



- 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 Ith ratings in AC1 duty at $\leq 40^{\circ}\text{C}$: 16 to 1600A
- IEC Ie 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.



Page 2-8

FOUR-POLE CONTACTORS

- IEC Ith 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.



Page 2-12

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

- IEC Ith 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.



Page 2-13

FOUR-POLE CONTACTORS WITH 4 NC POLES FOR PHOTOVOLTAIC APPLICATIONS

- IEC Ith 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

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	DC ^①	AC/DC ^②
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	DC ^①	AC/DC ^②
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.



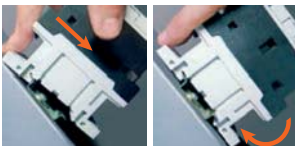
- SIDE ADD-ON FOURTH POLE**
 For the 45A to 165A AC1 ratings, a side-mount fourth power pole can be snapped on the three-pole contactor. This solution permits the optimisation of inventory.



- 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**

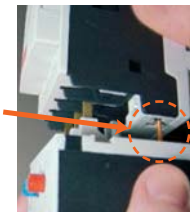


Contactors mounting on and removal from a 35mm DIN rail are tool-less operations and are done by simply applying pressure on the contactor.

- 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.



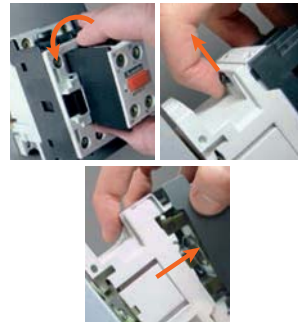
- EFFORTLESS THERMAL OVERLOAD RELAY LINK RF38, RF82 AND RF110 TYPES**



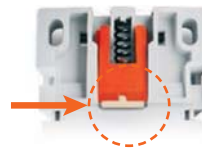
During the connection of the thermal overload relay to the contactor, its auxiliary contact is simultaneously linked to the contactor coil terminal rigid connector. The complete overload relay fixing is obtained with one single operation and without other connections.

- 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

new



BF95 A...BF150 A



B145...B180



B250...B400

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					
	I _{th} (AC1)			I _e (AC3)	230V	400V	415V	440V	500V	690V	1000V	Single phase		Three phase				
AC coil	≤40°C	≤55°C	≤70°C		≤440V at ≤55°C	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	120V	240V	200V	240V	480V	600V
[A]	[A]	[A]	[A]	[A]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[HP]	[HP]	[HP]	[HP]	[HP]	[HP]	
11 BG06 01 Aⓐ	16	14	12	6	1.5	2.2	2.4	2.5	3	3	—	1/3	1	1½	2	3	3	
11 BG06 10 Aⓐ																		
11 BG09 01 Aⓐ	20	18	15	9	2.2	4	4.3	4.5	5	5	—	1/2	1½	2	3	5	5	
11 BG09 10 Aⓐ																		
11 BGF09 01 Aⓐ	20	18	15	9	2.2	4	4.3	4.5	5	5	—	1/2	1½	2	3	5	5	
11 BGF09 10 Aⓐ																		
11 BGP09 01 Aⓐ	20	18	15	9	2.2	4	4.3	4.5	5	5	—	1/2	1½	2	3	5	—	
11 BGP09 10 Aⓐ																		
11 BG12 01 Aⓐⓑ	20	18	15	12	3.2	5.7	6.2	5.5	5	5	—	1/2	1½	3	3	7½	10	
11 BG12 10 Aⓐⓑ																		
BF09 01 Aⓐⓑ	25	20	18	9	2.2	4.2	4.5	4.8	5.5	7.5	—	¾	2	3	3	5	7½	
BF09 10 Aⓐⓑ																		
BF12 01 Aⓐⓑ	28	23	20	12	3.2	5.7	6.2	6.2	7.5	10	—	1	2	5	5	7½	10	
BF12 10 Aⓐⓑ																		
BF18 01 Aⓐⓑ	32	26	23	18	4	7.5	9	9	10	10	—	1	3	5	5	10	15	
BF18 10 Aⓐⓑ																		
BF25 01 Aⓐ	32	26	23	25	7	12.5	13.4	13.4	15	11	—	2	3	7½	7½	15	15	
BF25 10 Aⓐ																		
BF26 00 Aⓐⓑ	45	36	32	26	7.3	13	14	14	15.6	18.5	—	2	5	7½	7½	15	20	
BF32 00 Aⓐⓑ	56	45	40	32	8.8	16	17	17	20	22	—	3	7½	10	10	20	25	
BF38 00 Aⓐ	56 (60ⓑ)	45 (48ⓑ)	40 (42ⓑ)	38	11	18.5	18.5	18.5	20	22	—	3	7½	10	15	30	30	
BF40 00A ⓐ	70	60	50	40	11	18.5	22	22	22	30	18.5	3	7½	10	15	30	40	
BF50 00A ⓐⓑ	90	75	65	50	15	22	30	30	30	37	22	5	10	15	20	40	40	
BF65 00A ⓐⓑ	100	80	70	65	18.5	30	37	37	37	45	30	—	—	20	25	50	60	
BF80 00A ⓐ	115	95	80	80	22	45	45	45	55	55	37	—	—	25	30	60	75	
BF94 00A ⓐ	115	95	80	95	30	55	55	55	55	55	37	—	—	25	30	60	75	
BF95 00A ⓐ	140	115	100	95	30	55	55	55	75	90	45	—	—	30	30	60	75	
BF115 00A ⓐ	160	130	115	115	37	55	55	55	75	110	55	—	—	40	40	75	100	
BF150 00A ⓐ	165	135	118	150	45	75	75	75	90	110	55	—	—	50	50	100	125	
11 B145 00ⓐⓑ	250	235	190	150	46	80	88	93	100	120	75	—	—	50	50	100	125	
11 B180 00ⓐⓑ	275	250	200	185	57	100	108	115	123	144	103	—	—	60	75	150	150	
11 B250 00ⓐⓑ	350	300	250	265	83	140	155	164	176	212	156	—	—	75	100	200	250	
11 B310 00ⓐⓑ	450	370	300	320	100	170	188	200	213	256	180	—	—	100	125	250	300	
11 B400 00ⓐⓑ	550	430	360	420	130	225	247	263	271	352	208	—	—	125ⓑ	150ⓑ	350ⓑ	400ⓑ	
11 B500 00ⓐⓑ	700	550	500	520	156	290	306	328	367	416	312	—	—	150ⓑ	200ⓑ	400ⓑ	450ⓑ	
11 B630 00ⓐⓑ	800	640	540	630	198	355	368	368	368	440	368	—	—	200	250	500	500	
11 B630 1000 00ⓐⓑ	1000	850	700	—	For AC1/Resistive duty only, see page 2-8.							—	—	—	—	—	—	—
11 B1250 24ⓐⓑ	1250	1050	880	—	For AC1/Resistive duty only, see page 2-8.							No UL	—	—	—	—	—	—
11 B1600 24ⓐⓑ	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 16mm² 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

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



BF09 D...BF25 D
BF09 L...BF25 L



BF26 D-BF38 D
BF26 L-BF38 L



BF40 E...BF94 E

new



BF95 E...BF150 E



B145...B180



B250...B400

Three-phase motor control												UL/CSA details							
Order code DC coil	DC coil Low consumption	IEC operating current I _{th} (AC1)			I _e (AC3) ≤440V at ≤55°C	Maximum IEC power at ≤55°C (AC3)								Maximum UL/CSA horsepower ratings					
		≤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]	[kW]	[HP]	[HP]	[HP]	[HP]	[HP]	[HP]
11 BG06 01 D①	—	16	14	12	6	1.5	2.2	2.4	2.5	3	3	—	1/3	1	1 1/2	2	3	3	3
11 BG06 10 D①	—																		
11 BG09 01 D①	11 BG09 01 L②	20	18	15	9	2.2	4	4.3	4.5	5	5	—	1/2	1 1/2	2	3	5	5	5
11 BG09 10 D①	11 BG09 10 L②																		
11 BGF09 01 D①	11 BGF09 01 L②	20	18	15	9	2.2	4	4.3	4.5	5	5	—	1/2	1 1/2	2	3	5	5	5
11 BGF09 10 D①	11 BGF09 10 L②																		
11 BGP09 01 D①	—	20	18	15	9	2.2	4⑤	4.3⑤	4.5⑤	5⑤	5	—	1/2	1 1/2	2	3	5⑤	—	—
11 BGP09 10 D①	—																		
11 BG12 01 D①②	—	20	18	15	12	3.2	5.7	6.2	5.5	5	5	—	1/2	1 1/2	3	3	7 1/2	10	—
11 BG12 10 D①②	—																		
BF09 01 D①②	BF09 01 L②②	25	20	18	9	2.2	4.2	4.5	4.8	5.5	7.5	—	3/4	2	3	3	5	7 1/2	—
BF09 10 D①②	BF09 10 L②②																		
BF12 01 D①②	BF12 01 L②②	28	23	20	12	3.2	5.7	6.2	6.2	7.5	10	—	1	2	5	5	7 1/2	10	—
BF12 10 D①②	BF12 10 L②②																		
BF18 01 D①②	BF18 01 L②②	32	26	23	18	4	7.5	9	9	10	10	—	1	3	5	5	10	15	—
BF18 10 D①②	BF18 10 L②②																		
BF25 01 D①	BF25 01 L②	32	26	23	25	7	12.5	13.4	13.4	15	11	—	2	3	7 1/2	7 1/2	15	15	—
BF25 10 D①	BF25 10 L②																		
BF26 00 D①②	BF26 00 L②②	45	36	32	26	7.3	13	14	14	15.6	18.5	—	2	5	7 1/2	7 1/2	15	20	—
BF32 00 D①②	BF32 00 L②②	56	45	40	32	8.8	18	17	17	20	22	—	3	7 1/2	10	10	20	25	—
BF38 00 D①	BF38 00 L②	56 (60④)	45 (48④)	40 (42④)	38	11	18.5	18.5	18.5	20	22	—	3	7 1/2	10	15	30	30	—
BF40 00 E③	—	70	60	50	40	11	18.5	22	22	22	30	18.5	3	7 1/2	10	15	30	30	—
BF50 00 E③②	—	90	75	65	50	15	22	30	30	30	37	22	5	10	15	20	40	40	—
BF65 00 E③②	—	100	80	70	65	18.5	30	37	37	37	45	30	—	—	20	25	50	60	—
BF80 00 E③	—	115	95	80	80	22	45	45	45	55	55	37	—	—	25	30	60	75	—
BF94 00 E③	—	115	95	80	95	30	55	55	55	55	55	37	—	—	25	30	60	75	—
BF95 00 E③	—	140	115	100	95	30	55	55	55	75	90	45	—	—	30	30	60	75	—
BF115 00 E③	—	160	130	115	115	37	55	55	55	75	110	55	—	—	40	40	75	100	—
BF150 00 E③	—	165	135	118	150	45	75	75	75	90	110	55	—	—	50	50	100	125	—
11 B145 00④⑤	—	250	235	190	150	46	80	88	93	100	120	75	—	—	50	50	100	125	—
11 B180 00④⑤	—	275	250	200	185	57	100	108	115	123	144	103	—	—	60	75	150	150	—
11 B250 00④⑤	—	350	300	250	265	83	140	155	164	176	212	156	—	—	75	100	200	250	—
11 B310 00④⑦	—	450	370	300	320	100	170	188	200	213	256	180	—	—	100	125	250	300	—
11 B400 00④⑤	—	550	430	360	420	130	225	247	263	271	352	208	—	—	125	150	350	400	—
11 B500 00④⑤	—	700	550	500	520	156	290	306	328	367	416	312	—	—	150①	200①	400①	450①	—
11 B630 00④⑤	—	800	640	540	630	198	335	368	368	368	440	368	—	—	200①	250①	500①	500①	—
11 B630 1000 00④⑦	—	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...SL.00 ④.
If already fitted with mechanical latch (G495), the order code becomes 11 B...L.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, 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 General (purpose) use	UL/CSA Fuse class	Short circuit current RMS sym. 600VAC	Type of terminal	Incorporated auxiliary contacts		Quantity per pkg	Weight [kg]
					NO	NC		
	[A]	Type/[A]	[kA] UL/CSA			n°		
	16	K5/30	5	Clamp-screw	—	1Ⓣ	10	0.214
					1Ⓣ	—	10	0.214
	20	K5/30	5	Clamp-screw	—	1Ⓣ	10	0.214
					1Ⓣ	—	10	0.214
	20	K5/30	5	Faston	—	1Ⓣ	10	0.210
					1Ⓣ	—	10	0.210
	20	K5/30	5	Rear PCB solder pin	—	1Ⓣ	10	0.240
					1Ⓣ	—	10	0.240
	20	K5/30	5	Clamp-screw	—	1Ⓣ	10	0.214
					1Ⓣ	—	10	0.214
	25	RK5/60	5	Clamp-screw	—	1Ⓣ	1	0.494
					1	—	1	0.494
	28	RK5/70	5	Clamp-screw	—	1Ⓣ	1	0.494
					1	—	1	0.494
	32	RK5/80	5	Clamp-screw	—	1Ⓣ	1	0.494
					1	—	1	0.494
	32	RK5/100	5	Clamp-screw	—	1Ⓣ	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 Ⓣ	—	—	1	1.050
	90	RK5/150	5	Lug-clamp Ⓣ	—	—	1	1.050
	100	RK5/200	10	Lug-clamp Ⓣ	—	—	1	1.050
	115	RK5/200	10	Lug-clamp Ⓣ	—	—	1	1.050
	115	RK5/200	10	Lug-clamp Ⓣ	—	—	1	1.050
	140	RK5/250	10	Lug-clamp Ⓣ	—	—	1	2.060
	160	RK5/250	10	Lug-clamp Ⓣ	—	—	1	2.060
	165	RK5/250	10	Lug-clamp Ⓣ	—	—	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 Ⓣ	L/800	18	Screw-nut	—	—	1	9.635
	700 Ⓣ	L/1200 Ⓣ	18 Ⓣ	Screw-nut	—	—	1	18.060
	800 Ⓣ	L/1500 Ⓣ	18 Ⓣ	Screw-nut	—	—	1	18.620
	1000	L/1500	18	Screw-nut	—	—	1	21.400

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

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

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

Ⓣ 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Ⓣ	●	●	●			
BF09 D - BF09 L	●		●	●	●	●
BF12 D - BF12 L	●		●	●	●	●
BF18 D - BF18 L	●		●	●	●	●
BF25 D - BF25 L	●		●	●	●	●
BF26 D - BF26 L	●		●	●	●	●
BF32 D - BF32 L	●		●	●	●	●
BF38 D - BF38 L	●		●	●	●	●
BF40 E	●			●	●	
BF50 E	●			●	●	
BF65 E	●			●	●	
BF80 E	●			●	●	
BF94 E	●					
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.

Ⓣ 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 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



Resistive load control

Order code	IEC operating current I _{th} (AC1)				Maximum IEC power at ≤40°C (AC1)							UL/CSA details	
	≤55°C			≤70°C	I _e (AC3) ≤440V at ≤55°C	230V	400V	415V	440V	500V	690V		1000V
AC coil	[A]	[A]	[A]	[A]	[A]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[A]
11 BG09 T4 A①②	20	18	15	9	8	14	14	15	16	22	—	—	20
11 BGF09 T4 A①	20	18	15	9	8	14	14	15	16	22	—	—	20
11 BGP09 T4 A①	20	18	15	9	8	14⑦	14⑦	15⑦	16⑦	—	—	—	20
BF09 T4 A①②	25	20	18	9	9.5	16	17	18	21	27	—	—	25
BF12 T4 A①②	28	23	20	12	10	18	19	20	23	32	—	—	28
BF18 T4 A①②	32	26	23	18	12	21	22	23	26	36	—	—	32
BF26 T4 A①③④	45	36	32	26	17	30	31	33	37	51	—	—	45
BF38 T4 A①③	56 (60⑤)	45 (48⑤)	40 (42⑤)	38	21	36	38	40	45	62	—	—	55
BF40 T4 A①	70	60	50	40	26	46	48	51	58	79	115	—	70
BF50 T4 A①	90	75	65	50	34	59	61	65	74	102	148	—	90
BF65 T4 A①	100	80	70	65	38	65	68	72	82	114	165	—	100
BF80 T4 A①	115	95	80	80	43	76	79	83	95	120	185	—	115
BF95 T4 A①	140	115	100	95	53	92	96	101	115	159	230	—	140
BF115 T4 A①	160	130	115	115	61	105	109	116	132	182	263	—	160
BF150 T4 A①	165	135	118	150	62	110	113	119	136	187	271	—	165
11 B145 4 00②③	250	235	190	150	91	150	162	180	196	270	390	—	250
11 B180 4 00②③	275	250	200	185	95	160	177	200	213	298	430	—	275
11 B250 4 00②③	350	300	250	265	124	214	234	255	282	380	560	—	350
11 B310 4 00②③	450	370	300	320	158	270	293	325	350	488	700	—	450
11 B400 4 00②③	550	430	360	420	200	345	377	400	452	598	870	—	550
11 B500 4 00②③	700	550	500	520	252	438	478	500	575	755	1100	—	700
11 B630 4 00②③	800	640	540	630	288	500	545	580	655	860	1250	—	800
11 B630 1000 4 00②③	1000	850	700	—	350	600	630	725	750	1000	1600	—	1000
11 B1250 4 24③④	1250	1050	880	—	480	830	900	905	1100	1450	2000	—	No UL/CSA
11 B1600 4 24③④	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 16mm² 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	1.240
RK5 / 250	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 ②	18 ②	Screw-nut	none	none	1	11.195
L/1200 ②	18 ②	Screw-nut	none	none	1	20.910
L/1500 ②	18 ②	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.

② 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	●		● ^⑧	●	●	●
BF18 T4 A	●		●	●	●	●
BF26 T4 A	●		● ^⑧	●	●	●
BF38 T4 A	●		● ^⑧	●	●	●
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 (UL 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.

⑧ This contactor has also achieved CSA elevator equipment certification.

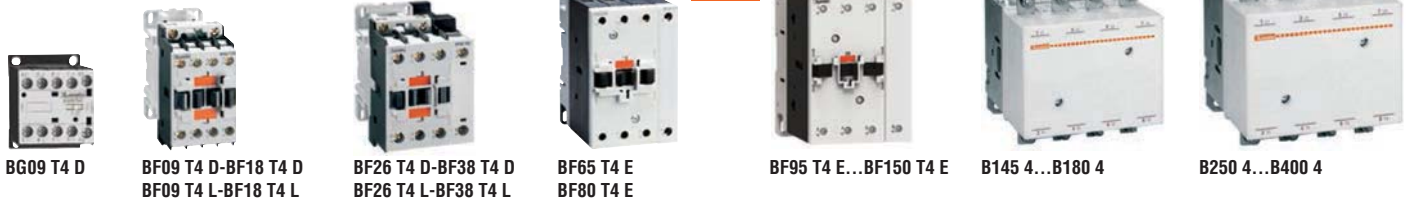
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14; UL 60947-1, UL 60947-4-1, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1.

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



new

Resistive load control													UL/CSA details
Order code DC coil	DC coil Low consumption	IEC operating current I _{th} (AC1)			I _e (AC3) ≤440V at ≤55°C	Maximum IEC power at ≤40°C (AC1)							UL/CSA General (purpose) use
		≤40°C	≤55°C	≤70°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	14⑤	14⑤	15⑤	16⑤	—	—	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 (60③)	45 (48③)	40 (42③)	38	21	26	38	40	45	62	—	55
BF65 T4 E ③	—	100	80	70	65	38	65	68	72	82	114	165	100
BF80 T4 E ③	—	115	95	80	80	43	76	79	83	95	120	185	115
BF95 T4 E ③	—	140	115	100	95	53	92	96	101	115	159	230	140
BF150 T4 E ③	—	165	135	118	150	62	110	113	119	136	187	271	165
11 B145 4 00④⑤	—	250	235	190	150	91	150	162	180	196	270	390	250
11 B180 4 00④⑤	—	275	250	200	185	95	160	177	200	213	298	430	275
11 B250 4 00④⑤	—	350	300	250	265	124	214	234	255	282	380	560	350
11 B310 4 00④⑦	—	450	370	300	320	158	270	293	325	350	488	700	450
11 B400 4 00④⑤	—	550	430	360	420	200	345	377	400	452	598	870	550
11 B500 4 00④⑤	—	700	550	500	520	252	438	478	500	575	755	1100	700
11 B630 4 00④⑤	—	800	640	540	630	288	500	545	580	655	860	1250	800
11 B630 1000 4 00④⑦	—	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 16mm² cable, headed with a fork terminal, must be used.



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
			NO	NC		
Type / [A]	[kA] UL/CSA				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-clamp [Ⓜ] [Ⓢ]	—	—	1	1.280
RK5 / 250	10	Lug-clamp [Ⓜ] [Ⓢ]	—	—	1	1.280
RK5 / 250	10	Lug-clamp [Ⓜ] [Ⓢ]	—	—	1	2.460
RK5 / 250	10	Lug-clamp [Ⓜ] [Ⓢ]	—	—	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 [Ⓜ]	18 [Ⓜ]	Screw-nut	—	—	1	20.910
L/1200 [Ⓜ]	18 [Ⓜ]	Screw-nut	—	—	1	21.880
L/1500 [Ⓜ]	18 [Ⓜ]	Screw-nut	—	—	1	25.600

[Ⓜ] No UL/CSA ratings; data given for indication and reference purposes only.
[Ⓢ] 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.

[Ⓢ] 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.

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



11 BG09 T2...

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

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



BF09 T2...

Order code	IEC rated conventional free air thermal current Ith			Qty per pkg	Wt
	≤40°C	≤55°C	≤60°C		
	[A]	[A]	[A]	n°	[kg]
AC COIL. Terminals: clamp screw.					
BF09 T2 A	25	20	18	1	0.340
BF18 T2 A	32	26	23	1	0.340
BF26 T2 A	45	36	32	1	0.420
BF38 T2 A	56 (60)	45 (48)	40 (42)	1	0.420
BF80 T2 A	115	95	75	1	1.075
DC COIL. Terminals: clamp screw.					
BF18 T2 D	32	26	23	1	0.470
BF26 T2 D	45	36	32	1	0.540
BF38 T2 D	56 (60)	45 (48)	40 (42)	1	0.540
BF80 T2 E	115	95	75	1	1.125
DC COIL. Low consumption (2.4W). Terminals: clamp screw.					
BF18 T2 L	32	26	23	1	0.470
BF26 T2 L	45	36	32	1	0.540
BF38 T2 L	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	Protection fuse		Conductor section	
	General use	IEC gG	UL K5	[mm ²]	[AWG]
	[A]	[A]	[A]	[mm ²]	[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.

Operational characteristics

Type	UL/CSA	Protection fuse		Conductor section	
	General use	IEC gG	UL RK5	[mm ²]	[AWG]
	[A]	[A]	[A]	[mm ²]	[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 TO...

Order code	IEC rated conventional free air thermal current I _{th}			Qty per pkg	Wt [kg]
	≤40°C [A]	≤55°C [A]	≤60°C [A]		

AC COIL. Terminals: clamp screw.					
BF18 TO A	32	26	23	1	0.340
BF26 TO A	45	36	32	1	0.420

DC COIL. Terminals: clamp screw.					
BF18 TO D	32	26	23	1	0.470
BF26 TO D	45	36	32	1	0.540

DC COIL. Low consumption (2.4W). Terminals: clamp screw.					
BF18 TO L	32	26	23	1	0.470

Operational characteristics

Type	UL/CSA General use	Protection fuse IEC gG	ULRK5	Conductor section	
	[A]	[A]	[A]	[mm ²]	[AWG]

BF18 TO	32	40	80	1-6	16-10
BF26 TO	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 TO A230 V260 for BF18, four NC main poles, 230VAC 50/60Hz coil with compliant plastic materials).

