | -20...+60      |                |
| Storage temperature                                   |                                                                                    | °C              | -60...+80                           |                |                  |                 |                 |               |                 |                 | -30...+80      |                |
| Maximum altitude                                      |                                                                                    | m               | 3000                                |                |                  |                 |                 |               |                 |                 |                |                |
| Operating position                                    | Normal                                                                             |                 | Vertical                            |                |                  |                 |                 |               |                 |                 |                |                |
|                                                       | Allowable                                                                          |                 | ± 30°                               |                |                  |                 |                 |               |                 |                 |                |                |
| Fixing                                                |                                                                                    |                 | Screw                               |                |                  |                 |                 |               |                 |                 |                |                |

① Derating for use at 61-400 Hz. Consult Technical support for information (Tel. 035 4282422; E-mail: service@LovatoElectric.com).

② Current values guarantee an electrical life of about 200,000 cycles.

③ Spanner/wrench size.

④ G371: Adapter to transform coil faston terminals into screw type.

| TYPE                                     |          |        | B145            | B180                                                | B250     | B310     | B400     | B500     | B630      | B630<br>1000 | B1250     | B1600     |           |
|------------------------------------------|----------|--------|-----------------|-----------------------------------------------------|----------|----------|----------|----------|-----------|--------------|-----------|-----------|-----------|
| AC CONTROL                               |          |        |                 |                                                     |          |          |          |          |           |              |           |           |           |
| Supply voltage                           |          |        | Either in AC/DC |                                                     |          |          |          |          |           |              |           | Only AC   |           |
| Rated control voltage                    |          |        | V               | 24...480                                            | 24...480 | 24...480 | 24...480 | 24...480 | 48...480  | 48...480     | 48...480  | 110/240   | 110/240   |
| Operating<br>voltage limits              | pick-up  | % Us   | 80...110        | 80...110                                            | 80...110 | 80...110 | 80...110 | 80...110 | 80...110  | 80...110     | 80...110  | 80...110  | 80...110  |
|                                          | drop-out | % Us   | 20...60         | 20...60                                             | 20...60  | 20...60  | 20...60  | 20...60  | 20...60   | 20...60      | 20...60   | 20...60   | 20...60   |
| Consumption<br>at ≤20°C                  | in-rush  | VA/W   | 300             | 300                                                 | 300      | 300      | 300      | 400      | 400       | 400          | 800       | 800       |           |
|                                          | holding  | VA/W   | 10              | 10                                                  | 10       | 10       | 10       | 18       | 18        | 18           | 45        | 45        |           |
| Dissipation at ≤20°C                     |          |        | W               | 10                                                  | 10       | 10       | 10       | 10       | 18        | 18           | 18        | 40        | 40        |
| OPERATING TIMES                          |          |        |                 |                                                     |          |          |          |          |           |              |           |           |           |
| Making                                   |          |        | ms              | 60...100                                            | 60...100 | 80...120 | 80...120 | 80...120 | 110...180 | 110...180    | 110...180 | 120...210 | 300...450 |
| Breaking                                 |          |        | ms              | 25...60                                             | 25...60  | 30...75  | 30...75  | 30...75  | 60...100  | 60...100     | 60...110  | 70...130  | 70...130  |
| LIFE                                     |          |        |                 |                                                     |          |          |          |          |           |              |           |           |           |
| Mechanical (million)                     | AC/DC    | cycles | 10              | 10                                                  | 10       | 10       | 10       | 5        | 5         | 5            | 5         | 5         |           |
| Electrical (million) (Ie at 400V in AC3) |          | cycles | 1,1             | 1                                                   | 1        | 0,9      | 0,7      | 0,7      | 0,7       | –            | –         | –         |           |
| MAXIMUM OPERATING RATE                   |          |        |                 |                                                     |          |          |          |          |           |              |           |           |           |
| Mechanical operations                    |          |        | cy/h            | 3600 (2000 for BF40...E, BF80...E)                  |          |          |          |          |           |              |           |           |           |
| PARTICULAR CHARACTERISTICS               |          |        |                 |                                                     |          |          |          |          |           |              |           |           |           |
| Indicator                                |          |        |                 | For contactor open or closed status                 |          |          |          |          |           |              |           |           |           |
| Safety feature                           |          |        |                 | Closing operations are prevented without arc chutes |          |          |          |          |           |              |           |           |           |

### CONTROL CIRCUIT UTILISATION

The input electronic circuit of the contactor coil B145-B1600 is designed and tested according to IEEEC 62.41 and can withstand a 10 kV impulse voltage (1.2/50µs) with 50 Joule energy.  
For higher values, the use of an auxiliary step-down voltage transformer is recommended.

