MCBs and Accessories Data

1. **Calibration**
   With CBI Hydraulic-Magnetic Miniature Circuit Breakers, there is no effect on the fixed trip point at ambient temperature ranges from -40°C to +85°C.

2. **Products**
   Products comply to local and international standards (SANS, VC, IEC, etc.).

3. **DC Voltage Rating**
   Please refer to CBI catalogues / leaflets for DC ratings.

4. **For reverse connection**
   Contact CBI for details.

5. **Module Width**
   CBI's MCB module widths are:
   - 13 mm and 26 mm dual mounting (escutcheon height 57 mm).
   - 13 mm, 18 mm and 27 mm in DIN rail mounting (escutcheon height 45 mm), Suffix "D"

6. **Special Breakers**
   For all breakers manufactured to non-standard requirements, prices will be by quotation only

7. **Standard Current Ratings**
   Ampere ratings as indicated are standard. Non-standard ratings can be provided – Prices on request (POR).

8. **Switch Disconnectors**
   All switch disconnectors must be backed up b y a suitable short circuit protection device (SCPD), having the same or lower current rating and the same interrupting capacity as the switch disconnector, unless otherwise stated. Contact CBI for availability of 4 Pole switch disconnector units.

9. **Motor Starting**
   Please refer to Page 95 or CBI catalogue.

10. **Time Delay Curves**

Curve No.	Time Delay	Instantaneous (short circuit)	Non Tripping	Current Tripping Current
1	Long	High 10 – 20 x In	1.05 x In	1.30 x In
2	Medium	Medium 5 – 10 x I n	1.05 x In	1.30 x In
3	Short	Low 3 – 5 x In	1.05 x In	1.30 x In
2,3 (LL)	Medium	115 % Trip Point (Load Limiting)	1.05 x In	1.15 x In
9	Long	Medium 7 – 12 x In	1.05 x In	1.30 x In
B	Short	Low 3 5 x In	1.13 x In	1.45 x In
C	Medium	Medium 5 – 10 x In	1.13 x In	1.45 x In
D	Long	High 10 – 20 x In	1.13 x In	1.45 x In
OP (AC + DC)	Very short	Low 3 – 5 x In	1.05 x In	1.30 x In
U2 (DC)	Medium	Medium 6 – 11 x In	1.05 x In	1.30 x In
KM	Medium	Medium 6 – 12 x In	1.05 x In	1.25 x In

Note:
Other curves available on request.

MCBs and Accessories Data

1. 1000 V Rating
F or 1000 V rating, please consult CBI. (Switch disconnectors not available)

2. Adjustable Current Ratings
From the FD range upwards, some breakers are fitted with adjustable magnetic trips. The suffix “V/E” types also have adjustable overload trips. “E” (electronic) types down to 50 % of nominal rating and suffix “V” (mechanical) types down to 75 % of nominal rating.

3. Calibration
CBI thermal breakers are calibrated at 40 °C, unless otherwise stated. Derating for higher temperature environment to be done in accordance with derating curves.

4. Reverse Connection
Contact CBI for details. Units indicated line / load should not be reverse connected.

5. Special Breakers
Prices for all breakers made by CBI to meet non-standard rating requirements of customer will be by quotation only.

6. Standard Current Ratings
Ampere ratings indicated are standard. Non-standard can be provided, on application at a surcharge of up to 20 % of the next standard rating price, depending on quantity, product type and acceptance by CBI.

7. Switch Disconnector Fault Ratings
The fault current ratings of CBI switch disconnectors which are fitted with shunt trips and external tripping devices are the same as those of the corresponding circuit breakers. Additional of interface barriers is mandatory.

8. Terminations
Consult CBI Catalogues for details.

9. Transient Inrush and Close Co-ordination Protection
Higher transient motor starting current associated with some high efficiency motors have created nuisance tripping problems. Consult CBI when in doubt.

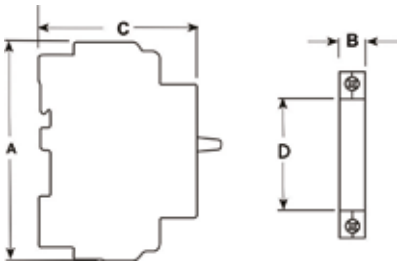
10. DC Interrupting Capacity
Refer to CBI DC Catalogue for details.

11. Motor Starting
In addition to cable protection functions, the CBI circuit breakers are designed for induction motor starting and protection duties. These breakers are particularly suited to direct-on-line starting applications for standard type motors in conjunction with a contactor overload combination or as a stand-alone unit.