NOTE: The BF18-BF26 TOD and BF18 TOL 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 [A]	Qty per pkg	Wt [kg]

AC COIL. Terminals: lug clamp.			
BFD80 T4 A	100	1	1.100

AC/DC COIL. Terminals: lug clamp.			
BFD80 T4 E	100	1	1.100

BFD150 T4 E	165	1	2.550
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① 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 TO A230 for contactor BF18 TO, 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.

② Complete the order code with coil voltage digit.

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

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

③ 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).

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 IEC/EN 60947-1 designation: Pillar terminal.

⑥ 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.

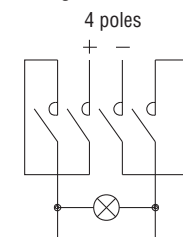
As an alternative, the PV generator must be installed, either externally of the fire system compartment or internally but in a dedicated compartment with adequate fire-resistant features. For such function, specifically designed contactors for on-load use in IEC DC1 duty up to 1000VDC are available.

Operational characteristics

Use in IEC DC1 duty

Type	IEC operational voltage U _e			
	400V	600V	800V	1000V
BFD80 T4 A...	IEC max current I _e in DC1 with L/R ≤1ms with 4 poles in series			
	[A]	[A]	[A]	[A]
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.

BFK contactors (including limiting resistors)



BFK...

new

Order code	Maximum IEC operational power at ≤50°C (AC-6b) ①				NO	Qty per pkg	Wt [kg]
	240V	400V	440V	690V 480V			
	[kvar]	[kvar]	[kvar]	[kvar]	n°		
AC COIL							
BFK09 10A Ⓜ	4.5	7.5	9	10	1	10	0.413
BFK12 10A Ⓜ	7	12.5	14	16	1	10	0.413
BFK18 10A Ⓜ	9	15	17	20	1	10	0.413
BFK26 00A Ⓜ	11	20	22	25	–	10	0.472
BFK32 00A Ⓜ	14	25	27.5	30	–	10	0.472
BFK38 00A Ⓜ	17	30	33	36	–	10	0.472
BFK50 00A Ⓜ	22	40	41	46	–	5	1.080
BFK65 00A Ⓜ	26	45	50	56	–	5	1.080
BFK80 00A Ⓜ	30	50	56	65	–	5	1.080
BFK95 00A Ⓜ	34	60	75	80	–	5	2.095
BFK115 00A Ⓜ	45	75	85	135	–	5	2.095
BFK150 00A Ⓜ	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]
11 G460	BF09 10A - BF12 10A - BF18 10A - BF26 00A - BF32 00A - BF38 00A	10	0.072
BFX10K3	BF50 00A - BF65 00A - BF80 00A	10	0.078
BFX10K4	BFK95 00A - BF115 00A - BF150 00A	10	0.080

Operational characteristics

Type	IEC rated operational current ≤440V [A]	IEC - UL/CSA protection fuse gG-SC [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.

Control relays BG00 type



11 BG00...



11 BGF00...

Order code	Configuration and n° of contacts ⑤		Quantity per pkg. n°	Wt [kg]
	NO	NC		
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 n° of contacts ⑤		Quantity per pkg. n°	Wt [kg]
	NO	NC		
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



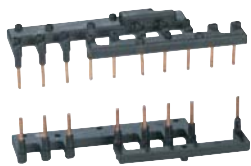
11 BGXF...



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



11 BGX50 00



11 SMX90 21
11 SMX90 22

Order code	Characteristics	Max qty per contactor	Qty per pkg	Wt
		n°	n°	[kg]
Auxiliary contacts. Screw terminals.				
11 BGX10 02ⓐ	2NC	1	10	0.021
11 BGX10 11ⓑ	1NO + 1NC	1	10	0.021
11 BGX10 20ⓐ	2NO	1	10	0.021
11 BGX10 04ⓐ	4NC	1	10	0.028
11 BGX10 13ⓐ	1NO + 3NC	1	10	0.028
11 BGX10 22ⓐ	2NO + 2NC	1	10	0.028
11 BGX10 31ⓐ	3NO + 1NC	1	10	0.028
11 BGX10 40ⓐ	4NO	1	10	0.028
Auxiliary contacts for reversing and changeover assemblies. Screw terminals.				
11 BGX11 11ⓑ	1NO + 1NC	1	10	0.021
11 BGX11 22ⓐ	2NO + 2NC	1	10	0.028
Auxiliary contacts. Faston terminals.				
11 BGXF10 02ⓐ	2NC	1	10	0.021
11 BGXF10 11ⓑ	1NO + 1NC	1	10	0.021
11 BGXF10 20ⓐ	2NO	1	10	0.021
11 BGXF10 04ⓐ	4NC	1	10	0.028
11 BGXF10 13ⓐ	1NO + 3NC	1	10	0.028
11 BGXF10 22ⓐ	2NO + 2NC	1	10	0.028
11 BGXF10 31ⓐ	3NO + 1NC	1	10	0.028
11 BGXF10 40ⓐ	4NO	1	10	0.028
Mechanical interlock.				
11 BGX50 00ⓐ	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 00ⓐ	IP40 front protection	20	0.006	
Paralleling links.				
11 G323ⓐ	For 2 poles	10	0.009	
11 G324		10	0.009	
11 G325ⓐ	For 4 poles	10	0.014	
11 G326		10	0.014	
Rigid connecting kits.				
11 SMX90 21ⓐ	Rigid connections for star-delta starter with BG... mini-contactors	10	0.040	
11 SMX90 22ⓐ	Rigid connections for reversing switches with BG... mini-contactors	1	0.026	

- ⓐ Cannot be used with BG...L types.
- ⓑ Cannot be used with BG...D and BG...L types.
- ⓐ Suitable for left-hand mini-contactor only of BGT and BGTP reversing and BGC changeover assemblies.
- ⓐ 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.
- ⓐ Cannot be used with BGX80 00 shroud.
- ⓐ 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... 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 1x6.3mm 2x2.8mm
	Width	mm	6.9
Tightening torque	Nm	0.8...1	—
	lbin	7...9	—
Conductor section maximum (with 1 or 2 cables)	flexible without lug	mm ²	2.5
	flexible with lug	mm ²	2.5
	AWG	n°	14
	UL/CSA and IEC/EN 60947-5-1 designation	AC	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:

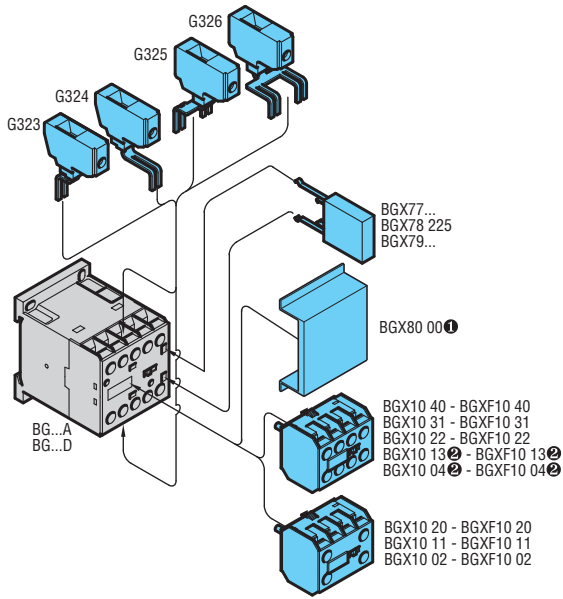
Type	UL	cULus	EAC	CCC
BGX10...	—	●	●	●
BGX11...	—	●	●	●
BGXF10...	—	●	●	—
BGX50 00	—	●	●	—
BGX7...	—	●	●	—
BGX80 00	—	—	●	—
G32...	—	—	●	—
SMX90...	UL	—	—	—

● 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.

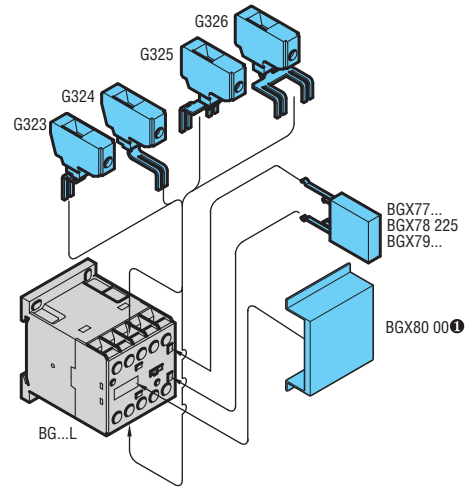
Compliant with standards: UL 60947-4-1, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1; IEC/EN 60947-1; IEC/EN 60947-5-1 for auxiliary contacts.

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

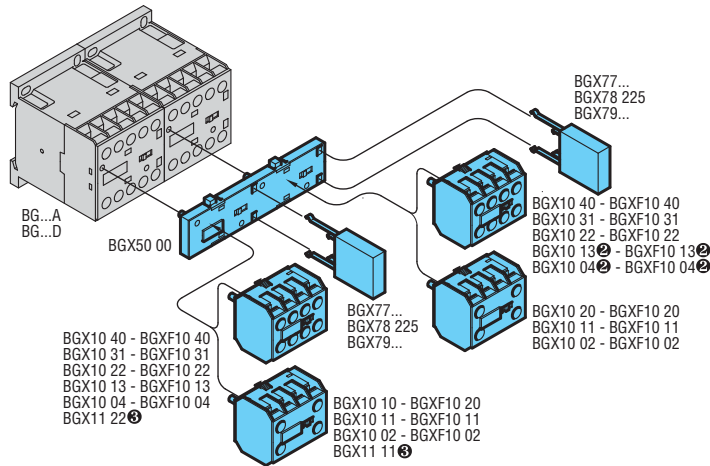


- ❶ Not suitable for mini-contactors BG... with auxiliaries contacts BGX10..., surge suppressor BGX7... and interlock BGX50 00.
- ❷ Not suitable for BG...D types.

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

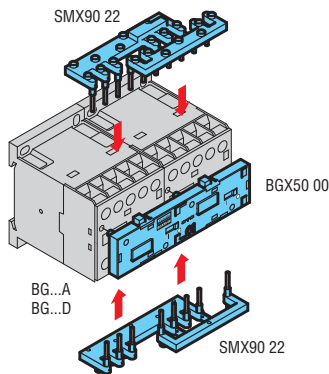


Combinations for reversing and changeover contactors assembled with BG...A and BG...D types

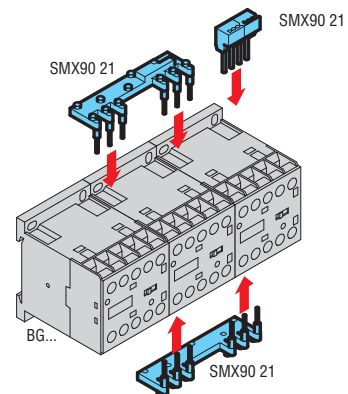


- ❸ Not suitable for BG...D types.
- ❹ For left-hand mini-contactor of BGT, BGTP and BGC contactor assemblies only. See page 4-5.

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 per cont.	Qty per pkg.	Wt [kg]
		n°	n°	[kg]

Auxiliary contacts with front center mounting [Ⓜ].
Screw terminals.

BFX10 02 [Ⓜ]	2NC	1	5	0.030
BFX10 11 [Ⓜ]	1NO + 1NC	1	5	0.030
BFX10 20 [Ⓜ]	2NO	1	5	0.030
11 G484 03 [Ⓜ]	3NC	1	5	0.039
11 G484 12 [Ⓜ]	1NO + 2NC	1	5	0.039
11 G484 21 [Ⓜ]	2NO + 1NC	1	5	0.039
11 G484 30 [Ⓜ]	3NO	1	5	0.039
BFX10 04	4NC	1	5	0.048
BFX10 13	1NO + 3NC	1	5	0.048
BFX10 22	2NO + 2NC	1	5	0.048
BFX10 31	3NO + 1NC	1	5	0.048
BFX10 40	4NO	1	5	0.048
BFX10 11 11	1NO+1NC and 1EM+1LB ^{ⓂⓃ}	1	5	0.048

Auxiliary contacts with front lateral mounting. Screw terminals [Ⓜ].

11 G418 01	1NC	2	10	0.014
11 G418 01D	1LB [Ⓜ]	2	10	0.014
11 G418 10	1NO	2	10	0.014
11 G418 10A	1EM [Ⓜ]	2	10	0.014

Auxiliary contacts with front lateral mounting. Faston terminals [Ⓜ].

11 G218	1NO or 1NC reversible	2	10	0.011
11 G481 02	2NC	2	10	0.013
11 G481 11	1NO + 1NC	2	10	0.013
11 G481 20	2NO	2	10	0.013
11 G482 ^{ⓂⓃ}	Changeover contact	2	10	0.013

Adapter for auxiliary contact side mounting.

11 G280	for G218	2	10	0.008
11 G419	for G418	2	10	0.010
11 G483	for G481 and G482	2	10	0.010

Auxiliary contacts with low side mounting. Screw terminals.

BFX12 02 [Ⓜ]	2NC for BF00, BF09...BF94	2	5	0.044
BFX12 11 [Ⓜ]	1NO+1NC for BF00, BF09...BF94	2	5	0.044
BFX12 20 [Ⓜ]	2NO for BF00, BF09...BF94	2	5	0.044
11 G428 01	1NC	2	10	0.024
11 G428 01D	1LB [Ⓜ]	2	10	0.024
11 G428 10	1NO	2	10	0.024
11 G428 10A	1EM [Ⓜ]	2	10	0.024

Delayed auxiliary contacts 1NO + 1NC (pneumatic operation) on energisation for front center mounting ^{ⓂⓃ}.
Screw terminals.

11 G485 3	3s	1	1	0.040
11 G485 6	6s	1	1	0.040
11 G485 15	15s	1	5	0.040
11 G485 30	30s	1	5	0.040
11 G485 60	60s	1	5	0.040
11 G485 120	120s	1	1	0.040

Delayed auxiliary contacts 1NO + 1NC (pneumatic operation) on de-energisation for front center mounting ^{ⓂⓃ}.
Screw terminals.

11 G486 3	3s	1	1	0.040
11 G486 6	6s	1	1	0.040
11 G486 15	15s	1	5	0.040
11 G486 30	30s	1	5	0.040
11 G486 60	60s	1	5	0.040
11 G486 120	120s	1	1	0.040
11 G487	70ms	1	1	0.040

Operational characteristics for add-on auxiliary contacts

Type		G418 [Ⓜ] G428 [Ⓜ] G485 [Ⓜ] G486 [Ⓜ] G487 [Ⓜ]	G484 BFX10 BFX12	G218 [Ⓜ] G481 [Ⓜ]	G482 [Ⓜ]
IEC conventional free air thermal current I _{th}	A	10	10	10	0.1 [Ⓜ]
IEC rated insulation voltage U _i	V	690	690	690	690
Terminals	Screw	M3.5	M3	—	—
	Width	mm	7	7	—
	Faston	—	—	1x6.35 2x2.8	1x6.35 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	mm ²	2.5	2.5	—
	flexible c/w lug	mm ²	2.5	2.5	2.5
	AWG	n°	14	14	14
Terminal protection per IEC/EN60529	IP20	IP20 [Ⓜ]	IP20	IP20 [Ⓜ]	IP20 [Ⓜ]
	UL/CSA and IEC/EN 60947-5-1 designation	AC	A600	A600	A600
	DC	P600 [Ⓜ]	Q600	P600	P600
Mechanical life (million)	cycles	10 [Ⓜ]	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 I_{th} 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 02	BFX10 04	G485...	G222... ^①	BFX50 02	BFX53 03	G418...	G428...	BFX12 02				
		BFX10 11	BFX10 13	G486...	G272... ^②	BFX50 03	BFX54 03	G218	G419+ G418...	BFX12 11				
		BFX10 20	BFX10 22	G487	BFX64 1... ^④	①	②	G481...	G280+ G218	BFX12 20				
		BFX10 31		BFX10 40				n° of blocks 1 type only	n° of blocks	G482	G483+ G481...	BFX50 00		
		BFX10 40								n° of blocks	n° of blocks	G483+ G482	BFX50 01	
		n° of blocks 1 type only				n° of blocks 1 type only			n° of blocks	n° of blocks				
Contactors	Control relay	BF00 A	1	1	1	1	—	1	0 2	1	1	—	—	
	Three poles	BF09 A...BF25 A	1	1	1	1	—	—	1	0 2	1	1	—	—
		BF26 A...BF38 A	1	1	1	1	—	—	1	0 2	1	1	—	—
		BF40 A...BF150 A	1	1	1	1	—	1	1	0 2	1	1	—	—
		BF40 E...BF150 E	1	1	1	1	—	1	1	0 2	1	1	—	—
	Four poles	BF09 A...BF25 A	1	1	1	1	—	—	1	0 2	1	1	—	—
		BF26 A...BF38 A	1	1	1	1	—	—	1	0 2	1	1	—	—
		BF40 A...BF150 A	1	1	1	1	—	1	1	0 2	1	1	—	—
BF40 E...BF150 E		1	1	1	1	—	1	1	0 2	1	1	—	—	

- 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...		BFX10...				G485...	G222... ^④	1 type only BFX50...				BFX12...					
		...02	...11	...20	...04	...13	...22	...31		...40	G486...	...02	...03	...00	...01	⑤			
		G487		n° of blocks 1 type only								n° of blocks 1 type only				n° of blocks 1 type only			
Contactors	Control relay	BF00 D	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	BF00 L	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	Three poles	BF09 D-BF25 D	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		BF26 D-BF38 D	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		BF09 L-BF25 L	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		BF26 L-BF38 L	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Four poles	BF09 D-BF25 D	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		BF26 D-BF38 D	—	1	—	—	—	—	—	—	—	1	1	1	1	1	1	1	1
BF09 L-BF25 L		1	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	
BF26 L-BF38 L		—	1	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	

- 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.
- For other assembly combination, consult Technical support (E-mail: service@LovatoElectric.com).

2 Contactors

Add-on blocks and accessories for BF series contactors



BFX42
BFXD42



BFX50 00
BFX53 00
BFX54 00

BFX50 01
BFX53 01
BFX54 01



BFX50 02

BFX53 03
BFX54 03



11 G222...
11 G272...
BFX64 1...



BFX64 2



BFX77...
BFX79...

new

new

new

new

Order code	Characteristics	Max qty per cont.	Qty per pkg	Wt
		n°	n°	[kg]
Fourth pole.				
BFX42	For BF26 A, BF32 A, BF38 A	1	1	0.100
BFXD42	For BF26 D, BF32 D, BF38 D, BF26 L, BF32 L, BF38 L	1	1	0.108
BFX43	For BF40 A... BF94 A and BF40 E...BF94 E	1	1	0.150
BFX44	For BF95 A...BF150 A and BF95 E...BF150 E	1	1	0.500

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

Mechanical latch. Screw terminals				
11 G222	For BF00, BF09...BF38	1	1	0.070
11 G272	For BF40...BF94	1	1	0.070
BFX64 1...	For BF95...BF150	1	1	0.070

Manual closing mechanism.				
11 G454	For BF00, BF09...BF38	1	1	0.021
11 G455	For BF40...BF94	1	1	0.021
BFX64 2	For BF95...BF150	1	1	0.021

Quick connect surge suppressors for BF00A, BF09A...BF150A contactors.				
BFX77 048	≤48VAC/DC (Varistor)	5	0.012	
BFX77 125	48...125VAC/DC (Varistor)	5	0.012	
BFX77 240	125...240VAC/DC (Varistor)	5	0.012	
BFX79 048	≤48VAC (Resistor-Capacitor)	5	0.012	
BFX79 125	48...125VAC (Resistor-Capacitor)	5	0.012	
BFX79 240	125...240VAC (Resistor-Capacitor)	5	0.012	
BFX79 415	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).
– DC
- NOTE: All contactors BF series, equipped with DC or AC/DC electronic coil, have built-in surge suppressor filter.

Operational characteristics

Type		BFX42 BFXD42	BFX43	BFX44	BFX5001 BFX53 01 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
	Ibin	21.6...26.4	35.4...44.2	48...57	7...9
Conductor section maximum with 1 or 2 cables					
flexible w/o lug	mm ²	16	35	70	2.5
flexible c/w lug	mm ²	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
	DC	V	12...240	12...240
Power consumption with control:	AC	VA	40	40
	DC	W	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
	Ibin	7...9	7...9	7...9
Conductor section Maximum with 1 or 2 cables				
flexible w/o lug	mm ²	4	4	4
flexible c/w lug	mm ²	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...	RU	—	—	—
G222...	RU	—	●	●
G272...	RU	—	●	●

● Certified products.

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

Operational characteristics

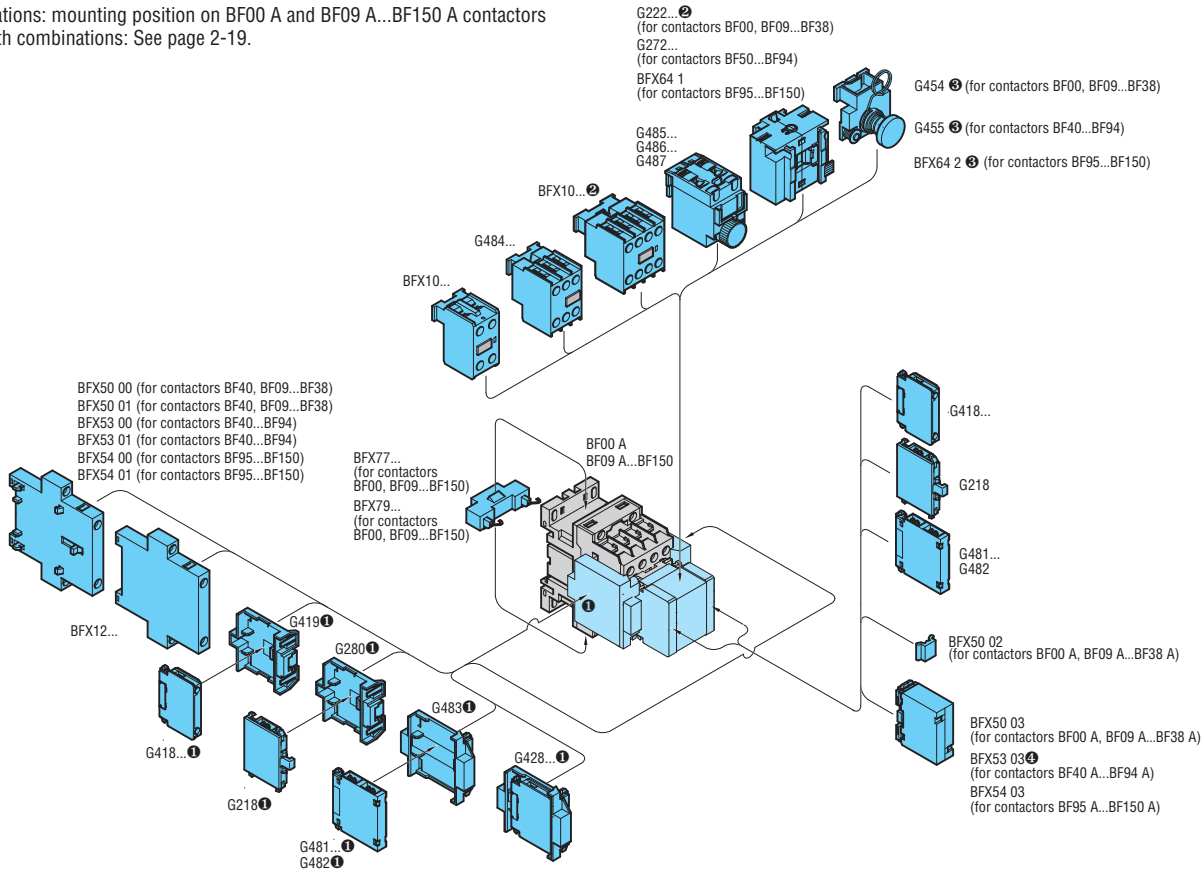
Type		G231	G232
Tightening torque	Nm	1.5-1.8	2.5-3
	Ibin	13.2-18	7-9
Tool	Type	PH1	PH2

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.

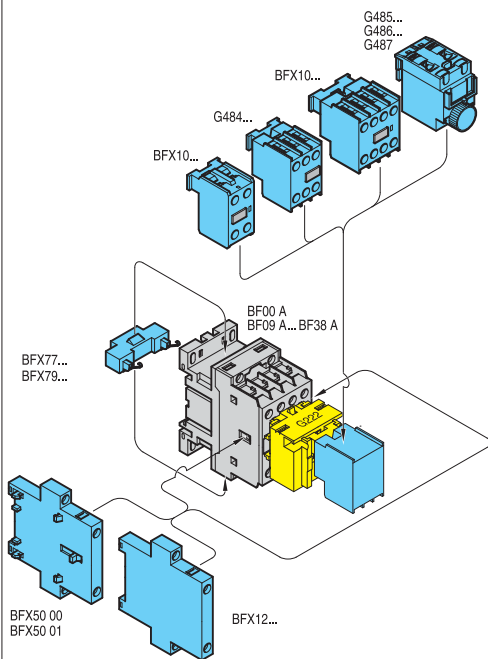
Add-on blocks for AC and AC/DC contactors

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

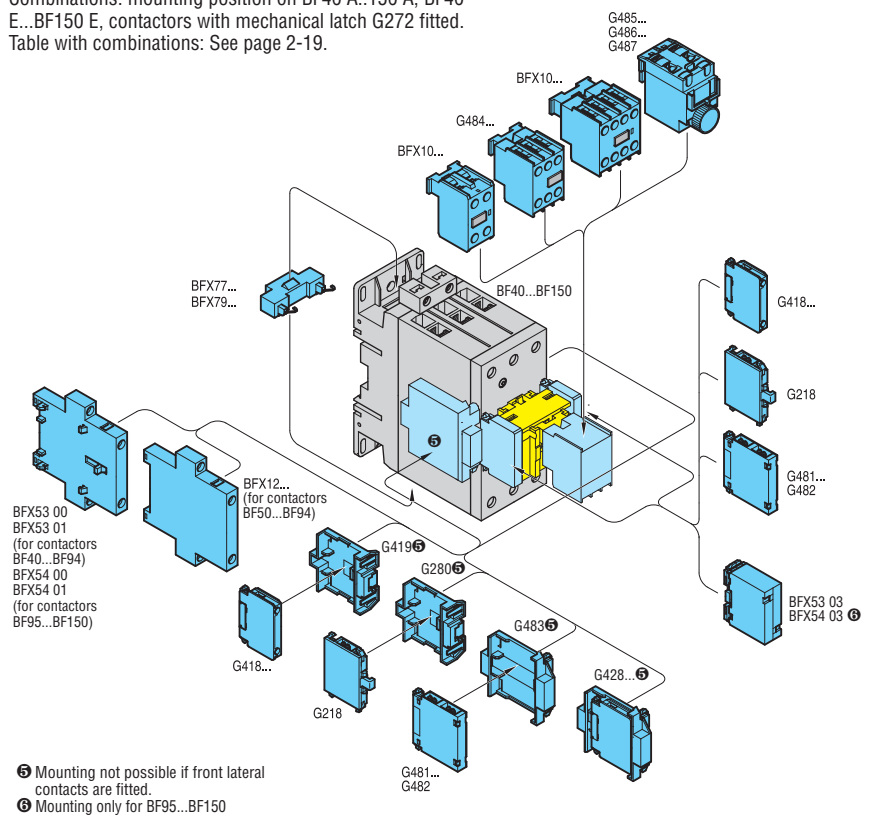


- ❶ Mounting is not possible if front lateral contacts or mechanical interlock BFX50 00 or BFX50 01 are mounted. BF00, BF09...38 cannot be fitted with BFX10 with 4 contacts or G222...
- ❷ Refer to the diagram below for use with G222... on contactors BF00 A and BF09 A...BF38 A and to the table of combinations on page 2-19.
- ❸ No add-on block can be mounted on front when the manual closing mechanism G454 or G455 is fitted.
- ❹ 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.



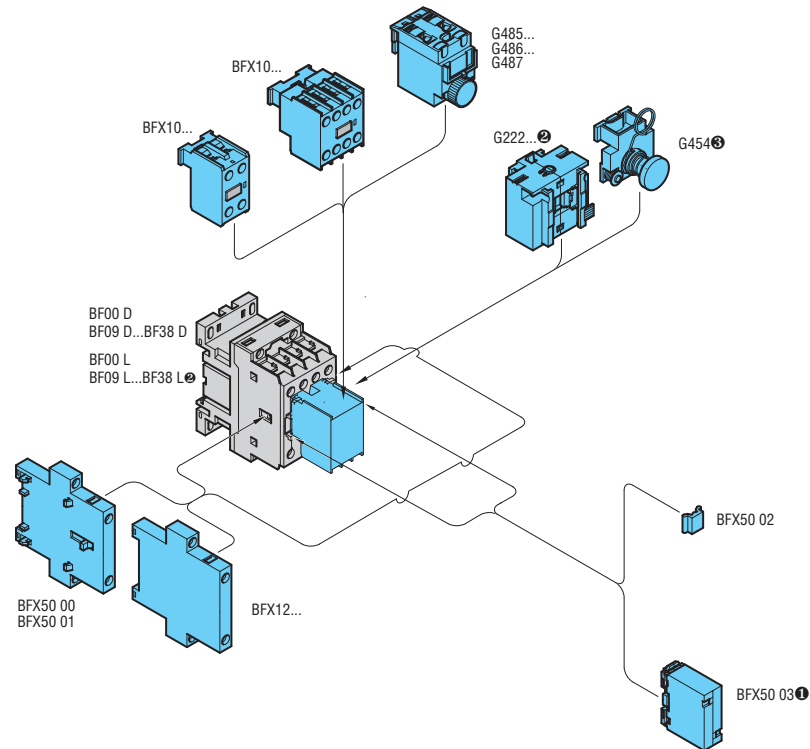
Combinations: mounting position on BF40 A...150 A, BF40 E...BF150 E, contactors with mechanical latch G272 fitted.
Table with combinations: See page 2-19.



- ❺ Mounting not possible if front lateral contacts are fitted.
- ❻ Mounting only for BF95...BF150

Add-on blocks for DC and DC low consumption contactors

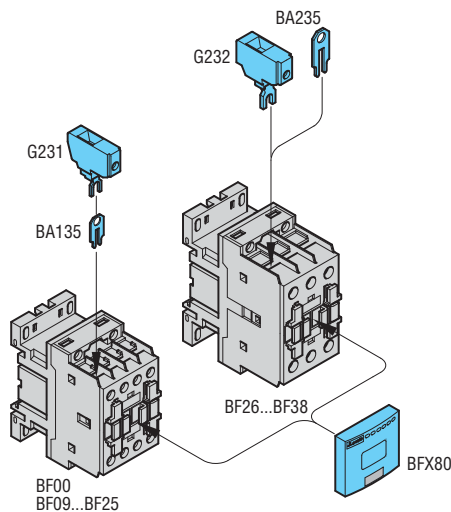
Combinations: mounting position on BF00 and BF09-BF38, D and L versions
 Table with combinations: See page 2-19.



- 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.

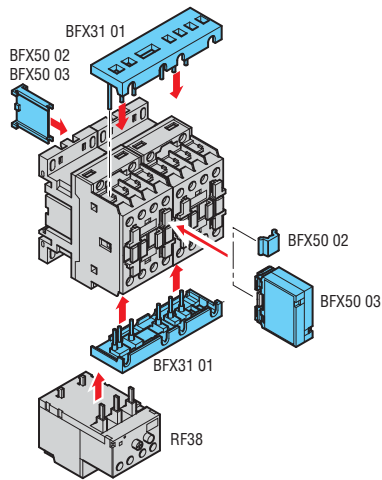
Accessories for AC, DC and DC low consumption contactors

Combinations

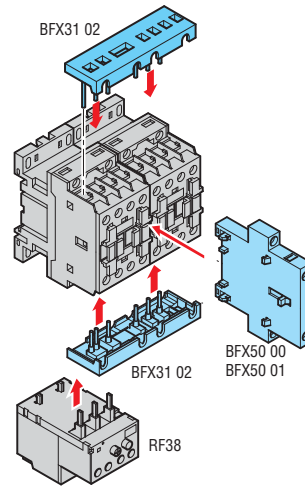


Accessories for AC, DC and DC low consumption contactors

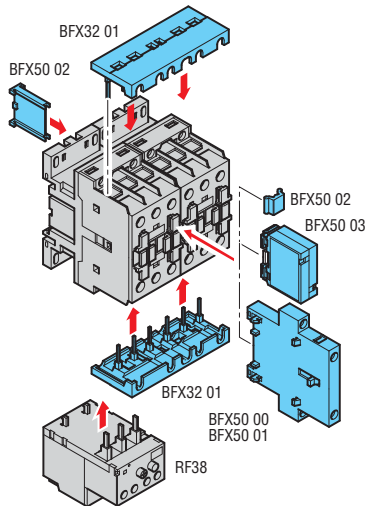
Connections for reversing contactors with contactors BF09...BF25



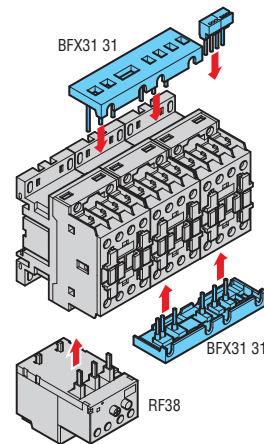
Connections for reversing contactors with contactors BF09...BF25 and mechanical interlock BFX50 00 or BFX50 01



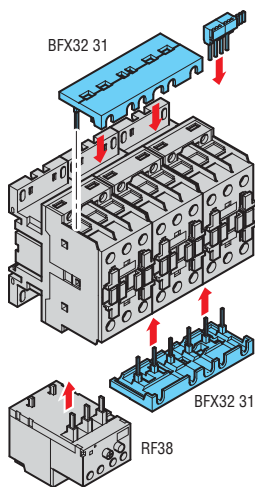
Connections for reversing contactors with contactors BF26...BF38



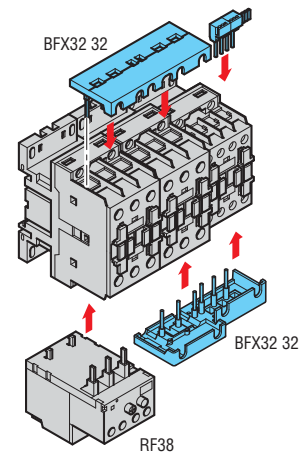
Rigid star-delta starter assembly connecting kits for BF09...BF25 contactors



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 qty per. contactor	Qty per pk	Wt sg
		n°	n°	[kg]

Auxiliary contacts.

Faston terminals. Side mounting.

11 G350	2NO+1NC or 1NO+2NC reversible	4	1	0.082
11 G354	1NO+1NC	4	1	0.078

Adapter.

11 G358	For fitting auxiliary contacts BFX10..., with 2 contacts, G484..., G485..., G486... and G487 on contactors B145...B630 1000 described on p. 2-26	4	5	0.050
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Mechanical interlock.

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

Mechanical latch.

11 G495	For B145...B630	1	1	0.795
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Order code	Characteristics	Qty per pkg	Wt
		n°	[kg]

Power terminal protection.

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

3 pole star connecting bars.

11 BA1595	For contactors B145-B180	1	0.065
11 BA1721	For contactors B250-B310-B400	1	0.140
11 BA1846	For contactors B500-B630	1	0.341

2 pole bars for parallel arrangement.

11 BA1594	For contactors B145-B180	1	0.095
11 BA1720	For contactors B250-B310-B400	1	0.149
11 BA1845	For contactors B500-B630	1	0.322

Terminal adaptor.

11 G370	To transform Faston terminals of auxiliary contacts and coils into screw terminals	10	0.003
11 G371	To transform both coil Faston terminals into screw terminals	5	0.022

Operational characteristics of auxiliary contacts

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

Type	G495	
Rated AC control circuit 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
Ibin		8.9
Tool	Type	PH2
Conductor section (with 1 or 2 cables)		
mm ²		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.

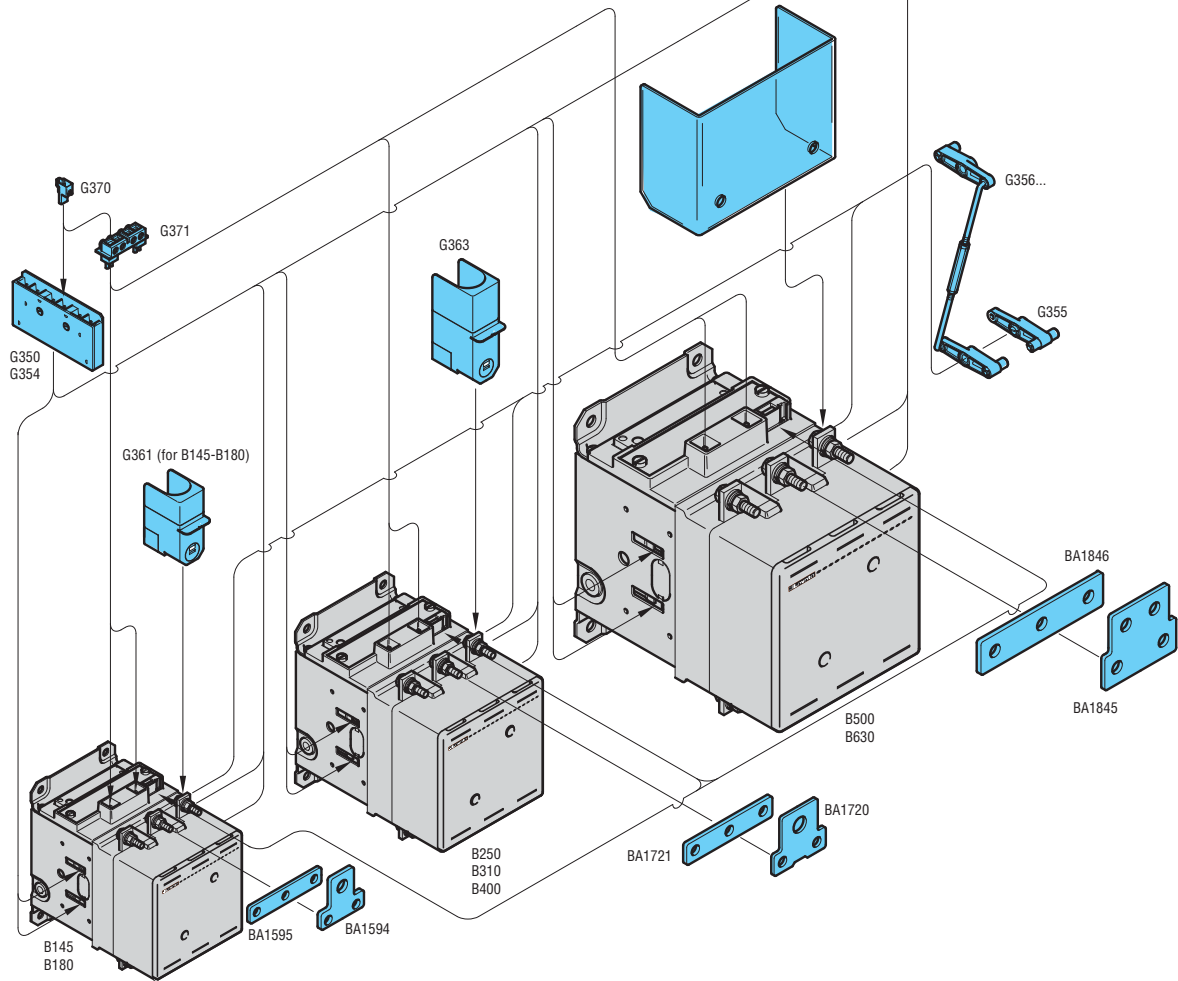
⑩ Replace with the required alphanumeric symbol; each package contains 100 pieces of the same symbol.

2 Contactors

Add-on blocks and accessories for B series contactors

Combinations: Mounting position on B145...B630 contactors

G527 (for B500 00)
G528 (for B500 4 00)
G529 (for B630 00)
G530 (for B630 4 00)

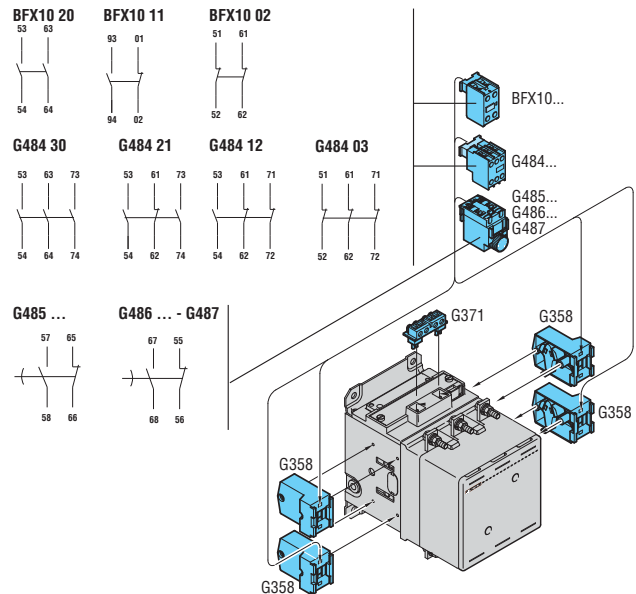
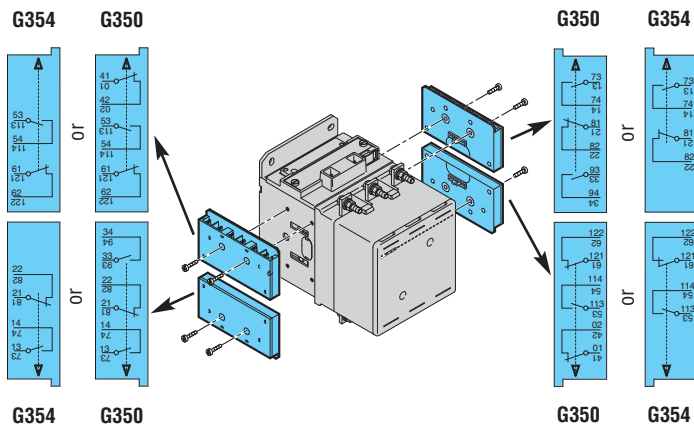


The add-on auxiliary contact blocks G350 and G354 can be applied to contactors B145-B630 1000 only up to a maximum of four pieces for each contactor, for a total of 12 contacts.

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



BF91A...



BF92A...



BF93A...



BF94 A...

Order code	Rated frequency and voltage		Qty per pkg n°	Wt [kg]
	[Hz]	[V]		
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		400VAC	1	0.085
BFX91 A024 60	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		400VAC	1	0.088
BFX92A 024 60	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		400VAC	1	0.150
BFX93 A024 60	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		400VAC	1	0.185
BFX94 A024 60	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.

new

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 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			BFX91	BFX93	BFX94
50/60Hz coil powered at	50Hz	in-rush	VA	75	210
		holding	VA	9	15
	60Hz	in-rush	VA	70	195
		holding	VA	6.5	13
60Hz coil powered at 60Hz	in-rush	VA	75	210	
	holding	VA	9	15	
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.

2 Contactors

Spare parts for BF series contactors

AC/DC and DC coils



BF93 E...



BF94 E...

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

For contactors BF40 E-BF50 E-BF65 E-BF80 E-BF94 E^①.

BFX93 E024^②	20...48V AC/DC	1	0.190
BFX93 E110^②	60...110V AC/DC	1	0.190
BFX93 E230^②	100...250V AC/DC	1	0.190

For contactors BF95 E-BF115 E-BF150 E.

BFX94 E024^②	20...48V AC/DC	1	0.225
BFX94 E110^②	60...110V AC/DC	1	0.225
BFX94 E230^②	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: 50/60 Hz coil powered at or in DC	pick-up	% Us	80...110 ^①
	drop-out	% Us	20...25 ^②
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: 50/60 Hz coil powered at or in DC	pick-up	% Us	80...110 ^①
	drop-out	% Us	20...25 ^②
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



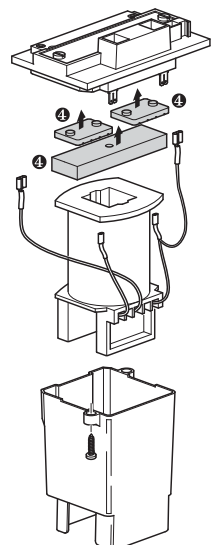
Bridge rectifier



Coil protection



Coil assembly



Order code	Rated voltage AC 50/60Hz and DC	Qty per 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 110ⓐ	110...125VACⓐ	1	3.400
11 BA1800 220ⓐ	220...240VACⓐ	1	3.400

Order code	For contactor	Qty per pkg	Wt
		n°	[kg]

Bridge rectifier (Faston terminals).

11 BA1575 1ⓐ	B145-B180	1	0.170
11 BA1700 1ⓐ	B250-B310-B400	1	0.230
11 BA1799ⓐ	B500-B630-B630 1000 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 B1250-B1600	1	0.164

Coil assembly

(Coil, rectifier and coil protection).

11 BA1546ⓐ	B145-B180	1	1.220
11 BA1671ⓐ	B250-B310-B400	1	2.290
11 BA1796ⓐ	B500-B630-B630 1000 B1250-B1600	1	4.650

ⓐ Available for AC supply only.

ⓑ 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.

ⓒ 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.

ⓓ 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.

ⓔ 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...

Order code	For contactor	Qty per pkg	Wt
		n°	[kg]

Main contacts.
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

new

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.
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.