### CONTACTORS WITH MECHANICAL LATCH

Contactors B145-B630 type, can have mechanical latch included or can be predisposed, to be completed with mechanical latch, see pages 2-4 and 2-6 (3-pole version) or 2-8 and 2-10 (4-pole version).  
Technical data of mechanical latch G495 type is stated on page 2-26.

## 2 Contactors

### Technical characteristics

#### MECHANICAL INTERLOCK BETWEEN CONTACTORS ONE ON TOP OF THE OTHER

B145.....B1600... (Fig. 1, 2 and 3)

It is G356... type, which is provided in six types to allow different fixing interaxis of contactors.

Contactors of the same size can be interlocked as well as different sizes.

The tables below indicate the interaxis which can be obtained with the various interlock types; with terminal protections (INTERAXIS A) and without terminal protection (INTERAXIS B ).

#### INTERAXIS A [mm] - For contactors with terminal protection (Fig. 1)

| KM1    | B145-B180    |                      |              | B250-B310-B400 |                      |              | B500-B630    |                      |              |
|--------|--------------|----------------------|--------------|----------------|----------------------|--------------|--------------|----------------------|--------------|
| KM2    | B145<br>B180 | B250<br>B310<br>B400 | B500<br>B630 | B145<br>B180   | B250<br>B310<br>B400 | B500<br>B630 | B145<br>B180 | B250<br>B310<br>B400 | B500<br>B630 |
| G356 1 | —            | —                    | —            | —              | —                    | —            | —            | —                    | —            |
| G356 2 | 286...305    | —                    | —            | —              | —                    | —            | —            | —                    | —            |
| G356 3 | 305...345    | 330...345            | —            | 330...345      | —                    | —            | —            | —                    | —            |
| G356 4 | 345...385    | 345...385            | 375...385    | 345...385      | 372...385            | —            | 375...385    | —                    | —            |
| G356 5 | 390...425    | 390...425            | 390...425    | 390...425      | 390...425            | 420...425    | 390...425    | 420...425            | —            |
| G356 6 | 470...500    | 470...500            | 470...500    | 470...500      | 470...500            | 470...500    | 470...500    | 470...500            | 470...500    |

#### INTERAXIS B [mm] - For contactors without terminal protection (Fig. 2)

| KM1    | B145-B180    |                      |              | B250-B310-B400 |                      |              | B500-B630    |                      |              |
|--------|--------------|----------------------|--------------|----------------|----------------------|--------------|--------------|----------------------|--------------|
| KM2    | B145<br>B180 | B250<br>B310<br>B400 | B500<br>B630 | B145<br>B180   | B250<br>B310<br>B400 | B500<br>B630 | B145<br>B180 | B250<br>B310<br>B400 | B500<br>B630 |
| G356 1 | 225...265    | —                    | —            | —              | —                    | —            | —            | —                    | —            |
| G356 2 | 265...305    | 265...305            | —            | 265...305      | 265...305            | —            | —            | —                    | —            |
| G356 3 | 305...345    | 305...345            | 305...345    | 305...345      | 305...345            | 305...345    | 305...345    | 305...345            | —            |
| G356 4 | 345...385    | 345...385            | 345...385    | 345...385      | 345...385            | 345...385    | 345...385    | 345...385            | 345...385    |
| G356 5 | 390...425    | 390...425            | 390...425    | 390...425      | 390...425            | 390...425    | 390...425    | 390...425            | 390...425    |
| G356 6 | 470...500    | 470...500            | 470...500    | 470...500      | 470...500            | 470...500    | 470...500    | 470...500            | 470...500    |

To interlock two contactors B630 1000, use type G356 6 only.