For complete details, refer to the “Motor Starting and Protection Application Guide” and “Circuit breaker Selection Guide for DOL Motor Starting”.

Warranty Claims

Products may only be returned to CBI for warranty claims if all conditions under Section 7, Limitation of Liability, of CBI’s General Terms and Conditions of Sale have been met (copy available upon request).



MCB Dimensions

MCB Dimensions				
Product	**Height (A)**	**Width (B)**	**Depth (C)**	**Escutcheon (D)**
QA - 1(13)	93	13	66	57
QA - 2(13)	93	26	66	57
QA - 3(13)	93	39	66	57
QF - 1(13)	93	13	66	57
QF - 2(13)	93	26	66	57
QF - 3(13)	93	39	66	57
QF - 4(13)	93	52	66	57
QF - 1(26)	93	26	66	57
QF - 2(26)	93	52	66	57
QF - 3(26)	93	78	66	57
QF - 4(26)	93	104	66	57
QF - 1(27)-D	97,5	27	65	45
QF - 2(27)-D	97,5	54	65	45
QF - 3(27)-D	97,5	81	65	45
QF - 4(27)-D	97,5	108	65	45
QH - 1(27)-D	97,5	27	65	45
QH - 2(27)-D	97,5	54	65	45
QH - 3(27)-D	97,5	81	65	45
QH - 4(27)-D	97,5	108	65	45
QF14 A/C - D	93	36	65	45
QA17 A/C	93	26	64,8	57
QF17 A/C	93	26	64,8	57
SM15A	122	65	66	57
SM36	122	117	66	57
Note: All measurements are in mm.				

Technical Section: Motor Starting Guide: 230 - 400 V

	SINGLE PHASE VOLTAGE 230 V AC		THREE PHASE VOLTAGE 400 V AC					
MOTOR SIZE (kW)	**5 kA**	**10 kA**	**5 kA**	**10 kA**	**15 kA**	**25 kA**	**35 kA**	**65 kA**
0.12	QF1 5A*	QH1 5A*				Note: * = External Overload Protection Required. Curve 1 Circuit Breakers Only. ** = Locked Rotor Protection Only.		
0.18	QF1 5A*	QH1 5A*	QF3 1A*	QH3 1A*				
0.25	QF1 5A*	QH1 5A*	QF3 2A*	QH3 2A*				
0.37	QF1 5A*	QH1 5A*	QF3 2A*	QH3 2A*	G15D 16A**	G25D 16A**	G35D 16A**	F65DV 16-25 (16 A)**
0.55	QF1 10A*	QH1 10A*	QF3 5A*	QH3 5A*	G15D 16A**	G25D 16A**	G35D 16A**	F65DV 16-25 (16 A)**
0.75	QF1 10A*	QH1 10A*	QF3 5A*	QH3 5A*	G15D 16A**	G25D 16A**	G35D 16A**	F65DV 16-25 (16 A)**
1.1	QF1 15A*	QH1 15A*	QF3 5A*	QH3 5A*	G15D 16A**	G25D 16A**	G35D 16A**	F65DV 16-25 (16 A)**
1.5	QF1 15A*	QH1 15A*	QF3 5A*	QH3 5A*	G15D 16A**	G25D 16A**	G35D 16A**	F65DV 16-25 (16 A)**
1.8	QF1 20A*	QH1 20A*	QF3 10A*	QH3 10A*	G15D 16A**	G25D 16A**	G35D 16A**	F65DV 16-25 (16 A)**
2.2	QF1 20A*	QH1 20A*	QF3 10A*	QH3 10A*	G15D 16A**	G25D 16A**	G35D 16A**	F65DV 16-25 (16 A)**
3	QF1 25A*	QH1 25A*	QF3 10A*	QH3 10A*	G15D 16A**	G25D 16A**	G35D 16A**	F65DV 16-25 (16 A)**
3.7	QF1 30A*	QH1 30A*	QF3 15A*	QH3 15A*	G15D 16A**	G25D 16A**	G35D 16A**	F65DV 16-25 (16 A)**
4	QF1 30A*	QH1 30A*	QF3 15A*	QH3 15A*	G15D 16A**	G25D 16A**	G35D 16A**	F65DV 16-25 (16 A)**
4.5	QF1 35A*	QH1 35A*	QF3 20A*	QH3 20A*	G15D 20A	G25D 20 A	G35D 20A	F65DV 16-25 (20 A)
5.2	QF1 40A*	QH1 40A*	QF3 20A*	QH3 20A*	G15D 20A	G25D 20 A	G35D 20A	F65DV 16-25 (20 A)
5.5	QF1 45A*	QH1 45A*	QF3 20A*	QH3 20A*	G15D 20A	G25D 20 A	G35D 20A	F65DV 16-25 (20 A)
6	QF1 50A*	QH1 50A*	QF3 20A*	QH3 20A*	G15D 20A	G25D 20 A	G35D 20A	F65DV 16-25 (20 A)
7	QF1 60A*	QH1 60A*	QF3 20A*	QH3 20A*	G15D 32A	G25D 32A	G35D 20A	F65DV 25-40 (32 A)
7.5	QF1 70A*	QH1 70A*	QF3 25A*	QH3 25A*	G15D 32A	G25D 32A	G35D 20A	F65DV 25-40 (32 A)
9.3	QF1 80A*	QH1 80A*	QF3 30A*	QH3 30A*	G15D(40A	G25D 40A	G35D 40A	F65DV 25-40 (40 A)
11	QF1 100A*	QH1 100A*	QF3 35A*	QH3 35A*	G15D 40A	G25D 40A	G35D 40A	F65DV 25-40 (40 A)
15			QF3 45A*	QH3 45A*	G15D 50A	G25D 50A	G35D 50A	F65DV 40-63 (50 A)
18.5			QF3 60A*	QH3 60A*	G15D 63A	G25D 63A	G35D 63A	F65DV 40-63 (63A)
22			QF3 70A*	QH3 70A*	G15D 80A	G25D 80A	G35D 80A	F65DV 80-125/63-100 (80 A)
26			QF3 80A*	QH3 80A*	G15D 100A	G25D 100A	G35D 100A	F65DV 80-125/63-100 (100 A)
30			QF3 100A*	QH3 100 A*	G15D 100A	G25D 100A	G35D 100A	F65DV 80-125/63-100 (100 A)
37					G15D 125A	G25D 125A	G35D 125A	F65DV 80-125 (125 A)
45					G15D 125A	G25D 125A	G35D 125A	F65DV 80-125 (125 A)
55					F15D 175A	F25D 175A	F35D 175A	F65DV 160-250 (175A)
75					F15D 225A	F25D 225A	F25D 225A	F65DV 160-250 (225A)
90					F15D 250 A / F25D 250 A	F25D 250 A / F25D 250 A	F35D 250 A / F35D250 A	F65DV 250 A / K65DE 250 A)
110					K25D 350A	K25D 350A	K35D 350A	K65D 200-400 (350 A)
132					K25D 400A	K25D 400A	K35D 400A	K65D 200-400 (400A)
160					K35D 500A	K35D 500A	K35D 500A	K70D 300-630 (500 A)
200					K35D 600A	K35D 600A	K35D 600A	K70D300-630 (600A)
250					L35DE 800 (700 A)	L35DE 800 (700 A)	L35DE 800 (700 A)	L70DE 800 (700 A)
315					N85DE 1000 (900 A)	N85DE 1000 (900 A)	N85DE 1000 (900 A)	N85DE 1000 (900 A)
355					N85DE 1000 (1000 A)	N85DE 1000 (1000 A)	N85DE 1000 (1000 A)	N85DE 1000 (1000 A)
400					N85DE 1250 (1200 A)	N85DE 1250 (1200 A)	N85DE 1250 (1200 A)	N85DE 1250 (1200 A)
450					N85DE 1250 (1250 A)	N85DE 1250 (1250 A)	N85DE 1250 (1250 A)	N85DE 1250 (1250 A)
500					N85DE 1600 (1400 A)	N85DE 1600 (1400 A)	N85DE 1600 (1400 A)	N85DE 1600 (1400 A)
560					N85DE 1600 (1600 A)	N85DE 1600 (1600 A)	N85DE 1600 (1600 A)	N85DE 1600 (1600 A)
630					ACB2000CM (1750A)	ACB2000CM(1750A)	ACB2000CM(1750A)	ACB2000CM(1750A)
710					ACB2000CM(1900)	ACB2000CM (1900A)	ACB2000CM(1900A)	ACB2000CM (1900A)

Notes:

1) All information in this table is for reference and selection purposes only, and only direct line (DOL) starting.
2) Breaker selection is based on 4-pole three phase squirrel cage motors and certain deviations may be encountered for different motor manufacturers.
3) Circuit breaker settings are based on rated motor current multiplied by 1,6 to prevent starting current from exceeding the instantaneous pick-up current of the circuit breaker.
4) For complete details refer to the "Circuit Breaker Selection Guide for DOL Motor Starting".
[1]These are adjustable breakers and the current in ( ) is the ampere value that these breakers must be set at.