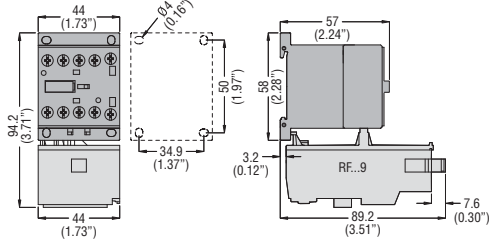
11 BA1588	B145-B180	1	0.755
11 BA1589	B145 4-B180 4	1	1.000
11 BA1713	B250-B310-B400	1	1.210
11 BA1714	B250 4-B310 4-B400 4	1	1.600
11 BA1838	B500-B630-B630 1000	1	1.910
11 BA1839	B500 4-B630 4-B630 1000 4	1	2.490



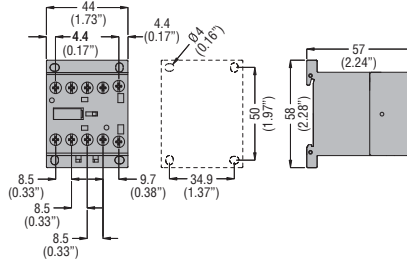
Arc chute

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

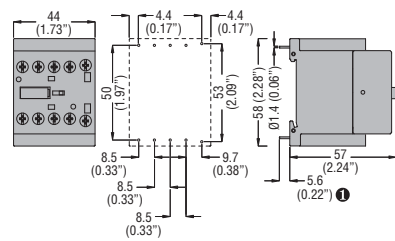
BG... three poles with screw terminals and **RF...9** thermal overload relay



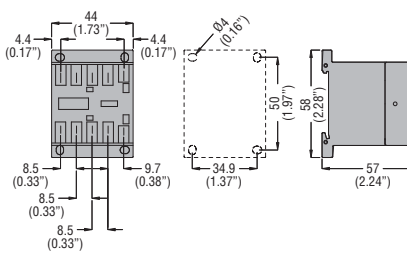
BG...T... four poles, with screw terminals



BGP... with rear PCB solder pins



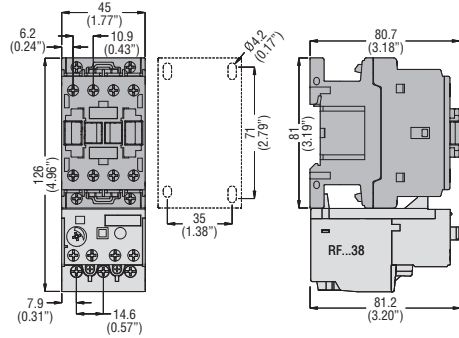
BGP...T... with Faston terminals



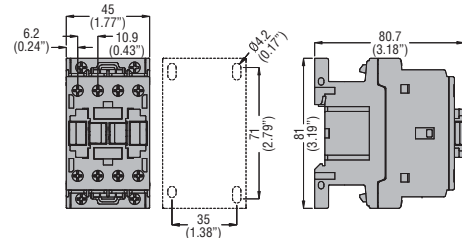
① Recommended PCB drillings 1.7-2mm.

BF... CONTACTORS WITH AC SUPPLY VOLTAGE

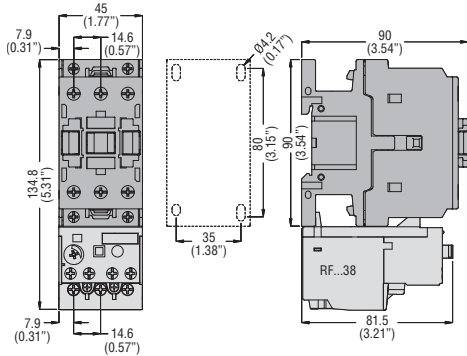
BF00 A... - BF09 A... - BF12 A... - BF18 A... - BF25 A... three poles with **RF...38** thermal overload relay



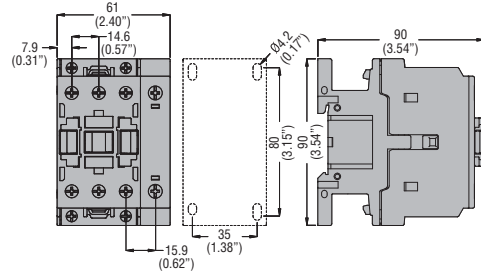
BF09T... A... - BF12T... A... - BF18T... A... four poles



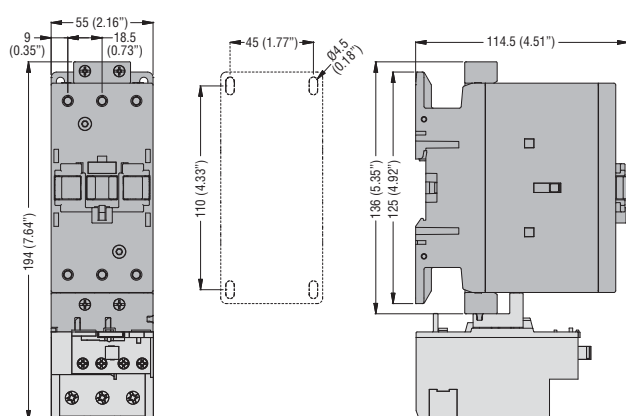
BF26 00A... - BF32 00A... - BF38 00A... three poles with **RF...38** thermal overload relay



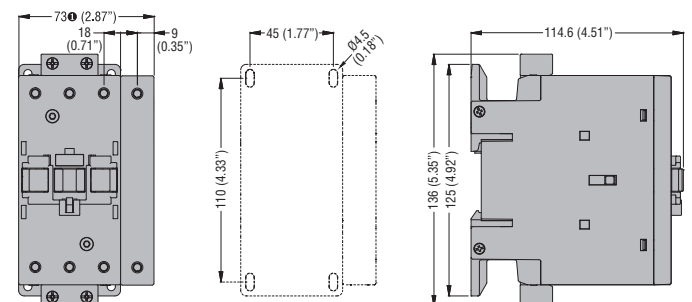
BF26 T...A... - BF38 T...A... four poles



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



BF40 T4...A... - BF50 T4...A... - BF65 T4...A... - BF80 T4...A... - BFD80 T4... - BF80 T2A... four poles

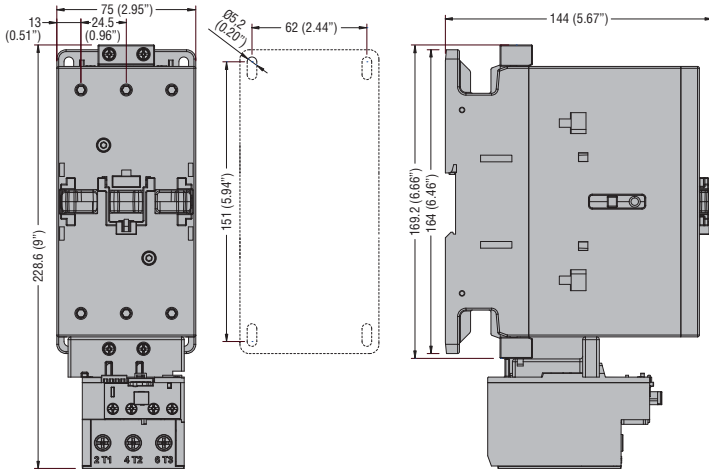


① BF80T2 91mm/3.58"

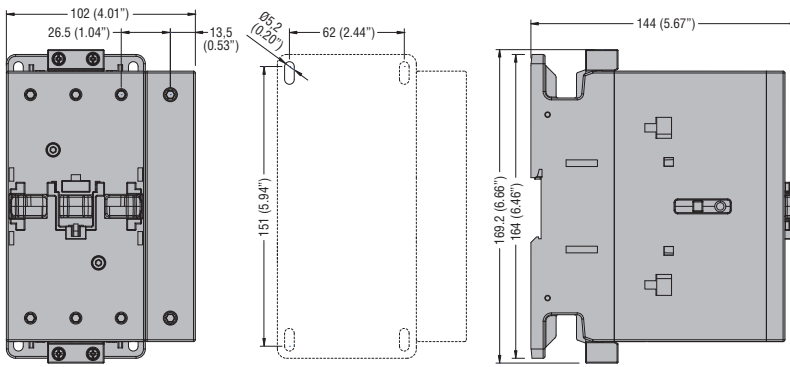
2 Contactors

Dimensions [mm (in)]

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

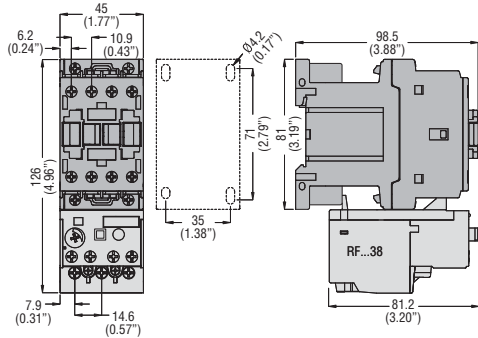


BF95 T4A... - BF115 T4A... - BF150 T4A... four poles



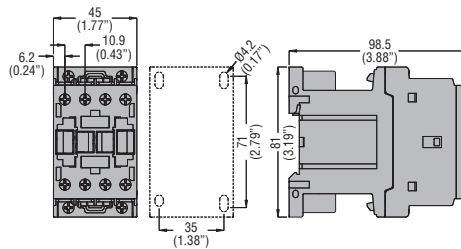
BF...CONTACTORS WITH DC SUPPLY VOLTAGE

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

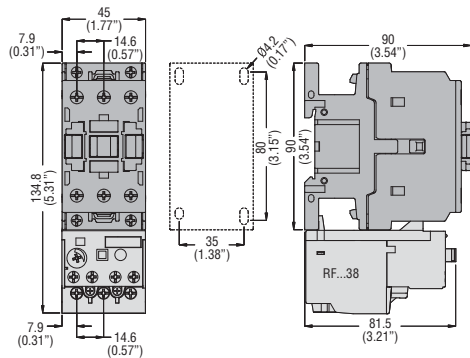


Control relays

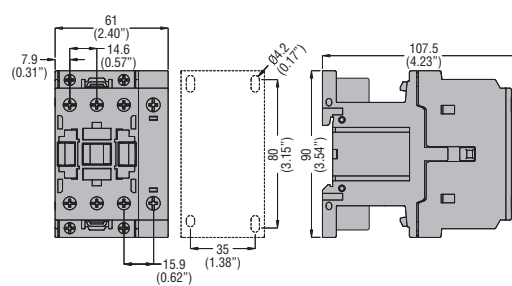
BF00...D and BF00...L
BF09 T... - BF18 T... D and L four poles



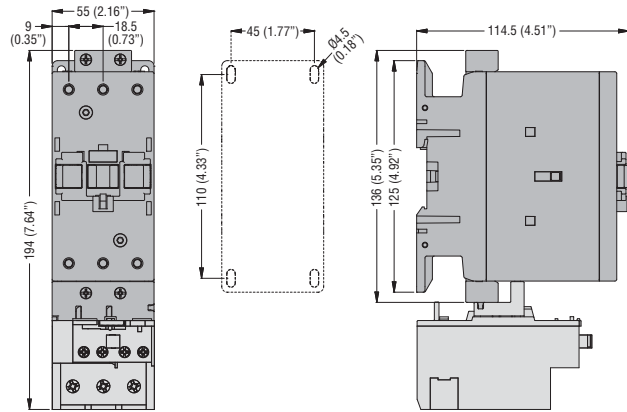
BF26... - BF32... - BF38... D and L three poles with **RF...38** thermal overload relay



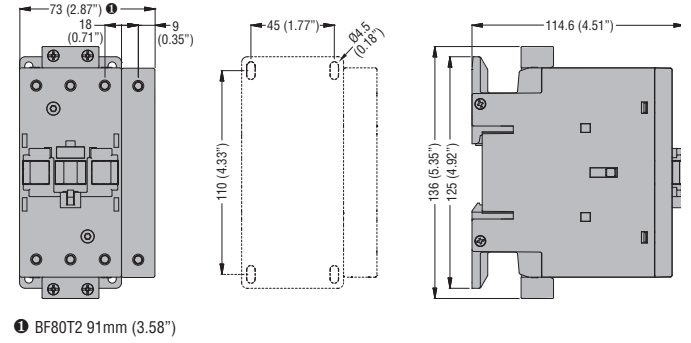
BF26 T... - BF38 T... D and L four poles



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

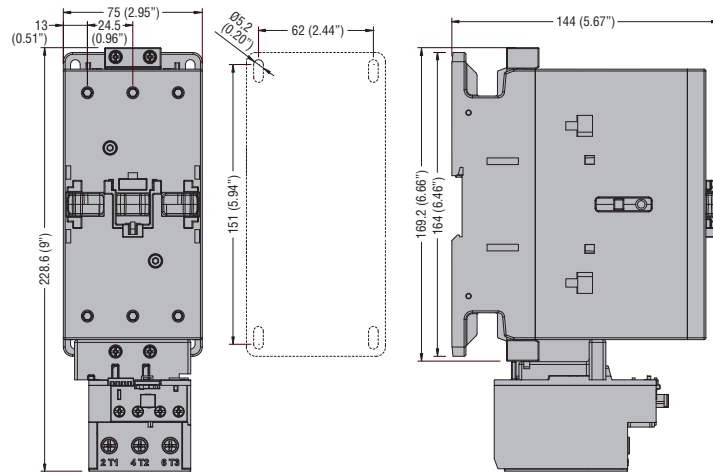


BF65 T4 E... - BF80 T4 E... - BF80 T2 E... four poles

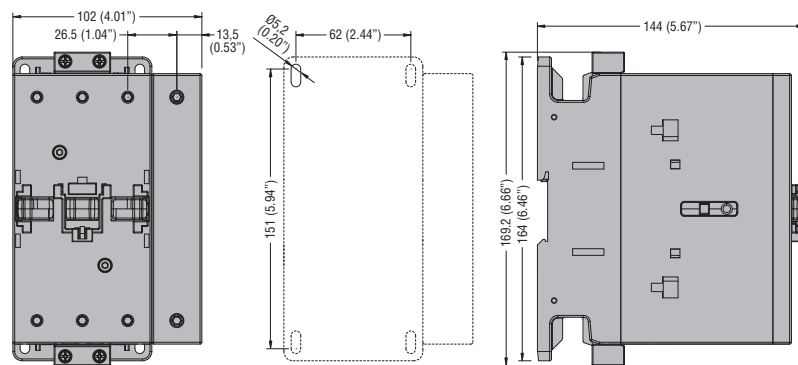


2

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



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

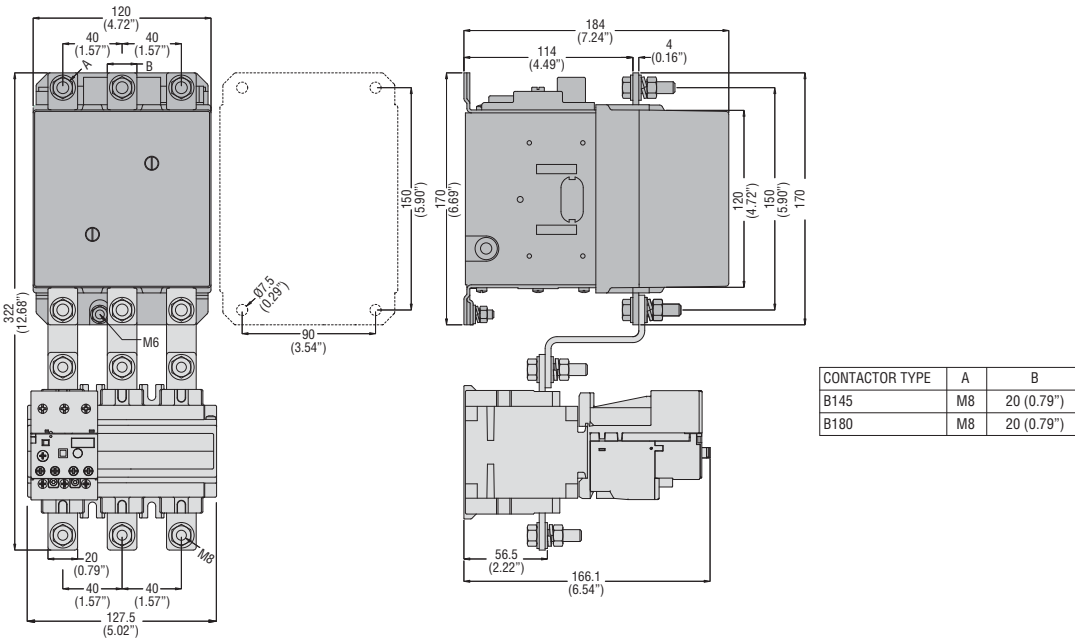


2 Contactors

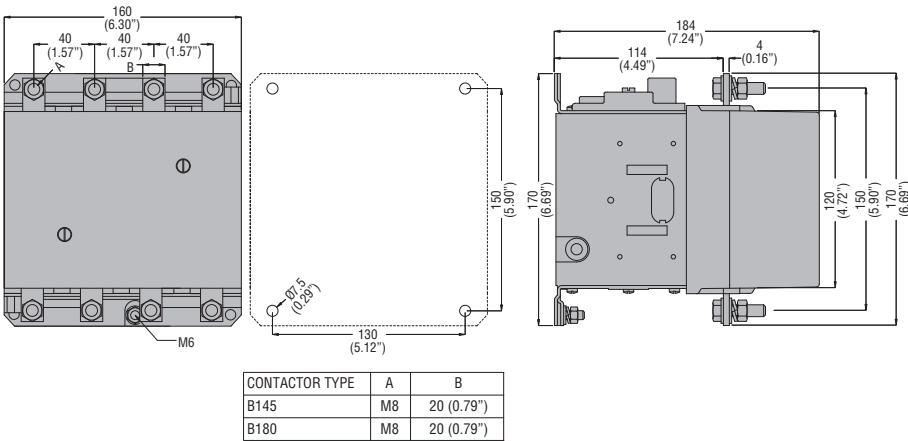
Dimensions [mm (in)]

B... CONTACTORS WITH AC OR DC SUPPLY VOLTAGE

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



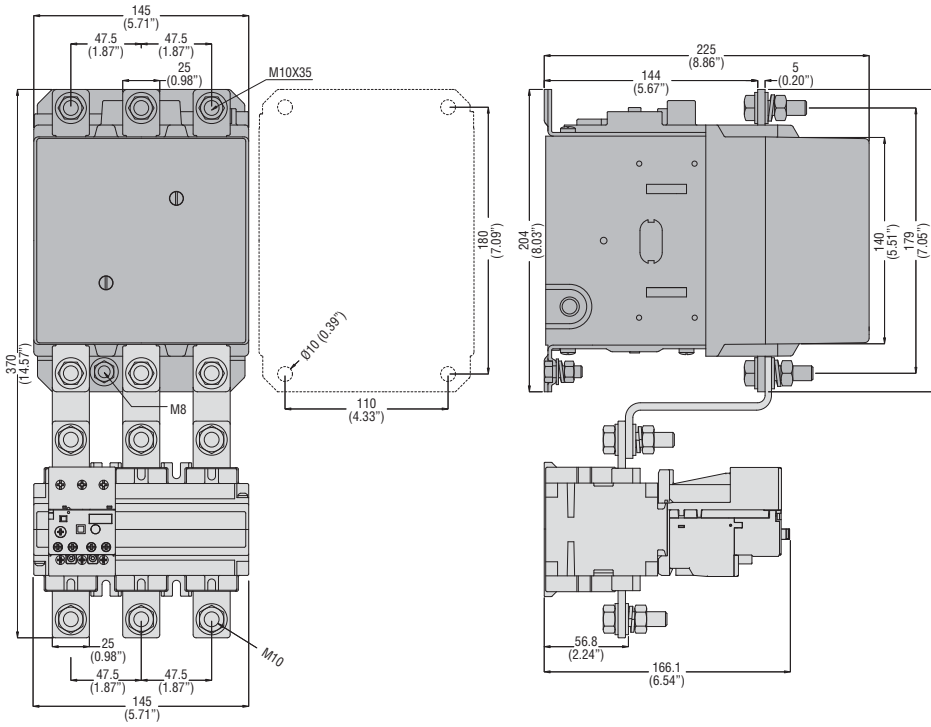
B145 4 - B180 4 four poles



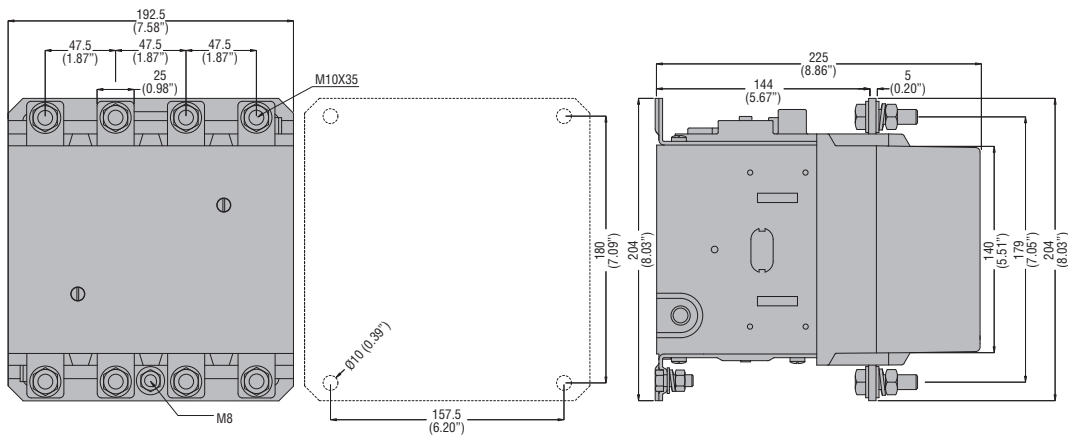
2 Contactors

Dimensions [mm (in)]

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



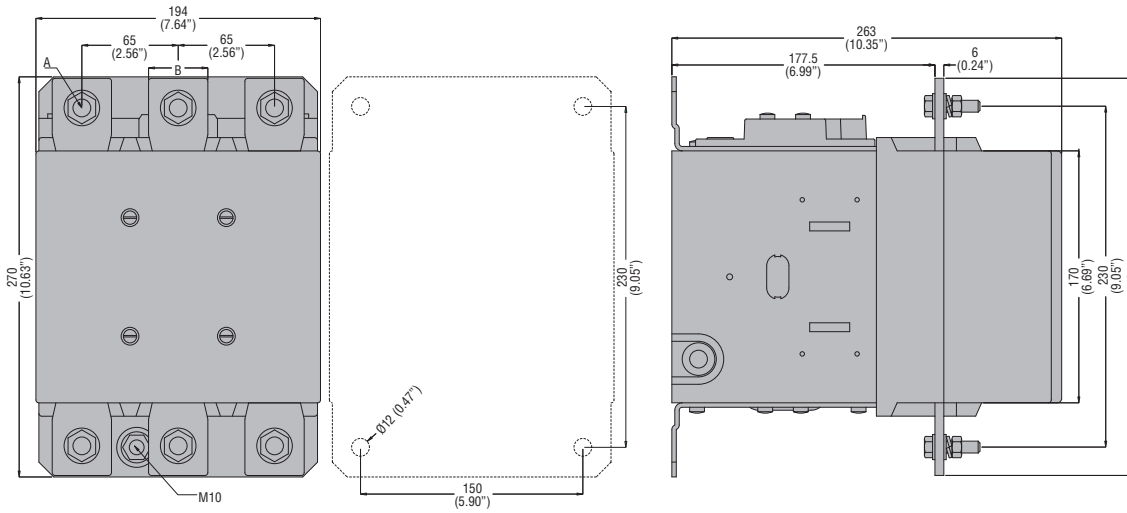
B250 4 - B310 4 - B400 4 four poles



2 Contactors

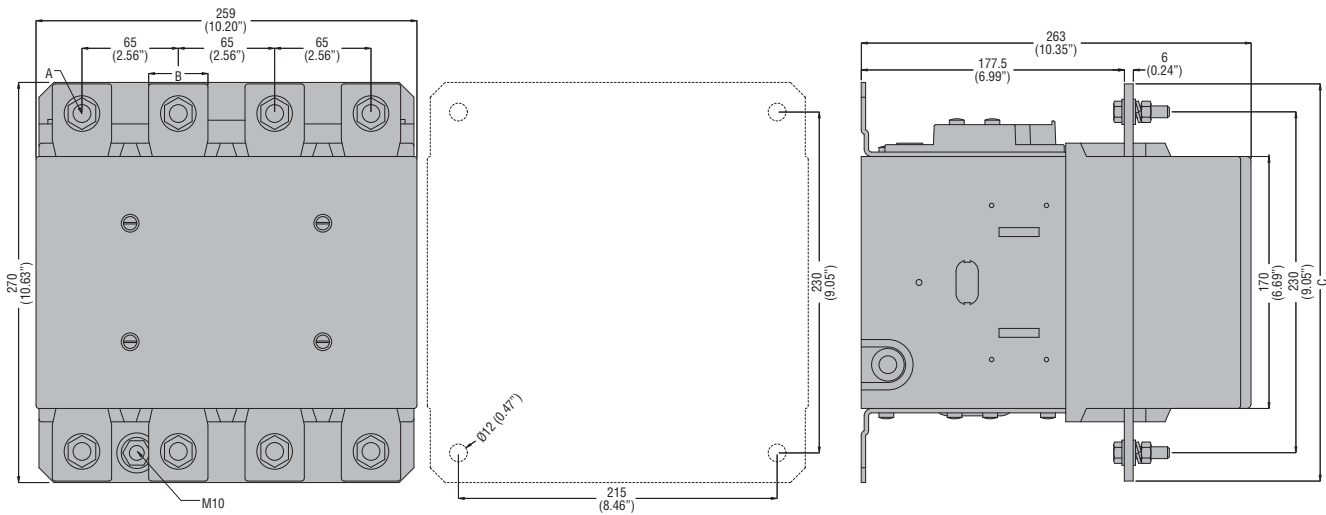
Dimensions [mm (in)]

B500 - B630 three poles



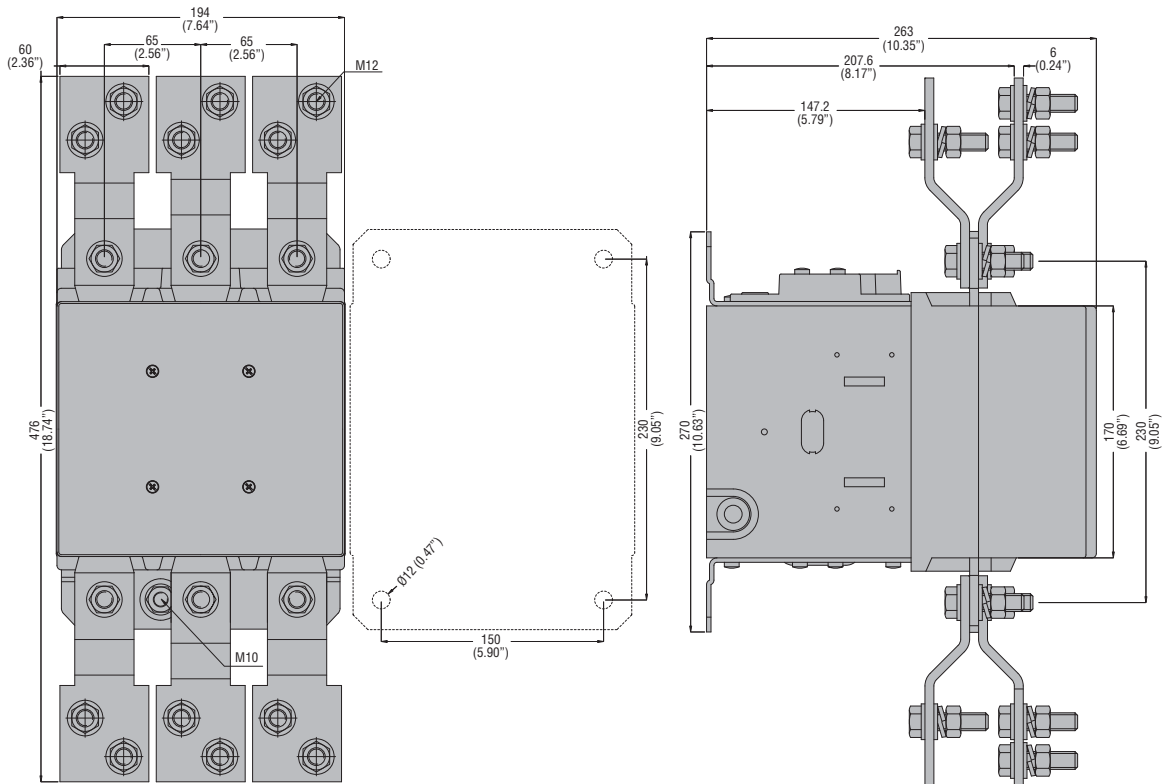
CONTACTOR TYPE	A	B	C
B500	M10	35 (1.38")	265 (10.43")
B630	M12	40 (1.57")	270 (10.63")

B500 4 - B630 4 four poles

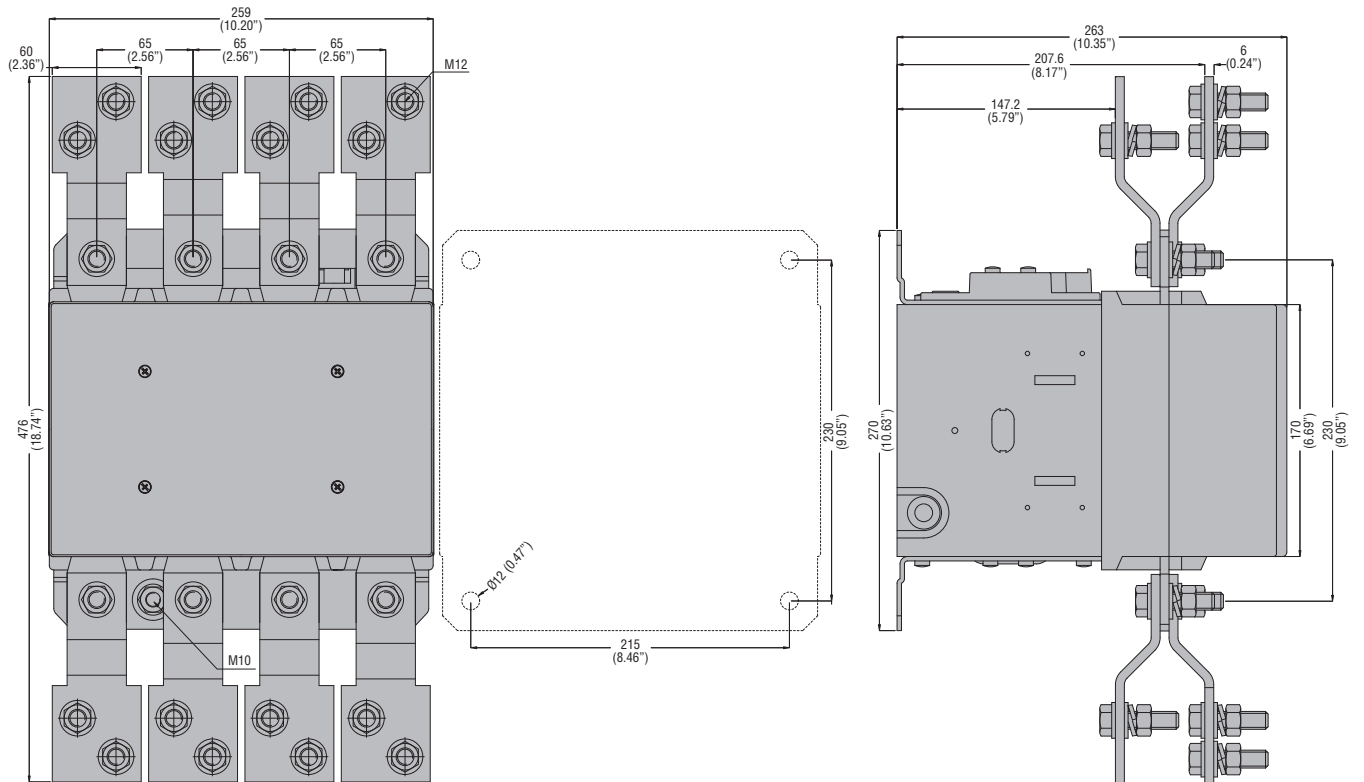


CONTACTOR TYPE	A	B	C
B500	M10	35 (1.38")	265 (10.43")
B630	M12	40 (1.57")	270 (10.63")

B630 1000 three poles



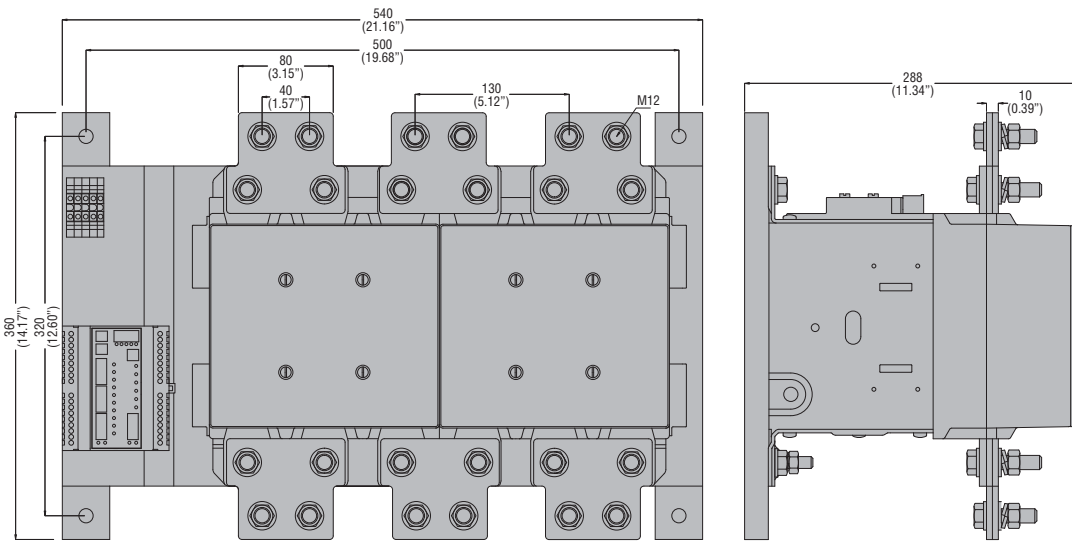
B630 1000 4 four poles



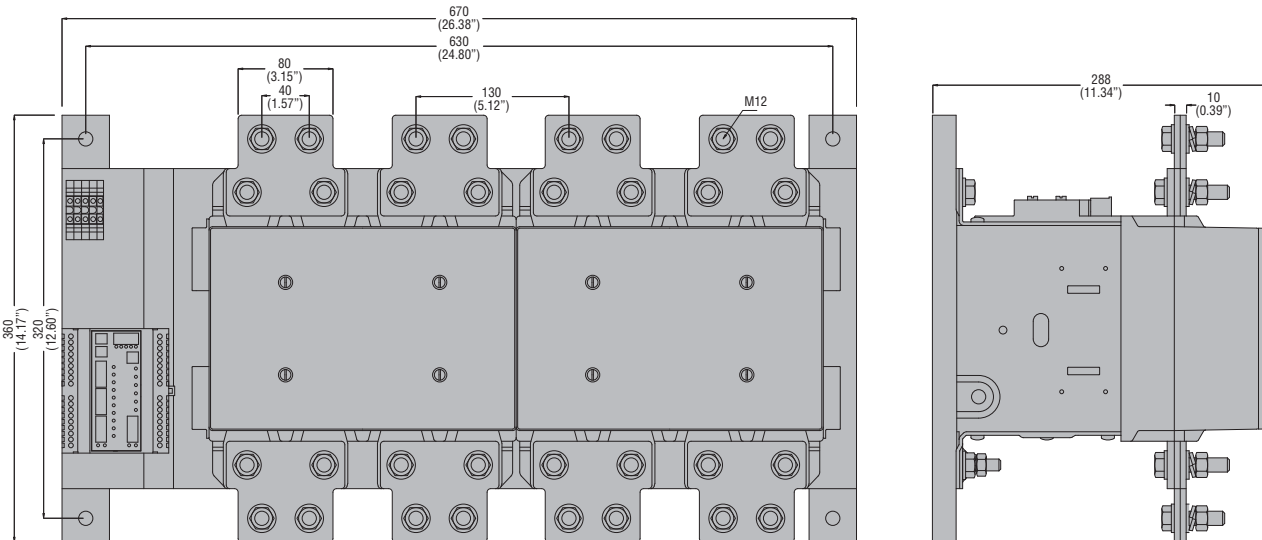
2 Contactors

Dimensions [mm (in)]

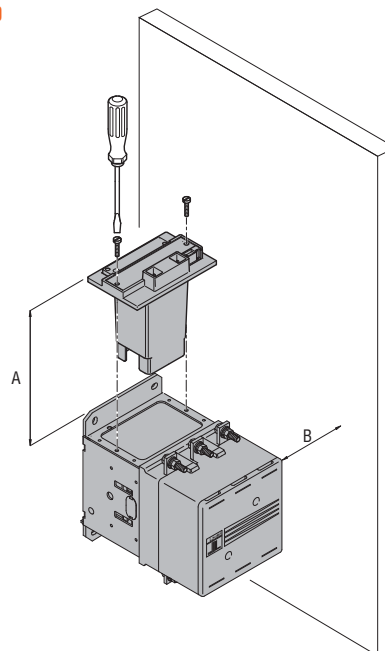
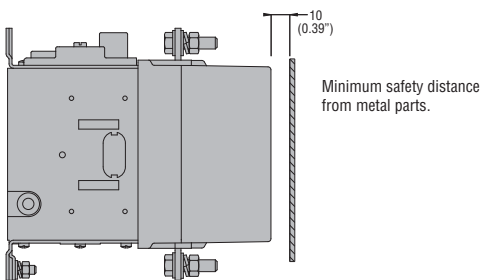
B1250 - B1600 three poles



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")

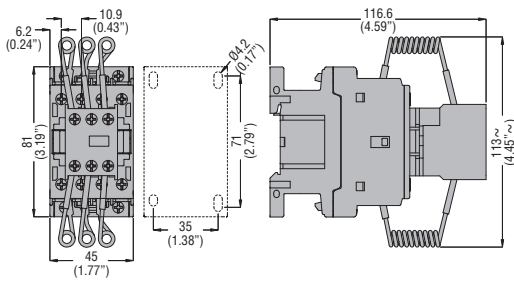
If dimension B is respected, coil replacement is possible without removing power wiring.

2 Contactors

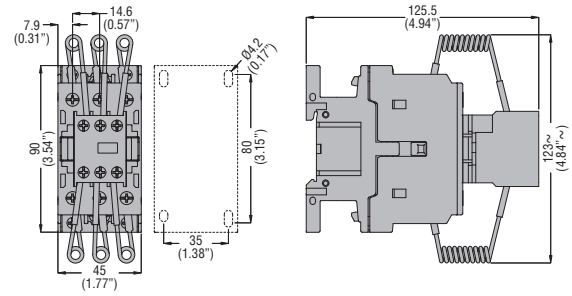
Dimensions [mm (in)]

CONTACTORS FOR POWER FACTOR CORRECTION

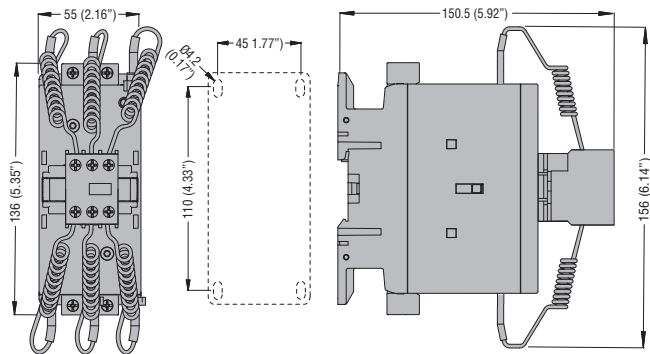
BFK09 10A - BFK12 10A - BFK18 10A



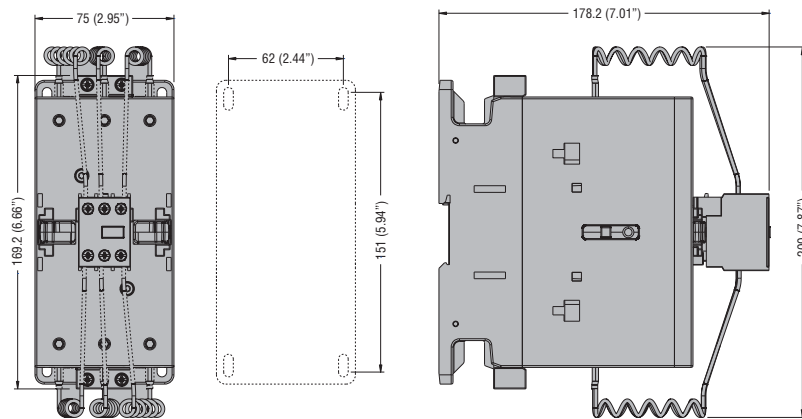
BFK26 00A - BFK32 00A - BFK38 00A



BFK50 - BFK65 - BFK80

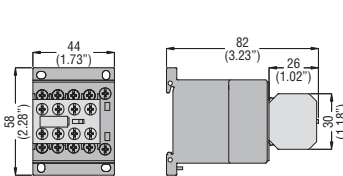


BFK95 - BFK115 - BFK150



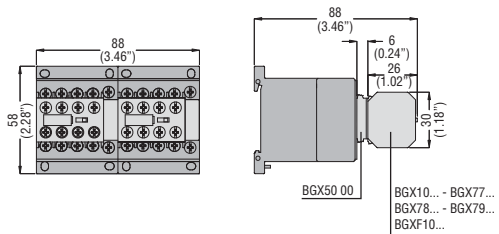
ADD-ON BLOCKS WITH BG MINI-CONTACTORS

BGX10... - BGXF10... auxiliary contacts

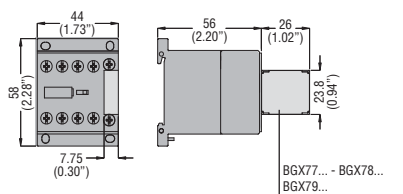


Valid for BGX11... contacts as well when mounted on left-hand contactor of BGT or BGC assembly (p. 4 and 5).

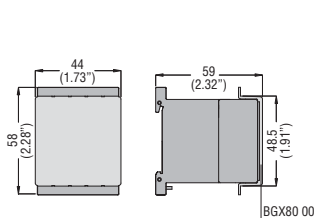
BGX50 00 interlock with BGX10..., BGXF10... contacts and BGX77... or BGX78... or BGX79... suppressor



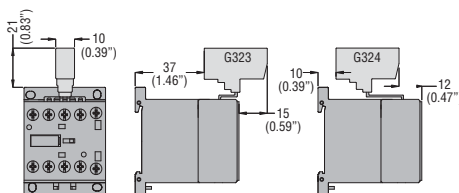
BGX77..., BGX78... or BGX79... suppressor only



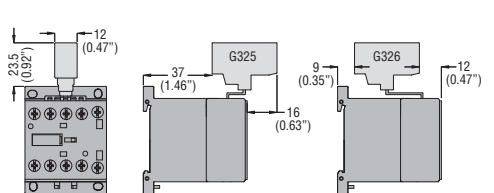
BGX80 00 shroud



Paralleling links G323, G324

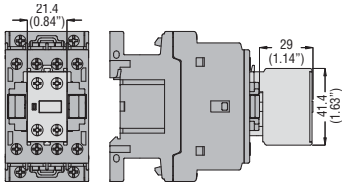


G325, G326

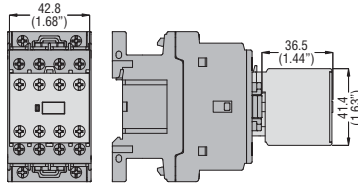


ADD-ON BLOCKS WITH BF CONTACTORS

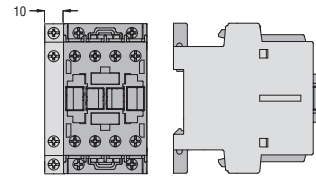
Auxiliary contacts **BFX10...**
w/2 contacts



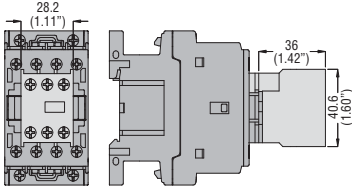
BFX10... w/4 contacts



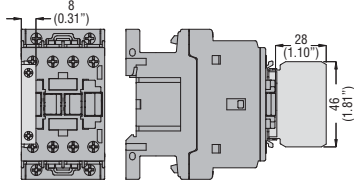
BFX12...



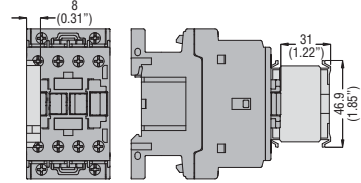
G484...



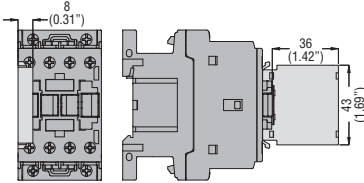
G418...



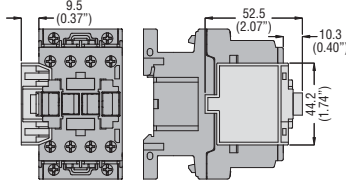
G218



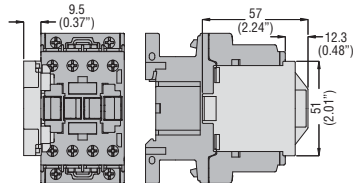
G481..., G482



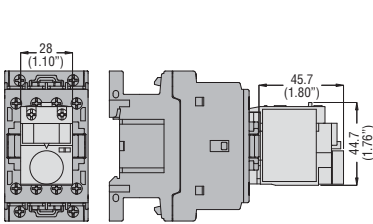
G280 with G218



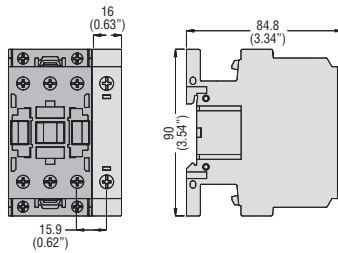
G419, with G418..., G428..., G483 with G481... or G482



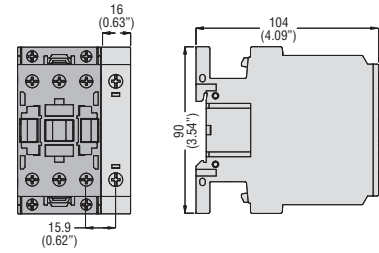
G485..., G486..., G487 delayed contacts



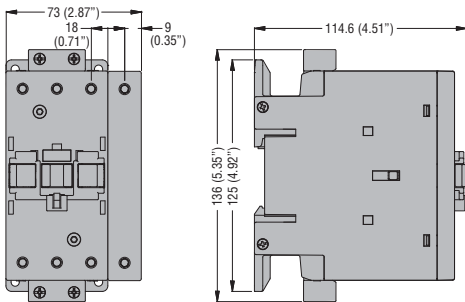
Fourth pole
BFX42



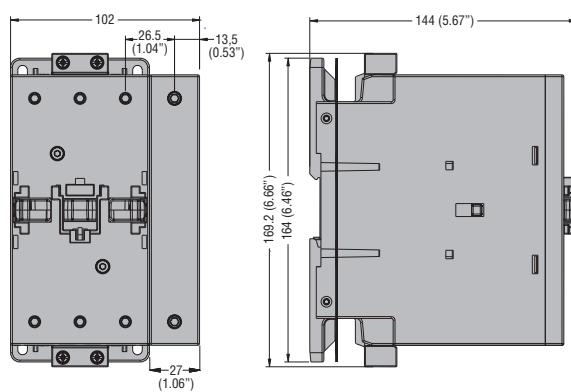
BFXD42



BFX43

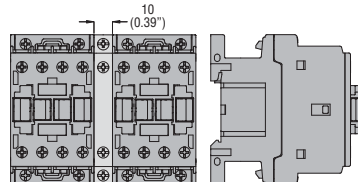


BFX44

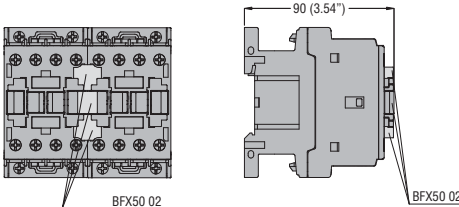


Interlocks

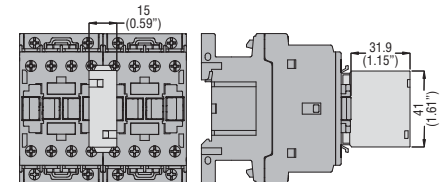
BFX50 00, BFX50 01, BFX53 00, BFX53 01, BFX54 00, BFX54 01



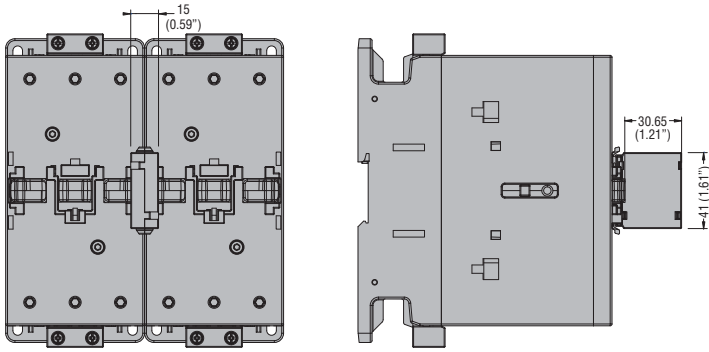
BFX50 02



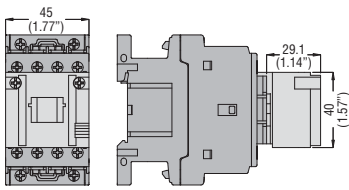
BFX50 03, BFX53 03, BFX54 03



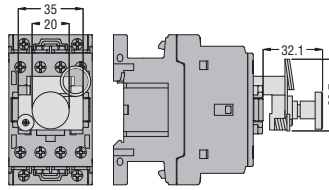
Interlocks
BFX53 03 - BFX54 03



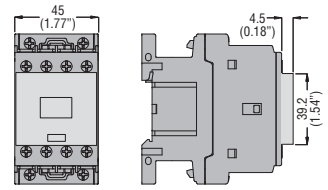
G222, G272, BFX64 1 mechanical latch



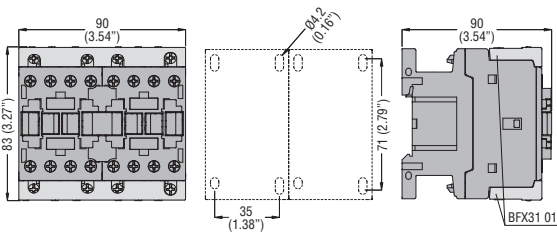
G454, G455, BF64 2 manual closing



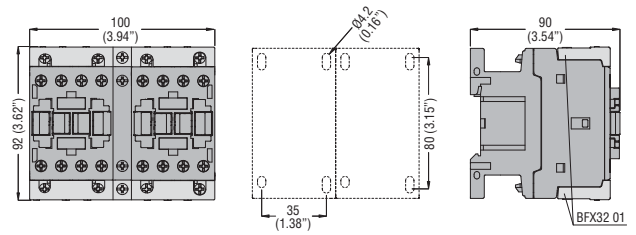
BFX80 sealing cover



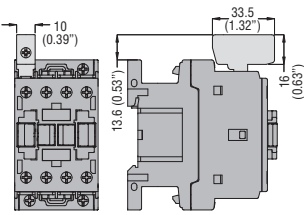
Rigid connecting kit
BFX31 01



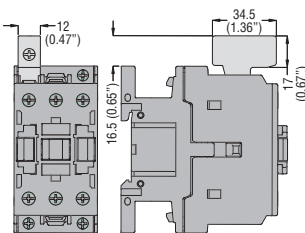
Rigid connecting kit
 90mm (3.54") with **BFX5000** and **BFX5001**
 100mm (3.94") with **BFX5002** and **BFX5003**



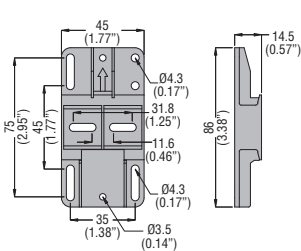
G231 terminal
 1-pole



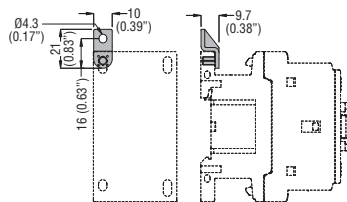
G232 terminal
 1-pole



BFX89 01 fixing base

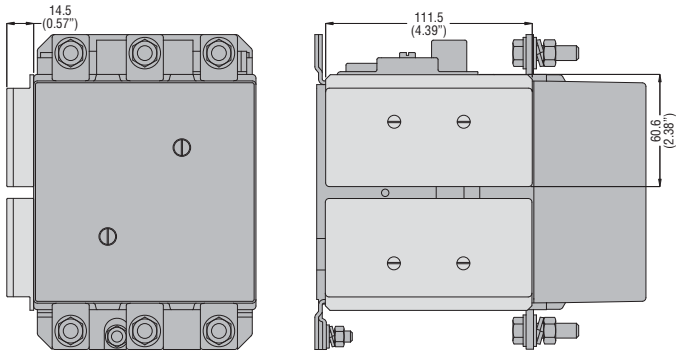


BFX89 02 fixing brackets

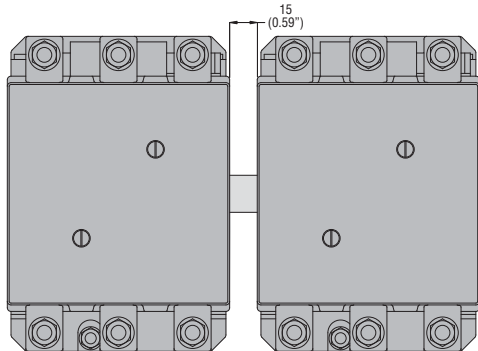


ADD-ON BLOCKS WITH B CONTACTORS

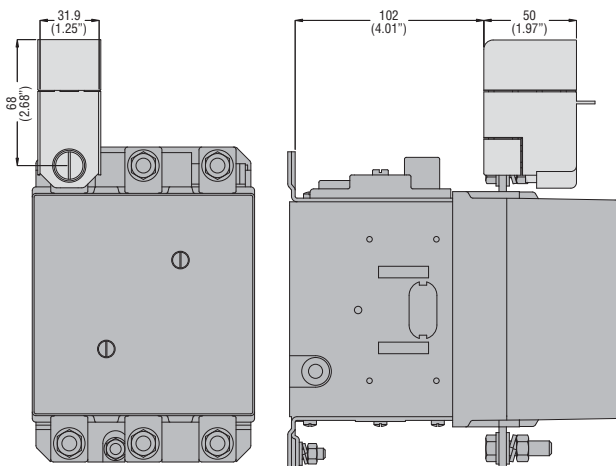
Auxiliary contacts **G350, G354**



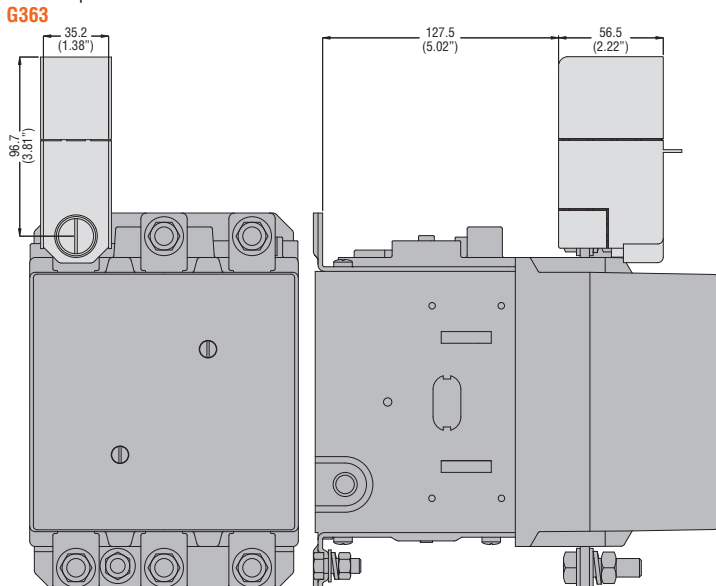
G355 interlocks



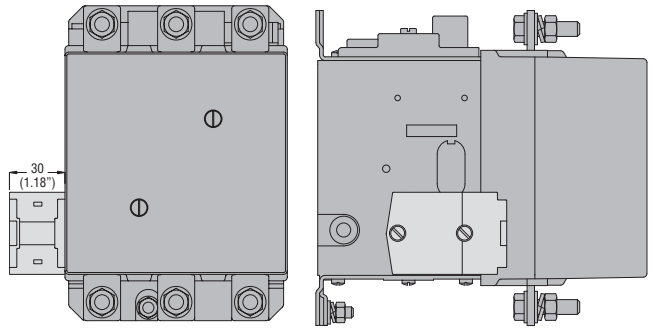
Terminal protection **G361**



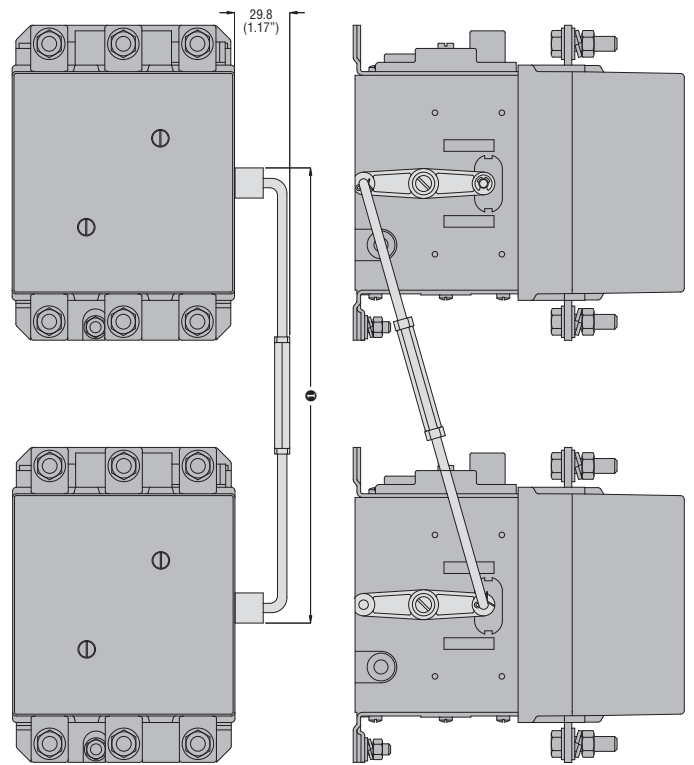
Terminal protection



G358 adapter

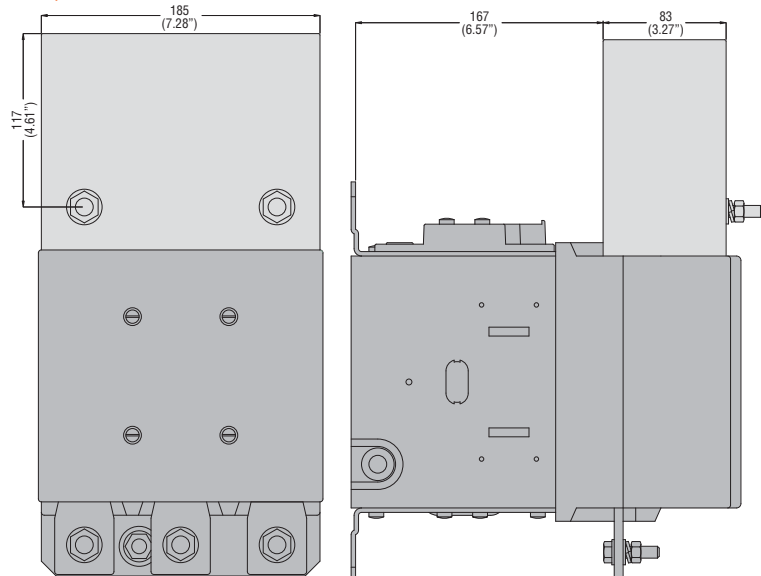


G356...

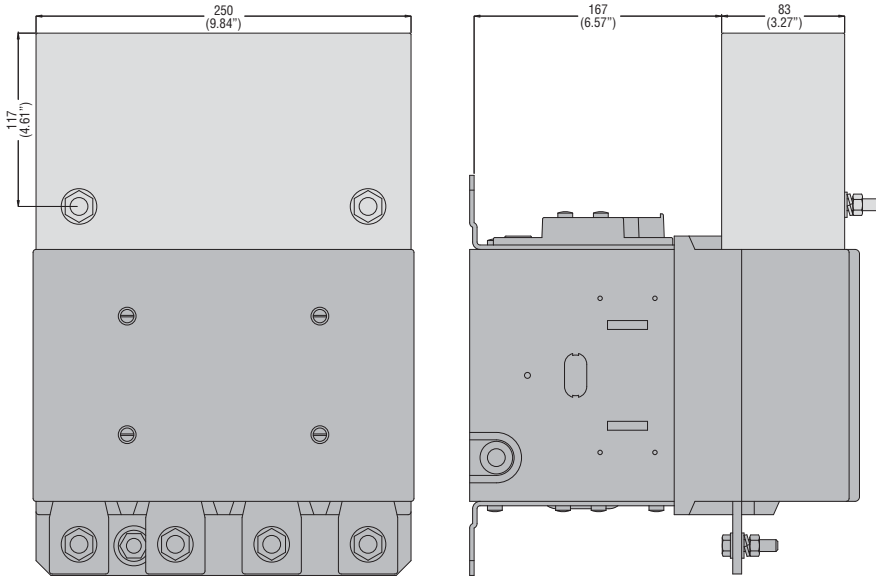


❶ For dimensions, refer to page 2-68.

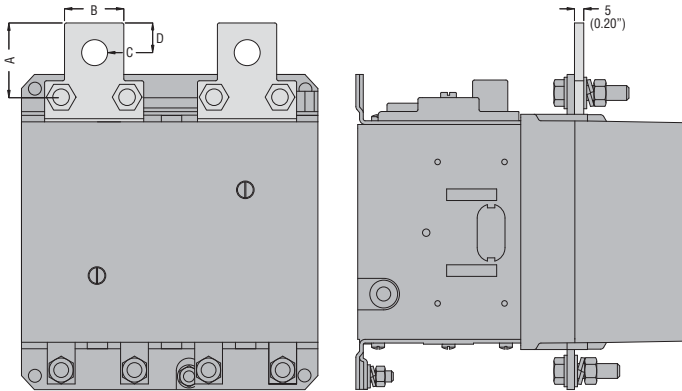
G527, G529



G528, G530

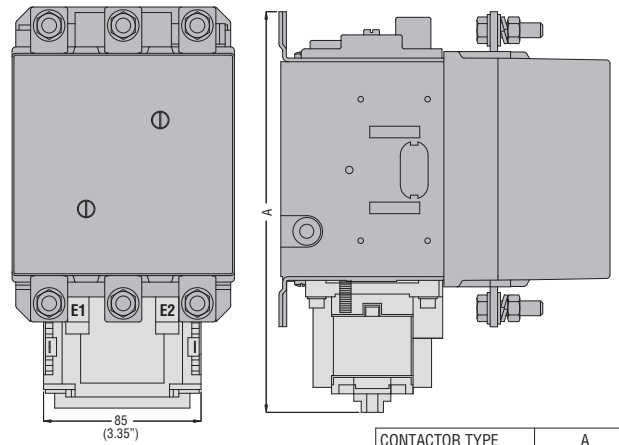


BA1594, BA1720 parallel 2-pole bar



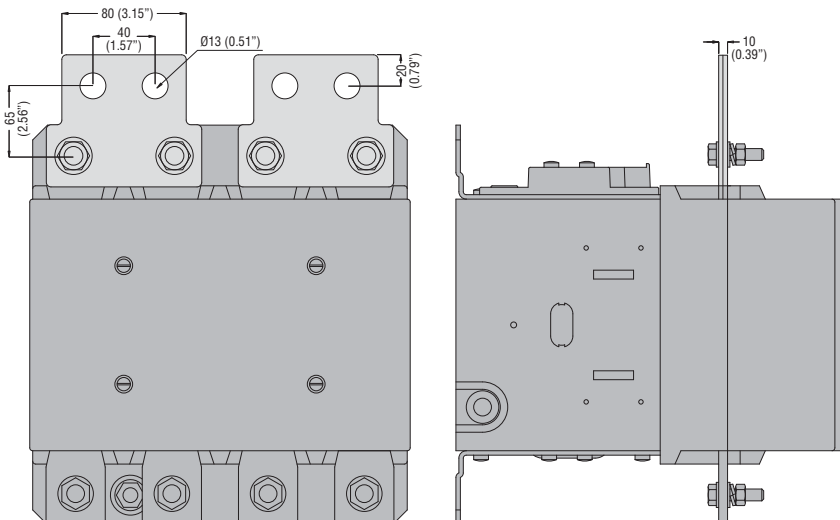
PARALLEL POLE BAR	A	B	C	D
BA1594	45 (1.77")	32 (1.26")	Ø14 (0.55")	16 (0.63")
BA1720	53 (2.09")	50 (1.97")	Ø18 (0.71")	20 (0.79")

G495 mechanical latch



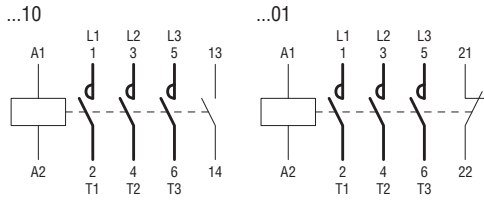
CONTACTOR TYPE	A
B145 - B180	221 (8.70")
B250 - B400	255 (8.86")
B500 - B630	300 (11.81")

BA1845

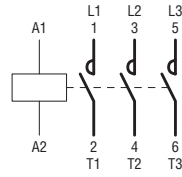


THREE-POLE CONTACTORS IN AC

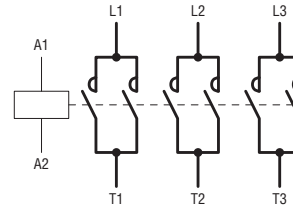
BG06 A - BG09 A - BGF09 A - BGP09 A - BG12 A
BF09 A - BF12 A - BF18 A - BF25 A



BF26 A - BF32 A - BF38 A
BF40 A - BF50 A - BF65 A - BF80 A
BF94 A - BF95 A - BF115 A - BF150 A
B145...B630



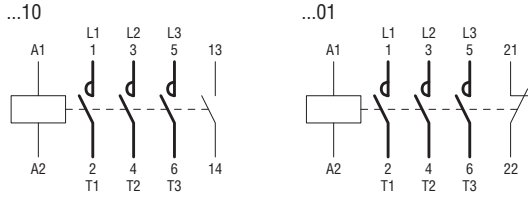
B1250 24 - B1600 24... ①



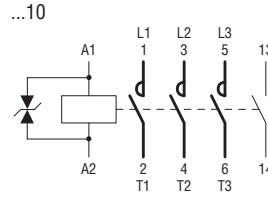
① The input electronic circuit of the contactor coil is designed and tested according to IEEEC 62.41 standards and can withstand a 10kV impulse voltage (1.2/50µs) with 50 Joule energy. The use of an auxiliary reduced voltage transformer is recommended for higher values.

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

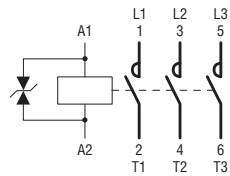
BG06 D - BG09 D - BGF09 D - BGP09 D - BG12 D
BG06 L - BG09 L - BGF09 L - BGP09 L - BG12 L



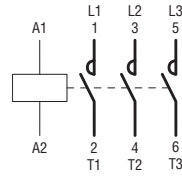
BF09 D - BF12 D - BF18 D - BF25 D
BF09 L - BF12 L - BF18 L - BF25 L



BF26 D - BF32 D - BF38 D
BF26 L - BF32 L - BF38 L

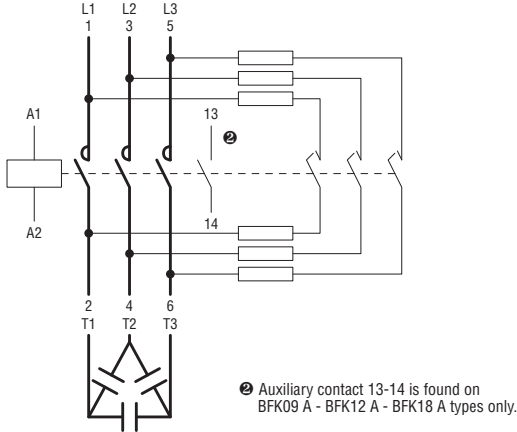


BF40 E - BF50 E - BF65 E - BF80 E - BF94 E
BF95 E - BF115 E - BF150 E



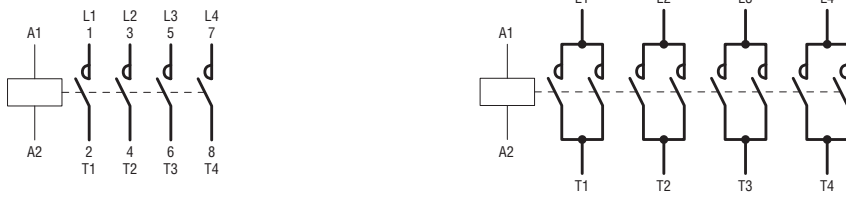
CONTACTORS FOR POWER FACTOR CORRECTION

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

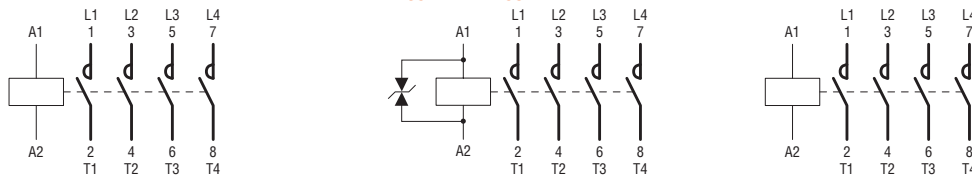


FOUR-POLE CONTACTORS IN DC (AC/DC for BF40E...BF150E)

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



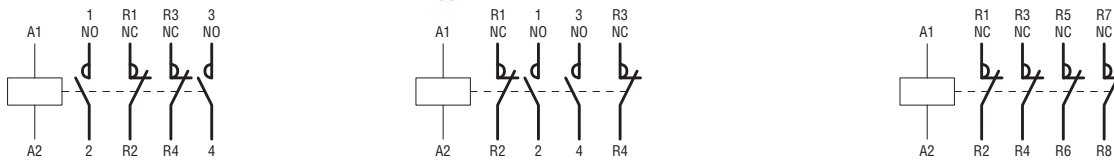
FOUR-POLE CONTACTORS IN AC WITH 2NO AND 2NC POLES

BG09 T2 A

BF09 T2 A - BF18 T2 A - BF26 T2 A - BF38 T2 A
BF80 T2 A

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



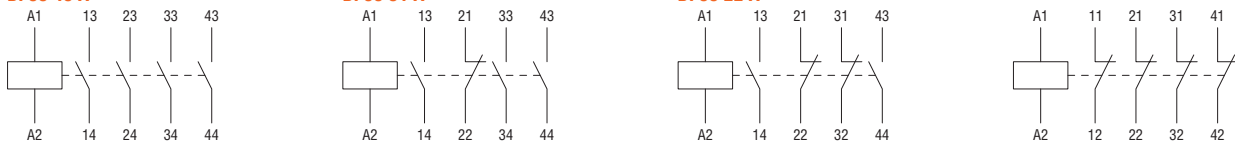
CONTROL RELAY IN AC

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



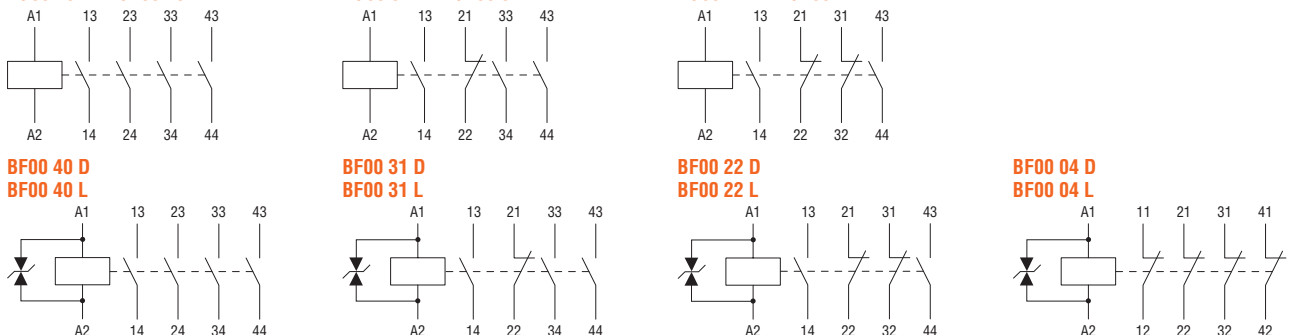
CONTROL RELAY IN DC

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

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

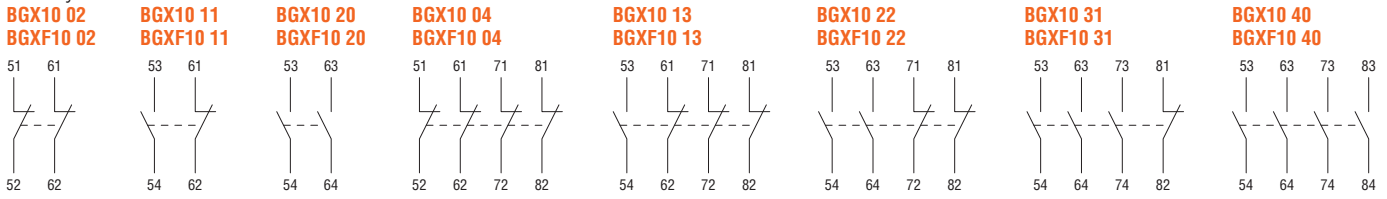
BG00 22 D - BGF00 22 D
BG00 22 L - BGF00 22 L

BF00 04 D
BF00 04 L

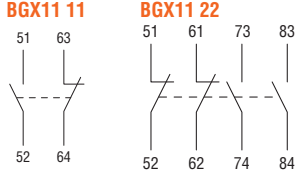


ADD-ON BLOCKS FOR BG MINI-CONTACTORS

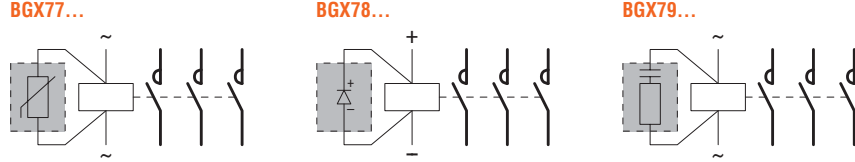
Auxiliary contacts



Special auxiliary contacts

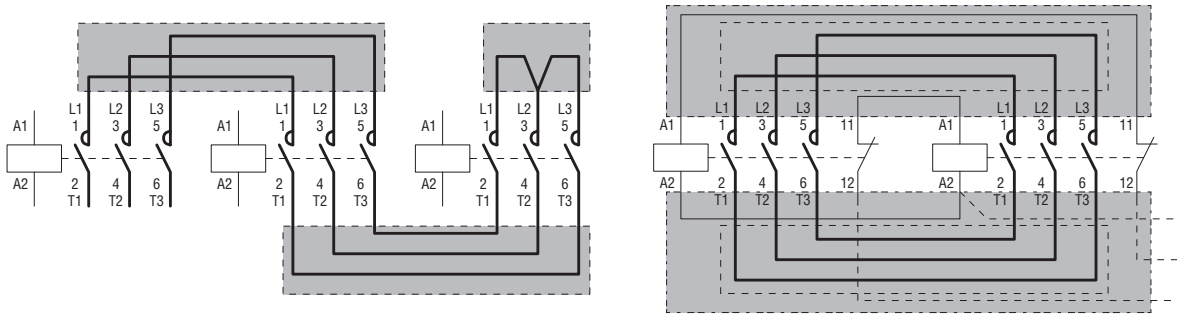


Surge suppressor



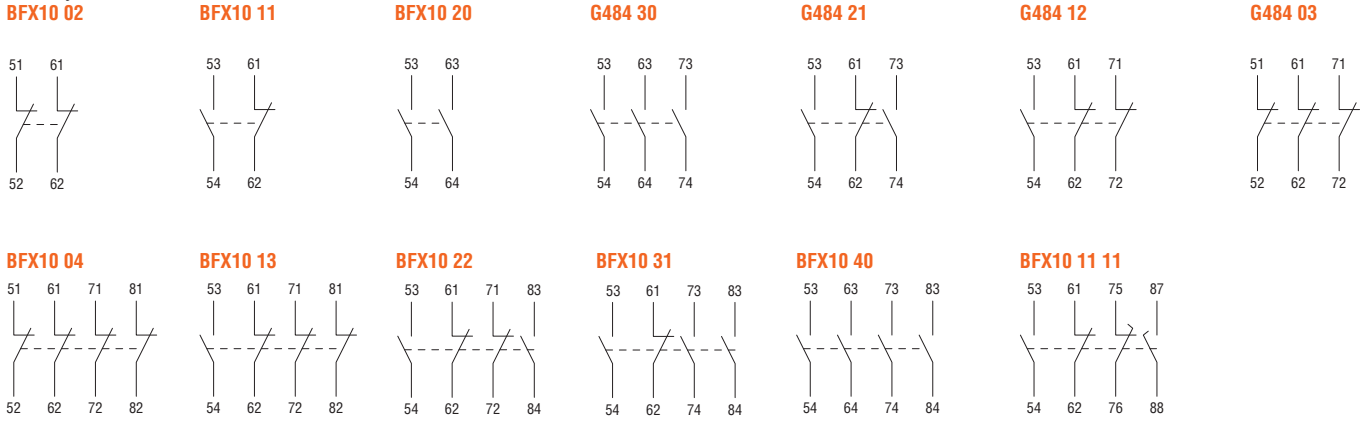
Rigid connections

SMX90 21

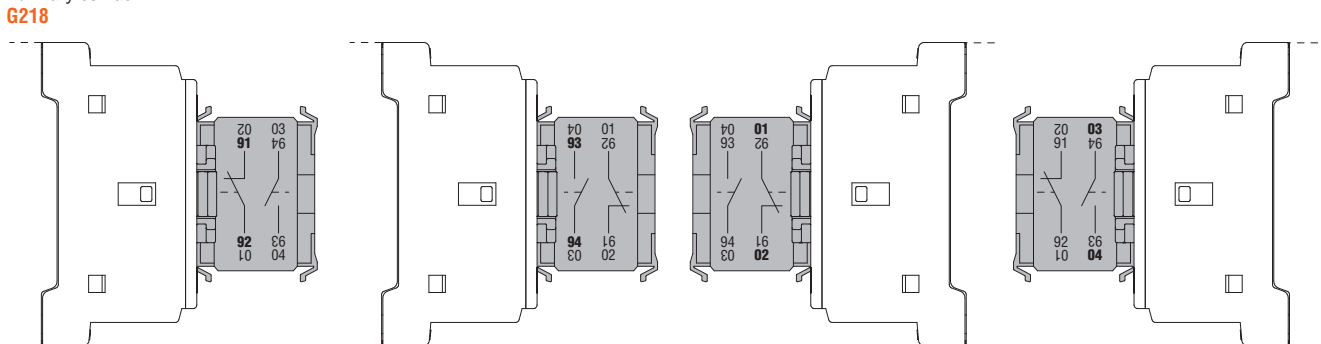


ADD-ON BLOCKS FOR BF CONTACTORS

Auxiliary contacts



Auxiliary contact

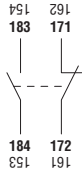


The termination of the G218 auxiliary contact has more than one numbering due to the fact that the block can assume various mounting positions. See the numbering in boldface for a correct interpretation.

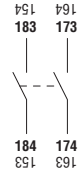
Auxiliary contacts
BFX12 02



BFX12 11



BFX12 20



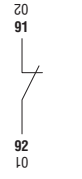
G418 10
G428 10



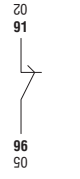
G418 10A
G428 10A



G418 01
G428 01



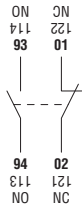
G418 01D
G428 01D



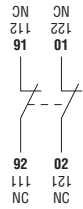
G481 20



G481 11



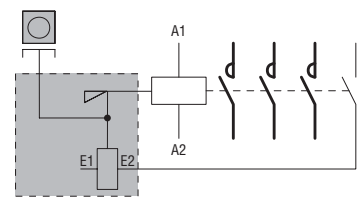
G481 02



G482



Mechanical latch
G222... - G272...

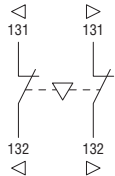


The termination of the BFX12... / G418... / G481... / G482 auxiliary contacts has more than one numbering due to the fact that the block can assume various mounting positions. See the numbering in boldface when the block is mounted on the left side of the contactor.

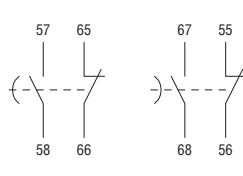
4th pole
BFX42
BFXD42



Interlock
BFX50 01

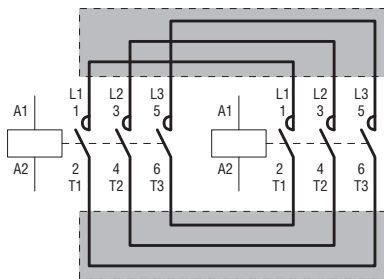


Delayed auxiliary contacts
G485... **G486... - G487**

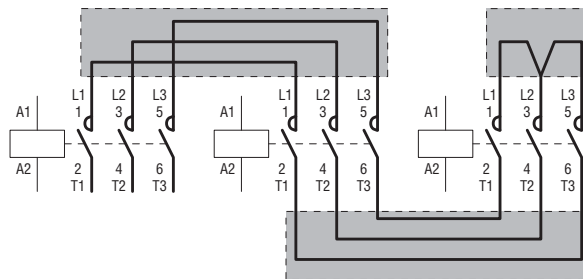


Rigid connecting kits

BFX31 01 - BFX31 02 - BFX32 01



BFX31 31 - BFX32 31 - BFX32 32

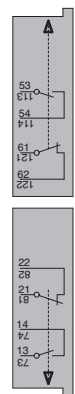


ADD-ON BLOCKS FOR B CONTACTORS

Auxiliary contacts

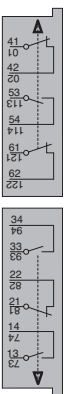
G350 - G354

G354

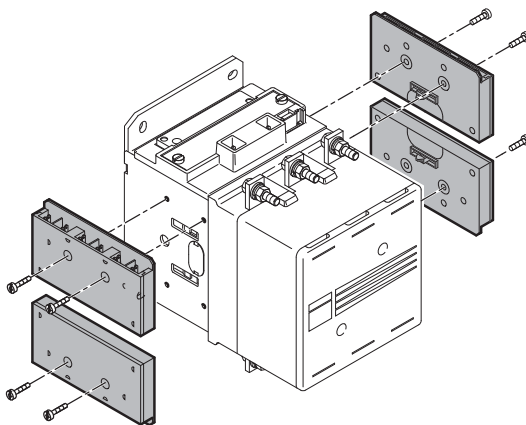


G354

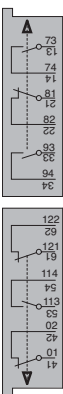
G350



G350

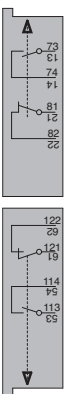


G350



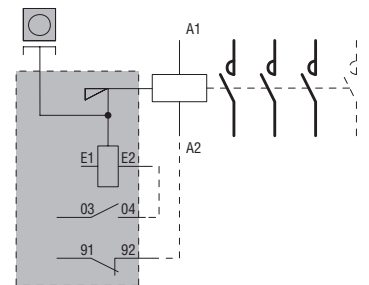
G350

G354



G354

Mechanical latch
G495



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.

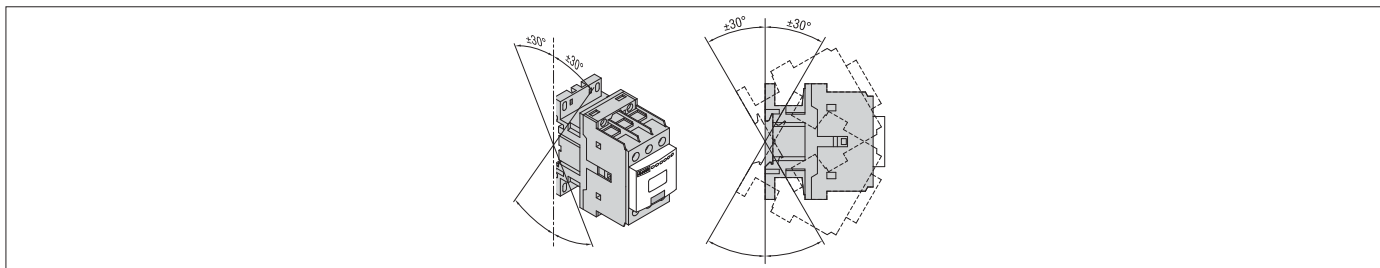


ON VERTICAL PLANE WITH 30° INCLINATION

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° 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:

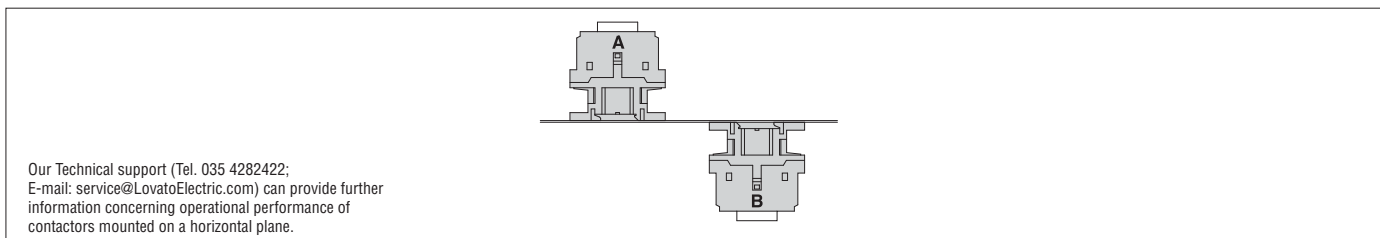
- when the contactor is energised, the movable equipment moves upwards.
- when the contactor is energised, the movable equipment moves downwards.

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.

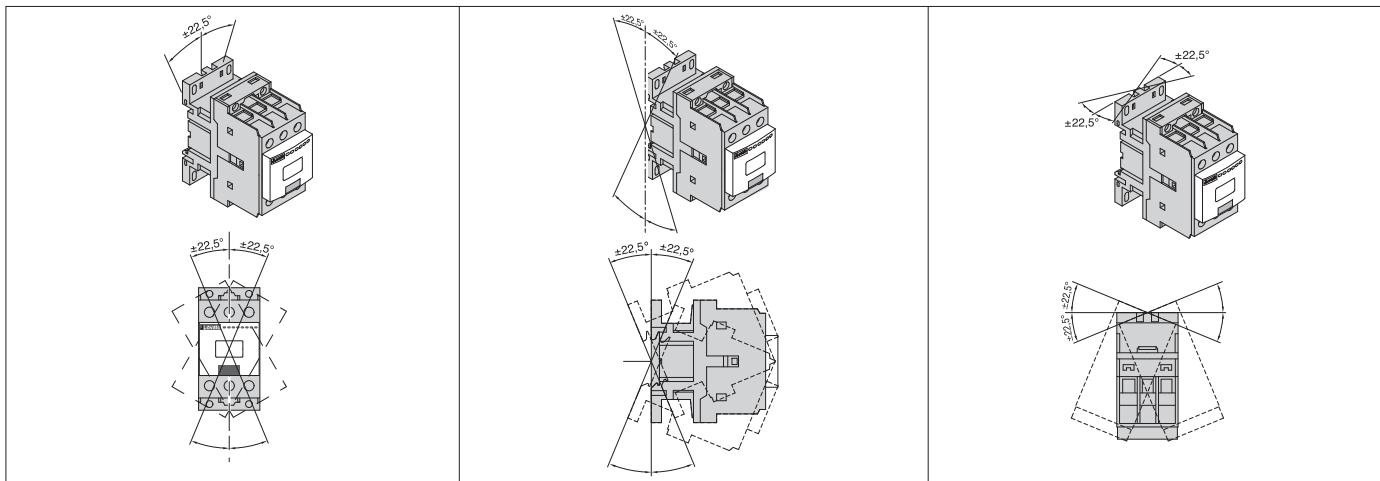
NOTE: Position B is not recommendable.



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 (U _e \leq 440V) [A]	IEC operational power							Maximum horsepower ratings (60Hz)			
		220/230V [kW]	380/400V [kW]	415V [kW]	440V [kW]	500V [kW]	660/690V [kW]	1000V [kW]	Three phase 200-208V [HP]	240V [HP]	480V [HP]	600V [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 ①	200 ①	400 ①	450 ①
B630	630	198	335	368	368	368	440	368	200 ①	250 ①	500 ①	500 ①

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

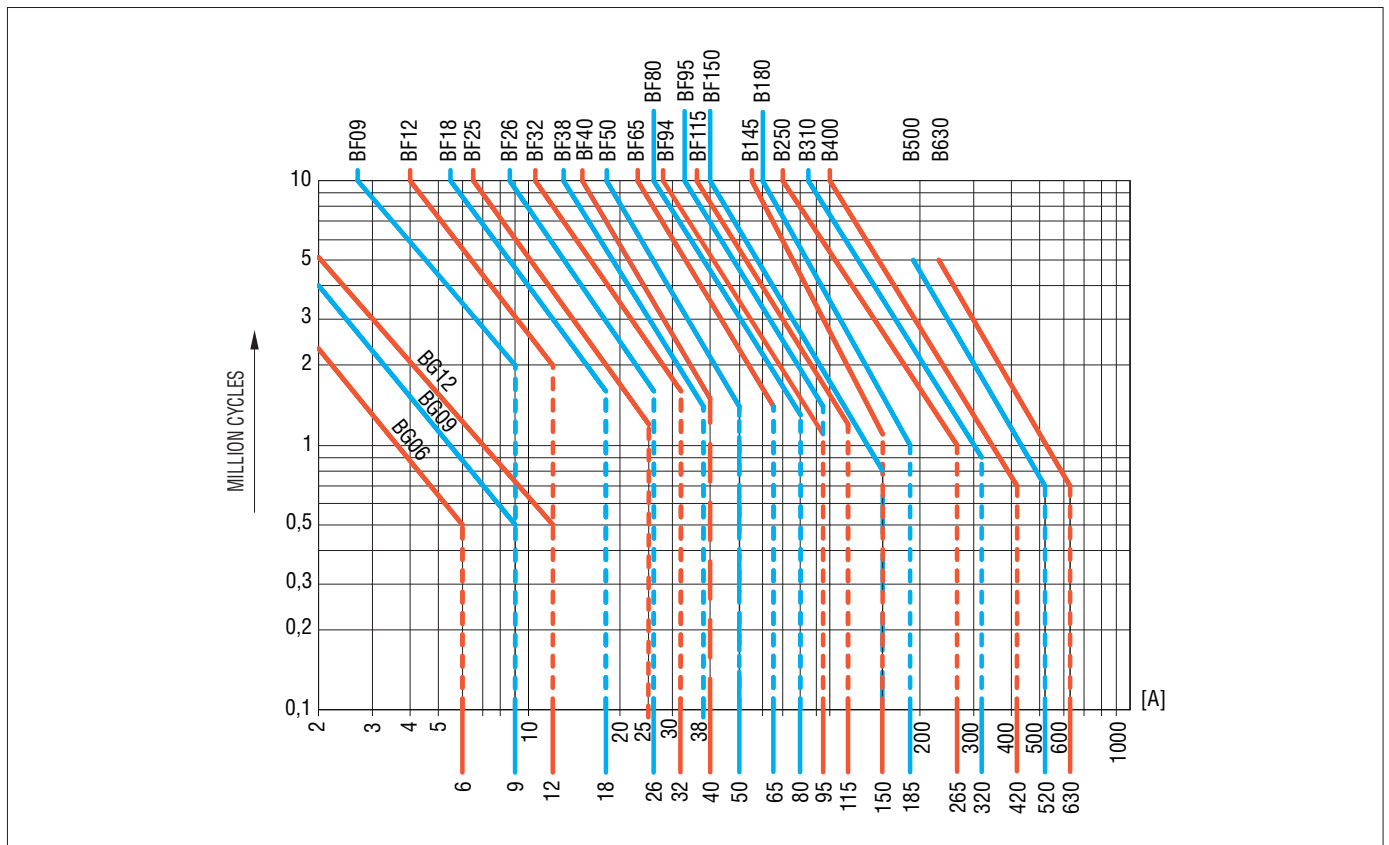
UL/CSA DUTY FOR AC MOTOR SWITCHING

Three-phase AC induction motors; breaking at rated motor current.

UL/CSA RATINGS at ambient temperature $\leq 55^{\circ}\text{C}$

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

Electrical life of contactors



IEC DC UTILISATION CATEGORY
POLE CHARACTERISTICS

MAXIMUM OPERATIONAL CURRENT

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

POLE CHARACTERISTICS

MAXIMUM OPERATIONAL CURRENT

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

IEC DC UTILISATION CATEGORY
POLE CHARACTERISTICS

MAXIMUM OPERATIONAL CURRENT

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

OPERATING CONDITIONS

Indicated current is valid for:

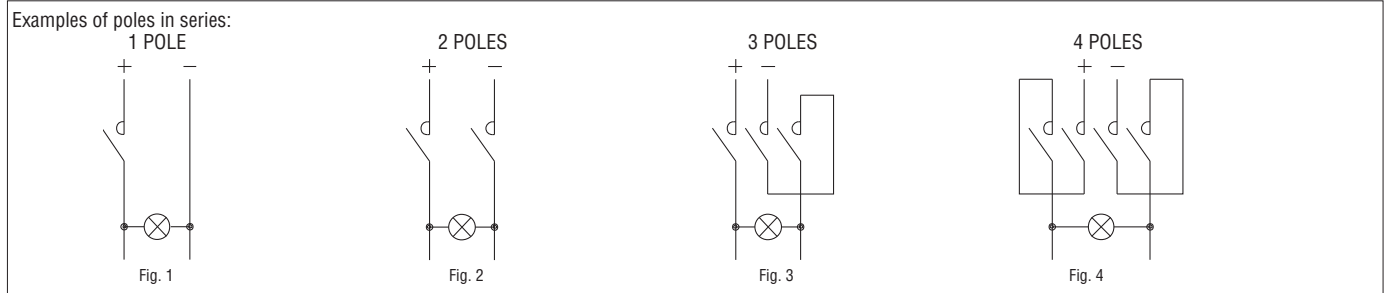
- Ambient temperature $\leq 55^{\circ}\text{C}$
- Operating cycles: up to 120 cy/h with 60% on-load factor
up to 250 cy/h with 30% on-load factor.