To interlock two contactors B1250 or B1600, it is imperative to use two pieces of type G356 6 (fig. 3), one fixed on the left side and the other on the right.

Interaxis B is 470-500mm for B630 1000, B1250 or B1600.

The B1250 or B1600 cannot be interlocked with the other types of the B series.

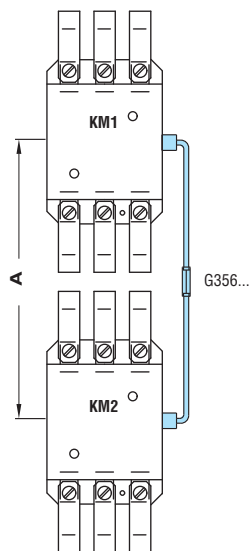


Fig. 1

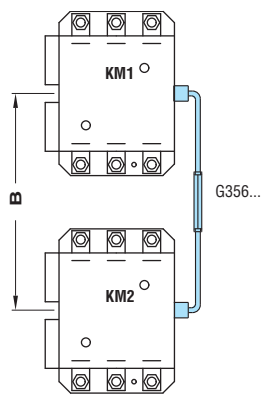


Fig. 2

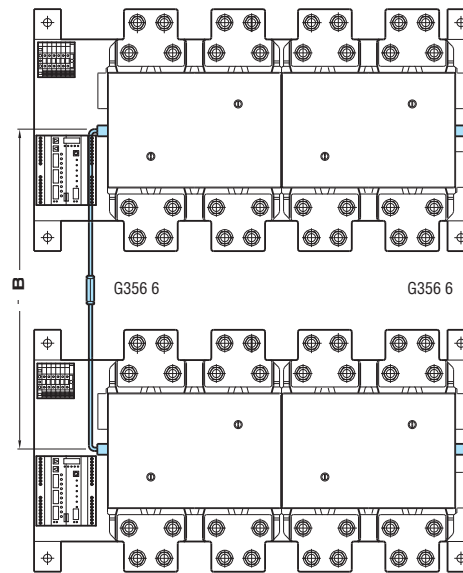
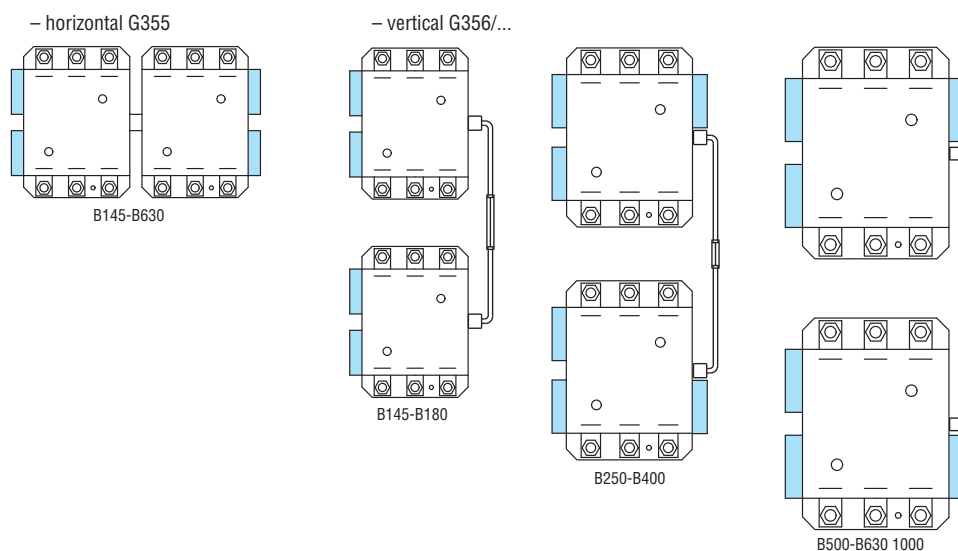


Fig. 3

Horizontal interlock between contactors side by side B145 to B630 1000.  
It is G355 type and can interlock both contactors of equal size and contactors of different sizes (e.g. B145 can be interlocked with B630).  
For contactor B630 1000 (three-pole), contact our Technical support office.  
This interlock cannot be applied to contactors B1250-B1600.

With mechanical interlock:



With mechanical interlock:

