



C-line

Onload Changeover Switch-Disconnectors

About us

Larsen & Toubro is a technology-driven company that infuses engineering with imagination. The Company offers a wide range of advanced solutions in the field of Engineering, Construction, Electrical & Automation, Machinery and Information Technology.

L&T Switchgear, which forms part of the Electrical & Automation business, is India's largest manufacturer of low voltage switchgear, with the scale, sophistication and range to meet global benchmarks. With over five decades of experience in this field, the Company today enjoys a leadership position in the Indian market with growing presence in international markets.

It offers a complete range of products including controlgear, powergear, motor starters, energy meters, wires and host of other accessories. Most of our product lines conform to international standards, carry CE markings and are *KEMA* certified.



Switchgear Factory, Mumbai

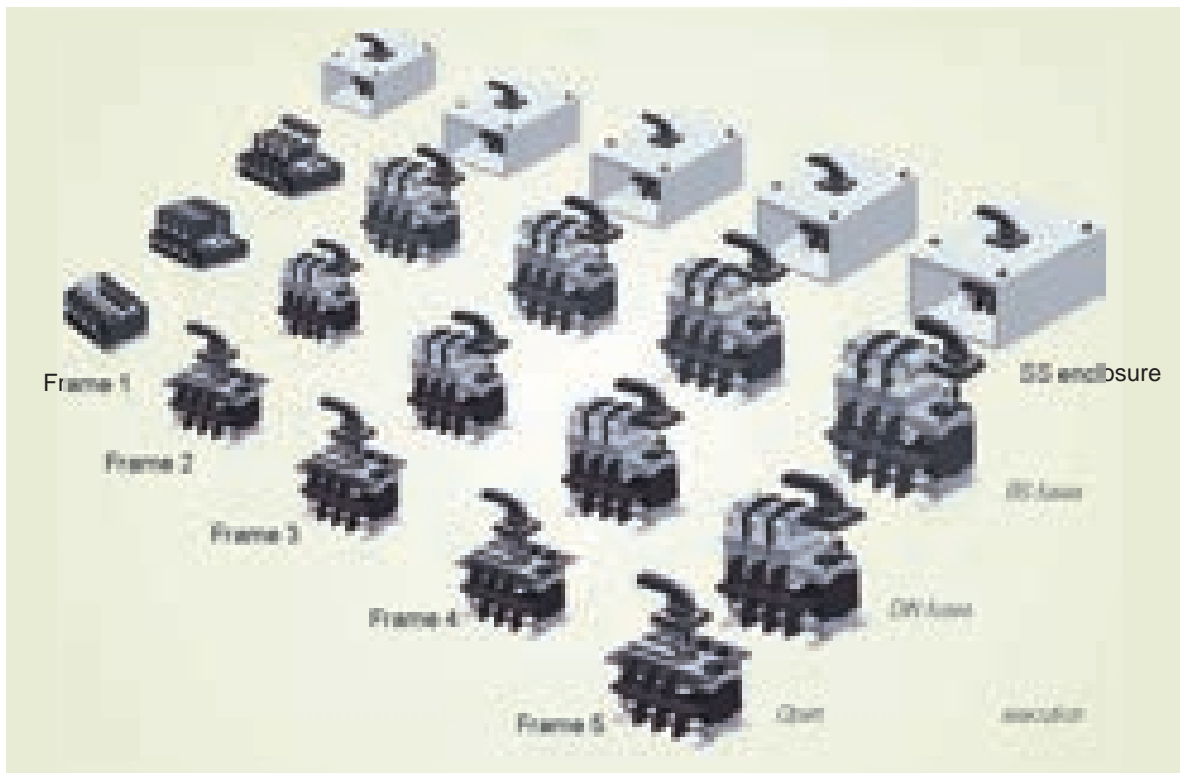


Switchgear Factory, Ahmednagar

Changeover Switches

C-Line offers you a unique series of changeover Switches combining compactness with high performance, thus, making C-line a state-of-the-art product in changeover technology.

The C-line range covers ratings from 63 A to 1000 A in 5 frame size. These changeover are available in open execution SS enclosures and fused version (type DIN / BS fuses).



Basic function of Changeover Switches

Onload Changeover S-D consists of two separate sets of terminals for connecting two incoming supplies and the output terminals need to be joined together to supply the common load. Thus, changeover ensures continuity of supply to the load by alternating between normal and alternate supply.