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.



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.

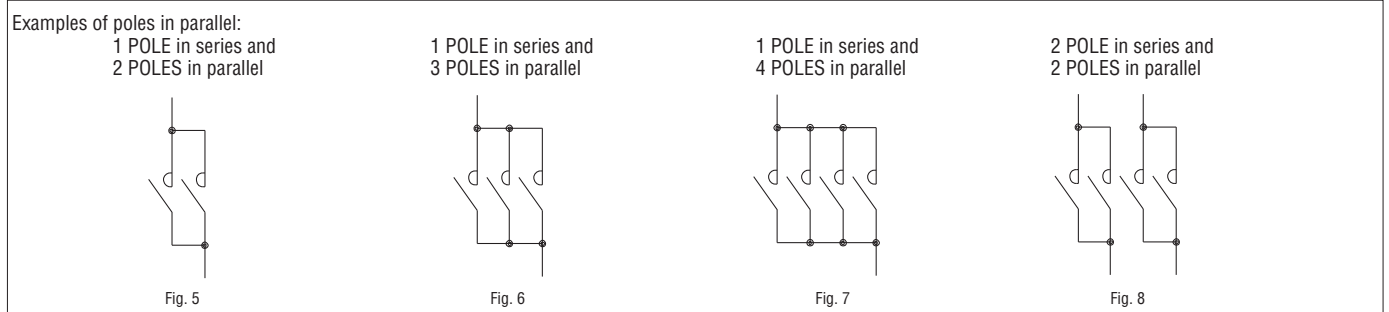
With poles in parallel, it is possible to increase the rated contact capacity (Ith) only if the contactor opens and closes in no-load conditions or when used as resistance shunts.

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



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).

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 (cosφ)
- 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		Switching off	
	Multiple of In ^①	cosφ	Multiple of In ^①	cosφ
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) 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 ^②	0.6...0.95	1	0.6...0.95

Lamp features	Lamp power [W]	Rated current [A]	Capacitor capacity [μF]	Maximum number [n] of lamps for each contactor pole ^③													
				BG06		BF09		BF26		BF40		BF65		BF115			
				BG09	BF12	BF18	BF25	BF32	BF38	BF50	BF94	BF95	BF150	B145	B180		
LED	220...240V 50/60Hz	See note ⑥	-	Each pole can carry 67% of the rated current AC3 ^④													
INCANDESCENT 220...240V	50/60Hz	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	50/60Hz	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 220...240V 50/60Hz (EVG)	Single mounting	16 / 18	0.1	(6.8) ^⑤	48	80	160	220	220	400	450	500	750	1050	1200		
		32 / 36	0.18	(6.8) ^⑤	27	44	88	122	122	222	250	277	416	583	666		
		50 / 58	0.27	(10) ^⑤	17	29	59	82	82	148	166	185	277	388	444		
	Dual mounting	2x16 / 18	0.18	(10) ^⑤	26	44	88	122	122	222	250	277	416	583	666		
		2x32 / 36	0.35	(10) ^⑤	13	22	45	62	62	114	128	142	214	300	342		
		2x50 / 58	0.52	(22) ^⑤	9	15	30	42	42	76	86	96	144	201	230		
STANDARD FLUORESCENT 220...240V 50/60Hz	Not corrected 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		
		140	1.5	-	6	10	17	23	26	36	43	53	73	93	113		
	Corrected 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		
		140	0.7	18	6	10	15	23	23	50	50	50	133	133	133		
	DUO circuit	2 x 20	0.26 ^④	-	54	57	100	153	153	211	250	307	423	538	653		
		2 x 40	0.46 ^④	-	19	32	56	86	86	119	141	173	239	304	369		
		2 x 65	0.7 ^④	-	12	21	37	57	57	78	92	114	157	200	242		
2 x 115		1.3 ^④	-	6	11	20	30	30	42	50	61	84	107	130			
2 x 140		1.5 ^④	-	6	10	17	26	26	36	43	53	73	93	113			

① In = Rated lamp current.

② 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.

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

④ For three-phase 380/415V circuits without neutral, the maximum number of lamps controlled by the same contactor is $n \cdot \sqrt{3}$.

⑤ Electrical life is 100,000 cycles up to 55°C.

⑥ Incorporated capacitor.

⑦ Total.

⑧ With reference to the AC side of the power supplies.

⑨ 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 features		Lamp power [W]	Rated current [A]	Capacitor capacity [μF]	Maximum number [n] of lamps for each contactor pole ^①												
					BG06	BF09	BF26			BF40	BF65		BF115				
					BG09	BF12	BF18	BF25	BF32	BF38	BF50	BF94	BF95	BF150	B145	B180	
HIGH-PRESSURE MERCURY VAPOUR 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 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 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		
		150	1	40	-	3	5	6	8	22	22	22	60	60	60		
		180	1.2	40	-	3	4	6	8	22	22	22	60	60	60		
METAL HALIDE 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		
		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		
380/415V 50/60Hz	Not corrected	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		

① 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.

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°C up to 70°C , stated maximum operational power ratings are to be reduced by a percentage equal to the difference between the ambient temperature and 50°C .
 Operating cycle: ≤ 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 230V 240V	380V 400V	415V 440V	500V 660/690V
Type	[A]	[A]	[V]	[A]	[kvar]	[kvar]	[kvar]	[kvar]
BF09 A	12	500	690	16	4.5	7.5	9	10
BF12 A	18	550	690	25	7	12.5	12	14
BF18 A	23	1000	690	32	9	15	16	18
BF25 A	23	1000	690	32	9	15	16	18
BF26 A	30	1400	690	40	11	20	22	22
BF32 A	36	1700	690	50	14	25	27	30
BF38 A	43	1900	690	63	17	30	30	34
BF40 A	50	2500	1000	100	20	35	40	45
BF50 A	58	2500	1000	80	22	40	41	45
BF65 A	65	2500	1000	100	26	45	50	52
BF80 A	75	2500	1000	125	30	50	56	70
BF94 A	75	2500	1000	125	30	50	56	70
BF95 A	90	3000	1000	125	34	60	75	80
BF115 A	115	3000	1000	160	45	75	85	135
BF150 A	144	3000	1000	160	50	100	115	150
B145	150	3400	1000	200	57	100	108	130
B180	170	3600	1000	250	65	112	122	150
B250	240	5100	1000	315	91	158	172	210
B310	265	5900	1000	315	105	184	200	245
B400	320	7500	1000	400	122	211	230	280
B500	500	9000	1000	630	190	330	360	430
B630	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.

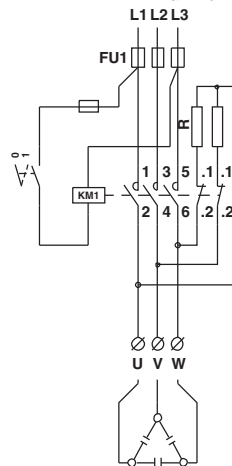
LIMITING INDUCTANCES

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 [kvar]	Voltage 220...230V		Voltage 380...500V	
	[Ω]	[W]	[Ω]	[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: $\leq 50\text{ }^{\circ}\text{C}$

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

Operating cycles: $\leq 120\text{ cy/h}$.

Electrical life: $\geq 400,000\text{ cycles}$.

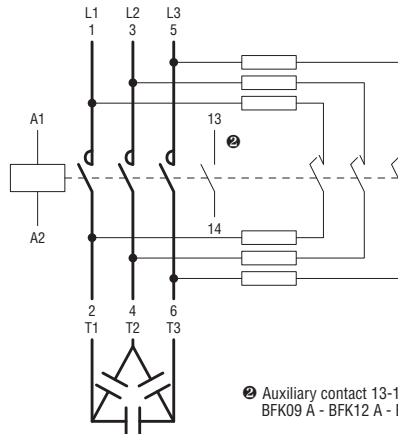


Fig. 1

Ⓜ Auxiliary contact 13-14 is found on BFK09 A - BFK12 A - BFK18 A types only.

Contactor	Built-in auxiliary contacts NO	IEC rated operational current $\leq 440\text{V}$	IEC fuse gG	Maximum IEC power at $\leq 50\text{ }^{\circ}\text{C}$ (AC6b) ①			
				220V 230V 240V	380V 400V	415V 440V	500V 690V
Type	n°	[A]	[A]	[kvar]	[kvar]	[kvar]	[kvar]
BFK09 A	1	12	16	4.5	7.5	9	10
BFK12 A	1	18	25	7	12.5	14	16
BFK18 A	1	23	40	9	15	17	20
BFK26 A	—	30	40	11	20	22	25
BFK32 A	—	36	63	14	25	27.5	30
BFK38 A	—	43	63	17	30	33	36
BFK50 A	—	58	80	22	40	41	46
BFK65 A	—	65	100	26	45	50	56
BFK80 A	—	75	125	30	50	56	65
BFK95 A	—	90	125	34	60	75	80
BFK115 A	—	115	160	45	75	85	135
BFK150 A	—	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]
BFK09 A	1	12	16	4.5	9	10
BFK12 A	1	18	25	7	14	16
BFK18 A	1	23	40	9	17	20
BFK26 A	—	30	40	11	22	27.5
BFK32 A	—	36	63	14	27.5	32
BFK38 A	—	43	63	17	33	36
BFK50 A	—	58	80	22	41	46
BFK65 A	—	70	100	26	50	56
BFK80 A	—	75	125	30	60	75
BFK95 A	—	100	125	40	80	100
BFK115 A	—	115	160	45	90	120
BFK150 A	—	121	160	50	100	125

NOTE: See page 2-14 for order codes.

IEC OPERATIONAL CHARACTERISTICS BG00 AND BF00

TYPE		BG00	BF00 A	BF00 D	BF00 L
POLE CONTACT CHARACTERISTICS					
Poles ^①	n°	4			
Conventional free air thermal current I _{th} (≤40°C)	A	10			
Rated insulation voltage U _i	V	690			
Frequency limit	Hz	25...400 ^②			
UL/CSA and IEC/EN 60947-5-1 auxiliary contact designation	AC	A600			
	DC	Q600		P600	
Terminals	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	mm ²	0.75...2.5		1...6
	Flexible c/w boot-lace ferrule	mm ²	2x1.5 or 1x2.5		1...4
	Flexible c/w spade lug	mm ²	2x1.5 or 1x2.5		1...4
Terminal protection according to IEC/EN 60529		IP20 ^③			
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			

- ① The built-in auxiliary contacts are high-conductivity
- ② Derating for use at 61-400 Hz. Consult Technical support for information (Tel. 035 4282422; E-mail: service@LovatoElectric.com).
- ③ 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 _{the}	Rated operational current I _e [A] at rated operational voltage U _e										VA rating	
UL designation	—	Thermal continuous test current	Maximum Amperes (AC) 60Hz										Maximum VA	
Alternating current	[A]		120VAC		240VAC		380VAC		480VAC		600VAC		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											
P600	DC-13	5	1.1	0.55	0.2 ^④	0.31 ^④	0.27 ^④	0.2	138	138				
Q600	DC-13	2.5	0.55	0.27	0.1 ^④	0.15 ^④	0.13 ^④	0.1	69	69				

- ④ Value at 301V is valid for UL/CSA up to 600VDC; the others are valid for IEC/EN.
- ⑤ 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 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 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 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 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		3.2 ^①	—	5.4	2.4	
OPERATING TIMES								
Average time for Us 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...30 ^②	24...30 ^③
			opening NC	ms	11...17	—	47...57 ^②	67...81 ^③
LIFE								
Mechanical		AC control	cycles	20 million				
		DC control	cycles	20 million				
MAXIMUM OPERATING RATE								
Mechanical operations			cycles/h	3600				

① 2.3W for low-consumption BG00...L version.
 ② NC closing time for BF00 04D is 23...29ms while NC opening time is 40...49ms.
 ③ NC closing time for BF00 04L is 25...31ms while NC opening time is 56...68ms.

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

TYPE		BG06	BG09	BG12
POLE CHARACTERISTICS				
Power poles	n°	3	3-4	3
Rated insulation voltage U_i	V	690	690 ❶	690
Rated impulse withstand voltage U_{imp}	kV	6	6	6
Operational frequency	Hz	25...400 ❷	25...400 ❷	25...400 ❷
Operational current	Conventional free air thermal I_{th} ($\leq 40^\circ\text{C}$)	A	16	20
	AC3 ($\leq 440\text{V}$ $\leq 55^\circ\text{C}$)	A	6	9
	AC4 (400V) ❸	A	3.3	4.0
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
	aM	A	6	10
Making capacity (RMS value)	A	92	92	120
Breaking capacity at voltage	$\leq 440\text{V}$	A	72	96
	500V	A	72	72
	690V	A	72	72
Consumption per pole and resistance (average values)		mΩ	10	10
	I_{th}	W	2.6	4
	AC3	W	0.36	0.81
Terminals		A [mm]	7.5	7.5
		B [mm]	4	4
		screw	M3	M3
		Phillips	2	2
	Quick-connect	Faston	—	1x6.35 - 2x2.8
	Solder		—	PIN for PCB ❹
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	mm ²	0.75...2.5	
	Flexible c/w boot-lace ferrule	mm ²	2x1.5 or 1x2.5	
	Flexible c/w spade lug	mm ²	2x1.5 or 1x2.5	
Terminal protection to IEC/EN 60529			IP20 ❺	
AUXILIARY CONTACT CHARACTERISTICS				
Type of contact	n°	1-NO or NC based on configuration ❻		
Thermal current I_{th}	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	$\pm 30^\circ$		
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 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 powered at	60Hz	pick-up	% Us	75...115		
		drop-out	% Us	20...55		
Average coil consumption at ≤20°C						
50/60Hz coil powered at	50Hz	in-rush	VA	30		
		holding	VA	4		
	60Hz	in-rush	VA	25		
		holding	VA	3		
60Hz coil 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	3.2 ^①	3.2	

OPERATING TIMES						
Average time for Us 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	

① 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		[A]	120VAC		240VAC		380VAC		480VAC		600VAC		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										300V or less ②			
Q600	DC-13	2.5	125VDC	250VDC	301VDC	400VDC	500VDC	600VDC	0.55	0.27	0.1 ③	0.15 ③	0.13 ③	0.1	69	69

② Value at 301V is valid for UL/CSA up to 600VDC; the others are valid for IEC/EN.

③ Voltage valid for UL/CSA only.

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 voltage Uimp	kV	6							
Operational frequency	Hz	25...400 ^①							
Operational current	Conventional free air thermal Ith (≤40°C)	A	25	28	32	32	45	56	56(60 ^⑤)
	AC3 (≤440V ≤55°C)	A	9	12	18	25	26	32	38
	AC4 (400V) ^⑥	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 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 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 resistance per pole (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
Terminals	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 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
Tightening torque for coil terminals min-max	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	
	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 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 boot-lace ferrule	mm²	1...4	1...4	1...4	1...4	1...10	1...10	1...10
	Flexible c/w insulated spade lug	mm²	1...4	1...4	1...4	1...4	1...10	1...10	1...10
Power terminal protection according to IEC/EN 60529		IP20 ^⑦	IP20 ^⑧	IP20 ^⑧	IP20 ^⑧	IP20 ^④	IP20 ^④	IP20 ^④	

AUXILIARY CONTACT CHARACTERISTICS

Type of contact	n°	1-NO or NC based on configuration ^⑨					—	
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 ^⑦	1/2	1 1/2	3	3	7 1/2	7 1/2
BF25 ^⑦	1 1/2	3	5	7 1/2	15	15
BF38 ^⑦	3	5	10	10	20	20
BF65 ^⑧	3	10	15	15	40	50
BF95 ^⑧	7.5	15	25	30	60	75
BF115 ^⑧	—	—	30	40	75	100
BF150 ^⑧	—	—	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 Us control in	closing NO	ms	8...24					8...24	
		opening NO	ms	10...20					5...15
		closing NC	ms	14...28 ^①					9...20 ^②
		opening NC	ms	7...18 ^①					9...17 ^②
	DC BF...D types	closing NO	ms	54...66					53...65
		opening NO	ms	14...17					14...18
		closing NC	ms	24...30 ^③					23...28
		opening NC	ms	47...57 ^③					46...56
	DC BF...L types	closing NO	ms	75...91					76...92
		opening NO	ms	15...19					16...20
		closing NC	ms	24...30 ^④					25...31
		opening NC	ms	67...81 ^④					63...77

LIFE									
Mechanical (million)	AC control	cycles	20	20	20	20	20	20	20
	DC control	cycles	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	1.4

MAXIMUM OPERATING RATE									
Mechanical operations	cy/h	3600							

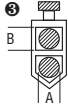
- ① NC closing time for BF...TOA types is 9...25ms while NC opening time is 9...15ms.
- ② NC closing time for BF...TOA types is 11...29ms while NC opening time is 6...14ms.
- ③ NC closing time for BF...TOD types is 23...29ms while NC opening time is 40...49ms.
- ④ NC closing time for BF...TOL types is 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			
			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 ^⑤	0.15 ^⑥	0.13 ^⑥	0.1						

⑤ Value at 301V is valid for UL/CSA up to 600VDC; the others are valid for IEC/EN. ⑥ Voltage valid for UL/CSA only.

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 U_i	V	1000									
Rated impulse withstand voltage U_{imp}	kV	8									
Operational frequency	Hz	25 ... 400 ^①									
Operational current	Conventional free air thermal I_{th} ($\leq 40^\circ\text{C}$)	A	70	90	100	115	115	140	160	165	
	AC3 ($\leq 440\text{V}$ $\leq 55^\circ\text{C}$)	A	40	50	65	80	95	95	115	150	
	AC4 (400V) ^②	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	1200	
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	$\leq 440\text{V}$	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)	m Ω		0.8	0.8	0.8	0.6	0.6	0.45	0.45	0.45	
	I_{th}	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 ^③ 									
	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		
lbft		2.95...3.69						4.4...5.2			
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	N°	14...2				16...2/0				
	Flexible w/o lug	mm ²	1.5...35				1.5...70				
	Flexible c/w lug	mm ²	1.5...35				1.5...70				
Power terminal protection according to IEC/EN 60529		IP20 front									
AMBIENT CONDITIONS											
Operating temperature	°C	-50...+70 ^④									
Storage temperature	°C	-60...+80 ^⑤									
Maximum altitude	m	3000									
Operating position	Normal	On vertical plane									
	Allowable	$\pm 30^\circ$									
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 coil powered at	60Hz	pick-up	% Us	85...110 ❶							
		drop-out	% Us	40...55 (≤70% electronically controlled AC/DC coil)							
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.

IEC OPERATIONAL CHARACTERISTICS B145 - B1600...

TYPE		B145	B180	B250	B310	B400	B500	B630	B630 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 voltage Uimp	kV	8										
Operational frequency	Hz	25-400 ^①										
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) ^②	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 ^④	Phillips	2 (⌀7mm/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 ^④ fitted	Nm	1										
	lbft	0.74										
Maximum conductor section	1 or 2 bars	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")
	N° 1 wire with lug	mm ²	120	150	240	–	–	–	–	–	–	–
	N° 2 wire with lug	mm ²	–	–	–	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 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 voltage limits	pick-up	% Us	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	
Consumption at $\leq 20^{\circ}\text{C}$	in-rush	VA/W	300	300	300	300	300	400	400	400	800	
	holding	VA/W	10	10	10	10	10	18	18	18	45	
Dissipation at $\leq 20^{\circ}\text{C}$	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	
Electrical (million) (I_e 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 (1.2/50 μs) 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.

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)

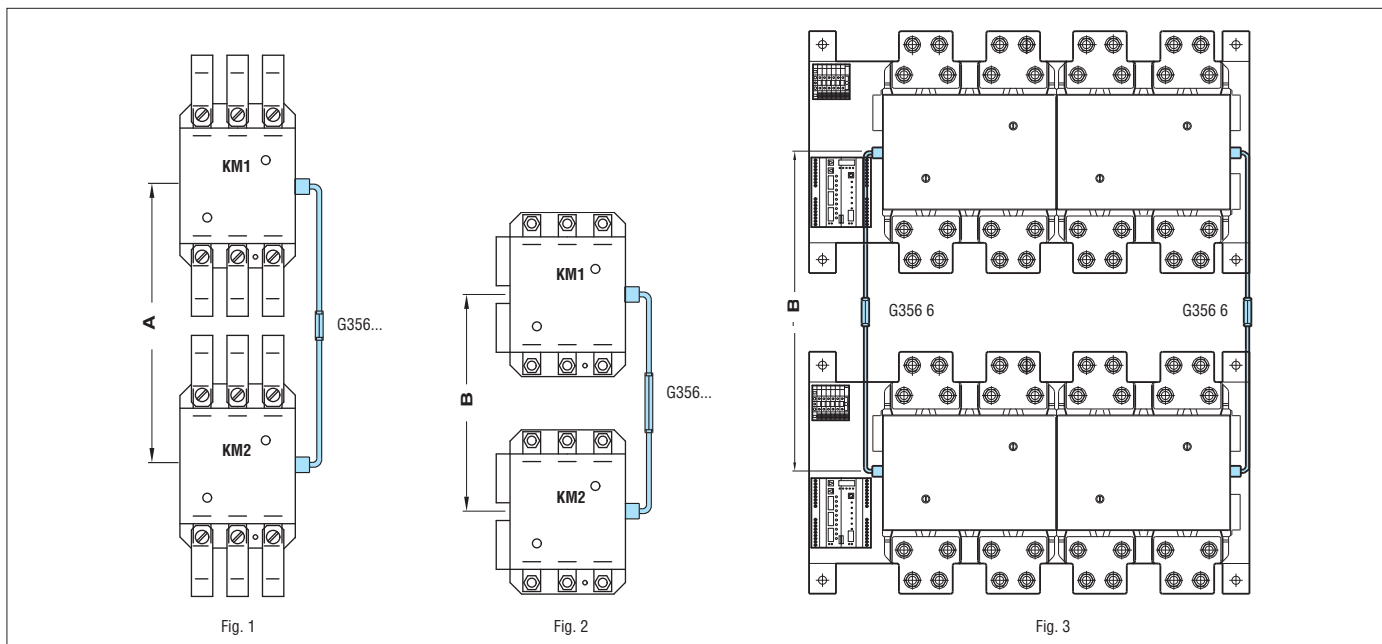
KM1	B145-B180			B250-B310-B400			B500-B630		
KM2	B145 B180	B250 B310 B400	B500 B630	B145 B180	B250 B310 B400	B500 B630	B145 B180	B250 B310 B400	B500 B630
G356 1	—	—	—	—	—	—	—	—	—
G356 2	286...305	—	—	—	—	—	—	—	—
G356 3	305...345	330...345	—	330...345	—	—	—	—	—
G356 4	345...385	345...385	375...385	345...385	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 B180	B250 B310 B400	B500 B630	B145 B180	B250 B310 B400	B500 B630	B145 B180	B250 B310 B400	B500 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.



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.