DOL: Contactor - Overload - MCCB Selection

Note: Customer to confirm motor FLC on site and adapt where necessary

Motor Rating 3PH Kw	400 V HP	FLC AC3 A	Contactor Type MCM	Rating AC3 A	OL Relay Type OR	Setting Range A	MCCB	Rating A	Cable Size mm^2
5,5	7,5	11,3	CC18	18	CMT12	9 to 13 A	G37D	20	2,5
7,5	10	15,2	CC18	18	CMT12	12 to 18 A	G37D	40	2,5
11	15	21,7	CC40	40	CMT32	18 to 25 A	G37D	40	4
15	20	29,3	CC40	40	CMT32	22 to 32 A	G37D	50	10
18,5	25	36	CC40	40	CMT32	24 to 36 A	G37D	63	10
22	30	41	CC50	50	CMT63	34 to 50 A	G37D	100	10
30	40	55	CC65	65	CMT63	45 to 65 A	G37D	100	16
37	50	68	CC85	85	CMT95	54 to 75 A	F37D	125	25
45	60	81	CC85	85	CMT95	70 to 95 A	F37D	125	35
55	75	99	CC100	100	CMT95	80 to 100 A	F37D	175	35
75	100	134	CC150	150	CMT150	110 to 150 A	F37D	225	50
90	125	161	CC185	185	CMT225	120 to 185 A	K50D	250	95
110	150	196	CC225	225	CMT225	160 to 240 A	K50D	350	95
132	180	231	CC225	225	CMT400	200 to 330 A	L65D	400	150
160	220	279	CC330	330	CMT400	260 to 400 A	L65D	500	185
200	270	349	CC400	400	CMT400	260 to 400 A	L65D	600	240
250	340	437	CC630	630	CMT800	400 to 600 A	L65D	700	300

Motor Rating 3PH Kw	500 V HP	FLC AC3 A	Contactor Type MCM	Rating AC3 A	OL Relay Type OR	Setting Range A	MCCB	Rating A	Cable Size mm^2
5,5	7,5	9	CC18	13	CMT12	7 to 10 A	G37D	16	1,5
7,5	10	12,1	CC18	13	CMT32	9 to 13 A	G37D	20	2,5
11	15	17,4	CC40	32	CMT32	16 to 22 A	G37D	40	2,5
15	20	23,4	CC40	32	CMT32	18 to25 A	G37D	40	6
18,5	25	28,9	CC40	32	CMT32	24 to36 A	G37D	50	6
22	30	33	CC50	43	CMT63	24 to 36 A	G37D	50	10
30	40	44	CC65	60	CMT63	34 to50 A	G37D	100	10
37	50	54	CC85	75	CMT95	45 to 65 A	G37D	100	16
45	60	65	CC85	75	CMT95	54 to 75 A	G37D	125	25
55	75	79	CC100	85	CMT150	63 to 85 A	G37D	125	35
75	100	107	CC150	100	CMT225	85 to 125 A	F37D	175	50
90	125	129	CC185	185	CMT225	120 to 185 A	F37D	200	50
110	150	157	CC185	180	CMT150	120 to185 A	K50D	250	95
132	180	184	CC225	200	CMT400	160 to 240 A	K50D	300	95
160	220	224	CC330	280	CMT400	200 to330 A	K50D	350	150
200	270	279	CC400	350	CMT400	260 to 400 A	K50D	400	185
250	340	349	CC630	500	CMT800	400 to 600 A	L65D	630	240

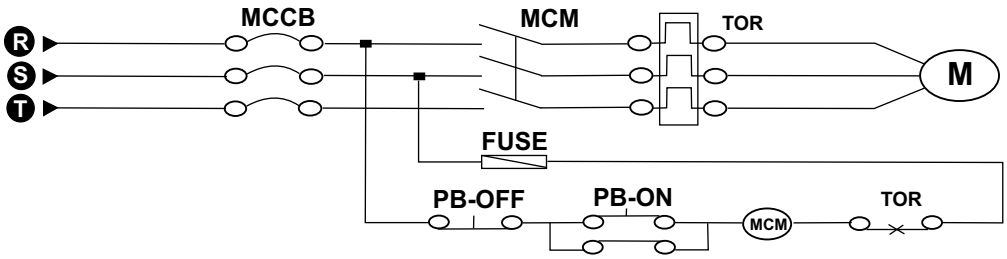
Star Delta Starting: Contactor - Overload - MCCB Selection

Note: Customer to confirm motor FLC on site and adapt where necessary

Motor Rating 3PH Kw	400V HP	FLC AC3 A	Main Contactor MCM type	Rating AC3 A	Delta Contactor Type MCD	Star Contactor Type MCY	TOR OL Relay Type CMT	Setting Range A	MCCB	Rating A	Cable Size mm^2
5,5	7,5	11,3	CC18	18	CC18	CC18	CMT12-6.5	5-8A	G37D	20	2,5
7,5	10	15,2	CC18	18	CC18	CC18	CMT12-8.5	7-10A	G37D	40	2,5
11	15	21,7	CC18	18	CC18	CC18	CMT12-15	12-18A	G37D	40	4
15	20	29,3	CC22	22	CC22	CC18	CMT32-19	16-22A	G37D	50	10
18,5	25	36	CC22	22	CC22	CC18	CMT32-21.5	18-25A	G37D	63	10
22	30	41	CC40	40	CC40	CC18	CMT32-27	22-32A	G37D	100	10
30	40	55	CC40	40	CC40	CC22	CMT32-34	28-40A	G37D	125	16
37	50	68	CC50	50	CC50	CC40	CMT63-42	34-50A	G37D	125	25
45	60	81	CC65	65	CC65	CC40	CMT63-42	34-50A	G37D	125	35
55	75	99	CC65	65	CC65	CC40	CMT63-55	45-65A	F37D	175	35
75	100	134	CC85	85	CC85	CC40	CMT95-74	63-85A	F37D	225	50
90	125	161	CC100	105	CC100	CC40	CMT95-90	80-100A	K50D	250	95
110	150	196	CC130	130	CC130	CC50	CMT150-113	95-130A	K50D	350	95
132	180	231	CC150	150	CC150	CC50	CMT150-130	110-150A	K50D	400	150
160	220	279	CC185	185	CC185	CC65	CMT225-153	120-185A	L65D	500	185

Motor Rating 3PH Kw	500 V HP	FLC AC3 A	Contactor Type MCM	Rating AC3 A	Delta Contactor Type MCD	Star Contactor Type MCY	OL Relay Type OR	Setting Range A	MCCB	Rating A	Cable Size mm^2
5,5	7,5	9	CC18	13	CC18	CC18	CMT12-5	4-6A	G37D	16	1,5
7,5	10	12,1	CC18	13	CC18	CC18	CMT12-6.5	5-8A	G37D	20	2,5
11	15	17,4	CC22	20	CC22	CC18	CMT12-11	9-13A	G37D	40	2,5
15	20	23,4	CC22	20	CC22	CC18	CMT32-15	12-18A	G37D	40	6
18,5	25	28,9	CC40	32	CC40	CC18	CMT32-15	12-18A	G37D	50	6
22	30	33	CC40	32	CC40	CC22	CMT32-19	16-22A	G37D	50	10
30	40	44	CC40	32	CC40	CC22	CMT32-27	22-32A	G37D	100	10
37	50	54	CC50	43	CC50	CC40	CMT32-34	24-36A	G37D	100	16
45	60	65	CC50	43	CC50	CC40	CMT63-42	34-50A	G37D	125	25
55	75	79	CC65	60	CC65	CC40	CMT63-42	34-50A	G37D	125	35
75	100	107	CC85	75	CC85	CC50	CMT95-65	54-75A	F37D	175	50
90	125	129	CC85	75	CC85	CC50	CMT95-74	63-85A	F37D	200	50
110	150	157	CC150	100	CC150	CC65	CMT150-93	80-105A	K50D	250	95
132	180	184	CC185	180	CC185	CC85	CMT225-107	85-125A	K50D	350	95
160	220	224	CC265	225	CC265	CC100	CMT400-130	100-160A	K50D	500	150

DOL Starting (Full Load)

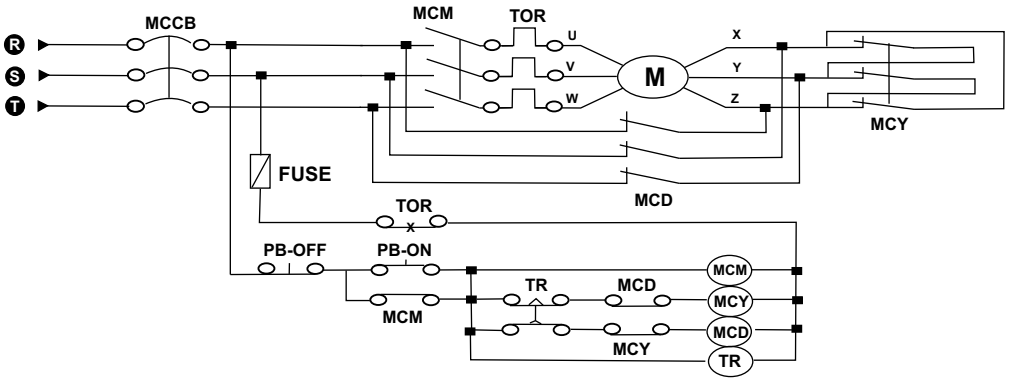


Conditions

1. The load shall be an Induction Motor with 3 phase and 4 Poles.
2. Overload relay setting range is selected according to the full load current of the motor.
3. Cross-section area of the cable is within the value that is connectable to the motor starter.
4. Circuit Breaker (MCCB) is for cable protection.

The breaking capacity of the MCCB should be reviewed according to site conditions.

Star Delta Starting Y:Δ



Conditions

1. The load shall be a squirrel cage motor with 3 phase and 4 Poles.
2. Overload relay setting range is selected according to the full load current of the motor.
3. When the Thermal Overload Relay (TOR) is placed in the area shown.
   the setting range should be divided by $\sqrt{3}$ (0,58)
4 Cross-section area of the cable is within the value that is connectable to the motor starter.
5. Thermal Circuit Breaker (MCCB) is for cable protection.
   The breaking capacity of the MCCB should be reviewed according to site conditions.
6. Thermal Overload Relay (TOR) mounting.*
   - Separately mountable with an optional mounting unit
   - Directly mountable when placed in the area shown in the dotted line

Note: * Contact CBI for availability

Terminations

G1

JSO / J25S

G4B

X3

K25D / K35D

G4B

X3

L20B / L40B

G4B

X1

X2

J25S/FD

G4

N50D / N70D

G4B

K50D

Notes:

Refer to product specific pages for actual terminal types - It might not be available as separate items if supplied as standard.

For relevant current carrying capacities, please refer to relevant products.

MCCB Terminal Bolt Sizes:

- J25S - M8
- L20/ L40B - M12
- G15/ 25D - M8
- G35D - M8
- F15/ 25D - M8
- F35D - M8
- K25/ 35D - M12
- L35/ 50D - M12
- MB - M12
- N85D - M12

MCCB Standard Range

- G37D - M8
- F37D - M8
- K50D - M10
- L65D - M12
- N65D - M12

MCCB Advanced Range

- G150D - M8
- F50D - M8
- F85D - M8
- F150D - M8
- K65D - M10
- K85D - M10
- K150D - M10
- L65D - M12
- L100D - M12
- N150D - M10 x 2
- N70D - M10 x 2
- N50D - M10 x 2

THIS IS A SERIES CONNECTED (CASCADING) SYSTEM

REPLACEMENT OF THE CIRCUIT BREAKERS OTHER THAN THOSE OF IDENTICAL TYPES

AND RATINGS SHOULD BE REFERRED TO THE CIRCUIT BREAKER MANUFACTURER

Cascading Tables

Note:

Any current limiting by the cables should be taken into account.

The Cascading Table is applied in practice as follows:

1. Determine the maximum prospective short circuit fault current level at the point of installation of the upstream breaker in the cascade.

2. Moving from the left side towards the right side of the cascading table, in the **top** row, select an upstream breaker whose breaking capacity rating is equal to or greater than determined by (1.) above.

3. Determine the prospective short circuit current at the installation point of the **downstream** breaker, taking into account only the current limiting effect of any cable that is connected between the upstream and downstream breakers. Any current limiting by the upstream breaker should be ignored for this purpose.

4. From the first column on the left of the cascading table, select the **row** that represents a short circuit current that is equal to or higher than this latter short circuit current.

5. The **downstream** breaker suitable for the cascading application will then be found at the intersection of the row from (2) above, and the column from (4) above.

Due to constant research and development, CBI reserves the right to make changes, modifications and extensions to these cascading tables without prior notice.

No substitute of any alternative products is allowed.

Care must be taken in replacing older product versions or obsolete ranges.

Cascading Table (CBI MCCBs)

Global Range Based

Type	G37D 15 - 125 A			F37D 150 - 250 A			K50D 250 - 400 A				L65D 500 - 800 A				BUSBAR RATING kA RMS
No of Poles	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Fault Level kA	15	25	35	15	25	35	15	25	35	50	25	35	50	65	
Downstream kA															
65											G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	20
50											G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	
35			QH/QF			QH/QF			G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	15
30			QH/QF			QH/QF			G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	
25		QF	QF		QF	QF		G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	
20		QF	QF		QF	QF		G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	G37D/ F37D	
15	QF	QF	QF	QF	QF	QF		QH,QF	QH,QF	QH,QF					10
10	QF	QF	QF	QF	QF	QF		QH/QF	QH/QF	QH/QF					

Cascading Table No. 1

Cascading Table No. 2

CASCADING TABLE (CBI MCCBs and MCBs)														
UPSTREAM CIRCUIT BREAKERS														
		G15D / F15D		G25D / F25D		G35D / F35D		F65DV		K25D	K35D	K65D	L65D	BUSBAR RATING kA RMS
No. OF POLES		3		3		3		3		3	3	3	3	
FAULT LEVEL kA		15		25		35		65		25	35	65	65	
AMP RATING		125	250	125	250	125	250	100	250	400	400	400	630	
PROSPECTIVE DOWNSTREAM FAULT LEVEL kA (RMS)	65							QH	QH				G15D / F15D	20
	50							QH	QH				G15D / F15D	
	35					QH QF1*	QH QF1*	QH QF1*	QH QF1*				G15D / F15D	15
	30					QF1 QF*	QF*	QF1 QF*	QF*		G15D / F15D	G15D / F15D	G15D / F15D	
	25			QF1 QF*	QF*	QF1 QF*	QF*	QF1 QF*	QF*	G15D / F15D	G15D / F15D	G15D / F15D QH	G15D / F15D	
	20			QF	QF1 QF*	QF	QF1 QF*	QF	QF1 QF*	G15D / F15D	G15D / F15D QH	G15D / F15D QH QF1	G15D / F15D	10
	15	QF	QF1 QF*	QF	QF1 QF*	QF	QF1 QF*	QF	QF1 QF*	QH QF1	QH QF1	QF1 QH		
	10	QF	QF	QF	QF	QF	QF	QF	QF	QF1	QF1	QF1		

NOTES:

QF = QF-(13), QF-(18), QF-(26)

QF* = QF-(18), QF-(26) ONLY

QF1, QF1* = Single pole circuit breakers

QF, QF*, QH = Single , double or triple pole circuit breakers

TYPE	MOUNTING TYPE	ESCUTCHEON, mm
QF/QH	Mini / DIN	57
	DIN	45

For more product information regarding cascading please contact CBI

F15D CAN CASCADE WITH ANY FD UPSTREAM BREAKER UP TO THE MAXIMUM FAULT LEVEL kA OF THE UPSTREAM BREAKER

Cascading Table No. 3

Protective Co-ordination

Cascading 380/415 System Voltage

Main: Advanced MCCB range **Branch: Global Standard & Advanced Range**

Main breaker		G150D	F50DEV	F150D	F50DEV	F85DV	K65DEV	L65DEV	L100DV	K150D	K150DEV	N70DEV
Rated breaking Capacity (kA rms)		150	50	150	50	85	65	65	100	150	150	70
Branch Breaker												
G37D	37	65	50	70	50	65	50			85	85	
F37D	37			70			50					
K50D	50								85	85	85	70
L65D	65							65	100			
F50DEV	50			150		85	65	65	100	150	150	70
F85DV	85			150					100	150	150	
K50DEV	65								100			70
L65DEV	65								100	150		70
L100DV	100											
L150DEV	150											
N150DEV	150											
N50DEV	50											70
N70DEV	70											

380/415V

Specific let-through energy curves

Mitsubishi DOL Starting

Mitsubishi DOL		
Motor Size (kW)	Three phase voltage - 400 V AC	Three phase voltage - 525 V AC
0.37	NF63-HVA 10 A, NV63-HVA 16 A, NV125-SVA/HVA 16 A	NF63-HVA 10 A, NV63-HVA 16 A, NV125-SVA/HVA 16 A
0.55	NF63-HVA 10 A, NV63-HVA 16 A, NV125-SVA/HVA 16 A	NF63-HVA 10 A, NV63-HVA 16 A, NV125-SVA/HVA 16 A
0.75	NF63-HVA 10 A, NV63-HVA 16 A, NV125-SVA/HVA 16 A	NF63-HVA 10 A, NV63-HVA 16 A, NV125-SVA/HVA 16 A
1.1	NF63-HVA 10 A, NV63-HVA 16 A, NV125-SVA/HVA 16 A	NF63-HVA 10 A, NV63-HVA 16 A, NV125-SVA/HVA 16 A
1.5	NF63-HVA 10 A, NV63-HVA 16 A, NV125-SVA/HVA 16 A	NF63-HVA 10 A, NV63-HVA 16 A, NV125-SVA/HVA 16 A
2.2	NF63-HVA 10 A, NV63-HVA 16 A, NV125-SVA/HVA 16 A	NF63-HVA 10 A, NV63-HVA 16 A, NV125-SVA/HVA 16 A
3	NF63-HVA 10 A, NV63-HVA 16 A, NV125-SVA/HVA 16 A	NF63-HVA 10 A, NV63-HVA 16 A, NV125-SVA/HVA 16 A
4	NF63-HVA 16 A, NF125-SVA/HVA 16 A, NV125-SVA/HVA 16 A	NF63-HVA 10 A, NV63-HVA 16 A, NV125-SVA/HVA 16 A
5.5	NF63-HVA 20 A, NF125-SVA/HVA 20 A, NV125-SVA/HVA 20 A	NF63-HVA 16 A, NF125-HVA 16 A, NV125-SVA/HVA 16 A
7.5	NF63-HVA 32 A, NF125-SVA/HVA 32 A, NV125-SVA/HVA 32 A	NF63-HVA20 A, NF125-HVA 20 A, NV125-SVA/HVA 20 A
11	NF63-HVA 40 A, NF125-SVA/HVA 40 A, NV125-SVA/HVA 40 A	NF63-HVA32 A, NF125-HVA 32 A, NV125-SVA/HVA 32 A
15	NF63-HVA 50 A, NF125-SVA/HVA 50 A, NV125-SVA/HVA 50 A	NF63-HVA40 A, NF125-HVA 40 A, NV125-SVA/HVA 40 A
18.5	NF63-HVA 63 A, NF125-SVA/HVA 63 A, NV125-SVA/HVA 63 A	NF63-HVA50 A, NF125-HVA 50 A, NV125-SVA/HVA 50 A
22	NF125-SVA/HVA 80 A, NV125-SVA/HVA 80 A	NF63-HVA50 A, NF125-HVA 50 A, NV125-SVA/HVA 50 A
30	NF125-SVA/HVA 100 A, NV125-SVA/HVA 100 A	NF125-SVA/HVA 80 A, NV125-SVA/HVA 80 A
37	NF250-SVA/HVA 125 A, NV125-SVA/HVA 125 A	NF125-SVA/HVA 80 A, NV125-SVA/HVA 80 A
45	NF250-SVA/HVA 125 A, NV125-SVA/HVA 125 A	NF125-SVA/HVA 100 A, NV125-SVA/HVA 100 A
55	NF250-SVA/HVA 175 A, NV250-SVA/HVA 175 A	NF250-SVA/HVA 125 A, NV250-SVA/HVA 125 A
75	NF250-SVA/HVA 225 A, NV250-SVA/HVA 225 A	NF250-SVA/HVA 175 A, NV250-SVA/HVA 175 A
90	NF250-/SVA/HVA 250 A, NF400-SW 250 A, NV400-SW 250 A	NF250-SVA/HVA 200 A, NV250-SVA/HVA 200 A
110	NF400-CW/SW 350 A, NV400-SW 350 A	NF250-SVA/HVA 250 A, NF400-CW/SW 250 A, NV400-SW 250 A
132	NF400-CW/SW 400 A, NV400-SW 400 A	NF400-CW/SW 300 A, NV400-SW 300 A
160	NF630-CW/SW 500 A, NV630-SW 500 A	NF400-SW 350 A, NV400-SW 350 A
200	NF630-CW/SW 600 A, NV630-SW 600 A	NF630-CW/SW 500 A, NV630-SW 500 A
250	NF800-CEW/SEW (700 A)*, NV800-SEW (700 A)*	NF630-CW/SW 600 A, NV630-SW 600 A
315	NF1000-SEW (900 A)*, AE1000-SW (900 A)*	NF800-CEW/SEW (700 A)*, NV800-SEW (700 A)*
355	NF1000-SEW (1000 A)*, AE1000-SW (1000 A)*	NF800-CEW/SEW (800 A)*, NV800-SEW (800 A)*
400	NF1250-SEW (1200 A)*, AE1250-SW (1200 A)*	NF1000-SEW (900 A)*, AE1000-SW (900 A)*
450	NF1250-SEW (1250 A)*, AE1250-SW (1250 A)*	NF1000-SEW (1000 A)*, AE1000-SW (1000 A)*
500	NF1600-SEW (1400 A)*, AE1600-SW (1400 A)*	NF1250-SEW (1200 A)*, AE1250-SW (1100 A)*
560	NF1600-SEW (1600 A)*, AE1600-SW (1600 A)*	NF1250-SEW (1200 A)*, AE1250-SW (1200 A)*
630	AE2000-SW/SWA (1750 A)*	NF1600-SEW (1400 A)*, AE1600-SW (1300 A)*
710	AE2000-SW/SWA (1900 A)*	NF1600-SEW (1500 A)*, AE1600-SW (1500 A)*