Manual Onload Changeover S-D has 3 stable positions as defined below

POSITION I

Switch is in ON position with normal supply available at the outgoing terminals.

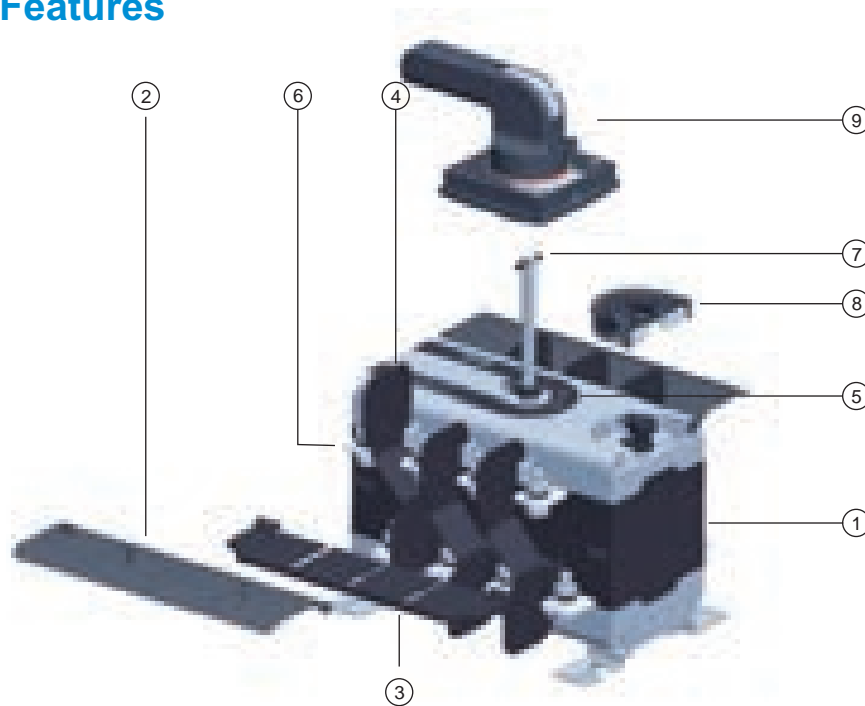
POSITION 0

Switch is in OFF position and both (normal and alternate supplies) are isolated from the outgoing terminals.

POSITION II

Switch is in ON position with alternate supply available at the outgoing terminals.

Product Features



1 Mechanism

A single, compact and modular mechanism cassette operates two Switch-Disconnectors and provides mechanical interlocking between them. The use of patented, self interlocked and dual dead center mechanism in C-line range provides higher reliability for changeover function.

2 Terminal shroud

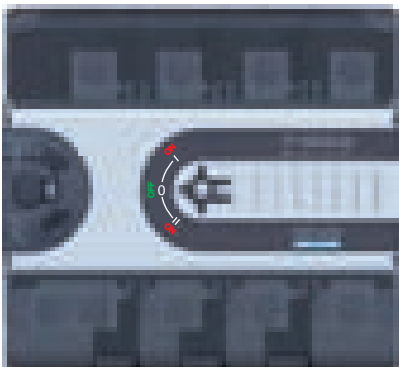
These shrouds provide complete touch proof design and prevent accidental touching of live terminals. They are click fit type. Due to hinge type design terminal, shrouds can be turned by 90 degree, hence terminals can be inspected without removing these shrouds.

3 Source separator

Source separator is used to isolate two incoming supplies and to eliminate possibility of flash over between two supplies due to accidental falling of external objects.

4 Inter-phase barriers

Inter-phase barriers are provided for additional safety to eliminate possibility of inter-phase short-circuit.



5 Positive on / off indication of S-Ds

Changeover S-D indicates true position of contacts.

6 Staggered terminals

The C-line Changeover S-Ds are designed to have staggered terminal arrangement for top and bottom S-Ds. It provides clear access to all terminals from the front, ensuring ease of termination. All terminal joints can be easily inspected without the need of removing termination of top S-D.



7 Interchangeable dual shaft position with site convertibility

Patented dual dead center mechanism enables the user to opt between central or side shaft positions for operating handle. This can be easily converted on site as required.

8 Auxiliary contact kit

It consists of two changeover contacts one for each S-D. This kit is pre-wired with terminal blocks and can be fitted at the site without increasing overall dimension.

9 Handle

The Changeover Switch has a unique flip-able operating handle for ratings 400 Amp and above which enables user to operate the switch with two hands. The handle also offers the following features:

- Provision for providing 3 padlocks in OFF Position
- Defeat feature in both ON states and auto restoration of panel door
- IP54 with all varied depth type operating handle



One hand type handle
up to 315 A rating



Two hand type for above
400 A rating



Changeover unit pad
lockable in OFF state by 3 pad locks

Superior Performance

Highest short-time ratings

Contact system is of double break, knife type having self wiping action with electrodynamic compensation. This ensures reliable performance during normal as well as most severe short circuit fault conditions, offering higher short-time withstand rating.

Highest life

C-line switch offers highest electrical and mechanical life in compact frame sizes. The electrical and mechanical life are two times the requirement of the standard.

Higher neutral ratings

Four pole configuration is with 100% neutral rating. 150% & 200% neutral ratings are also available.

Total flexibility of connection

Factory fitted external shorting links can be easily removed and fitted on the other side as required at site. This gives more flexibility at the time of installation.

Maximum termination capacity

The C-line range provides generous terminal capacity in its compact size facilitating aluminium termination.

Higher ground clearance

Higher ground clearance between terminals and mounting base plate ensures adequate clearance even after connecting cables. This eliminates the possibility of phase to ground flashover.

Total safety

C-line Changeover Switch provides complete safety by providing terminal shrouds, source separator and inter-phase barriers

Product Range

Onload Changeover S-Ds are available from 63 A to 1000 A. The range is covered through 5 frames as shown below.

| Frame No. | Ratings (A) | | |
|-----------|-------------|-----|------|
| 1* | 63 | 100 | |
| 2 | 125 | 160 | 200 |
| 3 | 250 | 315 | |
| 4 | 400 | 630 | |
| 5 | 630 | 800 | 1000 |

*to be introduced soon

Versions

C-line Changeovers are available with and without fuses, suitable for open execution and in sheet steel (SS) enclosures.

Changeover S-D suitable for open execution

Changeover S-D, which can be commissioned in panels, are of open execution type and provide IP30 protection from front.

Onload changeover S-D in SS enclosures

Onload Changeover S-Ds are available in sheet steel enclosure with adequate space for cable terminations so that additional cable entry boxes are not required. Cable gland plates are also provided with the switch. Enclosure provides IP54 protection

Changeover S-D suitable for HRC fuses

The Changeover S-Ds can be easily converted to fused version at site by using fuse conversion kit. It provides the benefits of overload and short circuit protection through the fastest switching device-fuse, and is suitable for knife type (DIN) and bolted type (DIN) and bolted type (BS) fuse links. Use of L&T HN fuse links reduces watt loss.

Technical Specifications



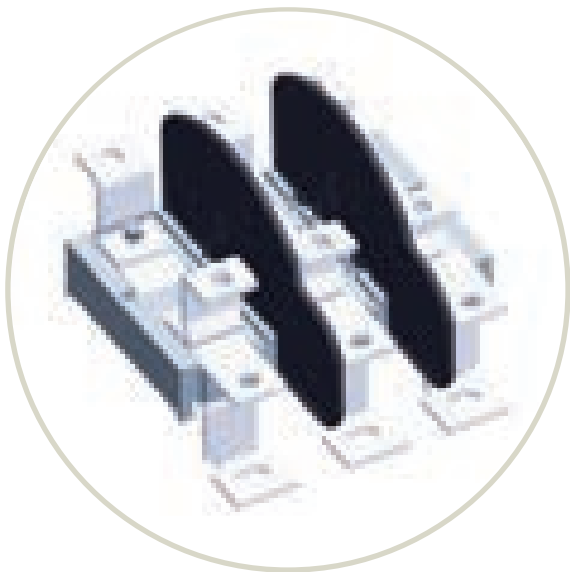
| Rating (A) | Unit | Frame 2 | | | Frame 3 | | Frame 4 | | Frame 5 | | | | |
|--|--|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|----------|-------|-----|
| | | 125 A | 160 A | 200 A | 250 A | 315 A | 400 A | 630 A | 630 A | 800 A | 1000 A | | |
| Reference Standards | IEC 60947-3, EN 60947-3, IS 13947 (Part 3) | | | | | | | | | | | | |
| Type designation | | CO2-125 | CO2-160 | CO2-200 | CO3-250 | CO3-315 | CO4-400 | CO4-630 | CO5-630 | CO5-800 | CO5-1000 | | |
| No. of Poles | | 4 Pole | 4 Pole | 4 Pole | 4 Pole | 4 Pole | 4 Pole | 4 Pole | 4 Pole | 4 Pole | 4 Pole | | |
| Rated operational voltage (U _e) | (V) | 415 | 415 | 415 | 415 | 415 | 415 | 415 | 415 | 415 | 415 | | |
| Rated frequency | (Hz) | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | | |
| Rated impulse withstand voltage (U _{imp}) | (kV) | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | | |
| Pollution degree | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | |
| Conventional free air thermal current, I _{th} at 40°C | (A) | 125 | 160 | 200 | 250 | 315 | 400 | 630 | 630 | 800 | 1000 | | |
| Conventional enclosed thermal current, I _{the} at 40°C | (A) | 125 | 160 | 200 | 250 | 315 | 400 | 630 | 630 | 800 | 1000 | | |
| Rated operational current, I _e AC-21A / AC-22A / AC-23A | (A) | 125 | 160 | 200 | 250 | 315 | 400 | 630 | 630 | 800 | 1000 | | |
| Rated operational power for AC-23A* | (kW) | 65 | 85 | 100 | 132 | 160 | 225 | 315 | 315 | 400 | 450 | | |
| Rated breaking capacity for AC-23A | (A) | 1000 | 1280 | 1600 | 2000 | 2520 | 3200 | 5040 | 5040 | 6400 | 8000 | | |
| Rated making capacity for AC-23A | (A) | 1250 | 1600 | 2000 | 2500 | 3150 | 4000 | 6300 | 6300 | 8000 | 10000 | | |
| Short time withstand, I _{cw} | 1 sec | (kA rms) | 8 | 8 | 10 | 16 | 18 | 22 | 26 | 35 | 50 | 50 | |
| | 0.2 sec | (kA rms) | 18 | 18 | 18 | 28 | 28 | 35 | 35 | 70 | 85 | 85 | |
| Short-circuit making capacity, I _{cm} | (kA peak) | 14 | 14 | 17 | 32 | 36 | 46 | 55 | 73.5 | 105 | 105 | | |
| Endurance (category A) | Mechanical | (O-I-O-II-O cycle) | 16000 | 16000 | 16000 | 16000 | 16000 | 10000 | 10000 | 10000 | 10000 | 10000 | |
| | Electrical | (O-I-O-II-O cycle) | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 1000 | 1000 | |
| Type and size of fuse | DIN | | 00 | 00 | 00 | 1 | 1 | 2 | NA | 3 | 3 | NA | |
| | BS | | A4 | B2 | B2 | B3 | B3 | B4 | | C2 | C3 | | |
| Rated fused short-circuit current at 415 V, 50/60 Hz | DIN | (kA rms) | 100 | 100 | 100 | 100 | 100 | 100 | | 100 | 100 | | 100 |
| | BS | (kA rms) | 80 | 80 | 80 | 80 | 80 | 80 | | 80 | 80 | | 80 |
| Termination Capacity | | | | | | | | | | | | | |
| Maximum Al. cable with lug | (sq mm) | 95 | 95 | 150 | 185 | 240 | 2 x 300 | 2 x 300 | 2 x 400 | 2 x 400 | 2 x 400 | | |
| Maximum link width | (mm) | 30 | 30 | 30 | 40 | 40 | 50 | 50 | 60 | 60 | 60 | | |
| Maximum link thickness | (mm) | 5 | 5 | 6 | 8 | 8 | 8 | 2 x 8 | 2 x 10 | 2 x 10 | 2 x 10 | | |
| Termination tightening torque | (N-m) | 10 | 10 | 20 | 20 | 20 | 27 | 27 | 35 | 35 | 35 | | |
| Operating torque center / side operating | (N-m) | 10 / 13 | 10 / 13 | 10 / 13 | 20 / 25 | 20 / 25 | 28 / 32 | 28 / 32 | 30 / 40 | 30 / 40 | 30 / 40 | | |
| Weight (without accessories) | (Kg) | 4 | 4 | 4.5 | 6.5 | 7 | 14 | 14.5 | 20 | 22 | 22 | | |

*These values are for 4 pole squirrel cage induction motors and are provided only for guidance and may vary as per the motor manufacturer.

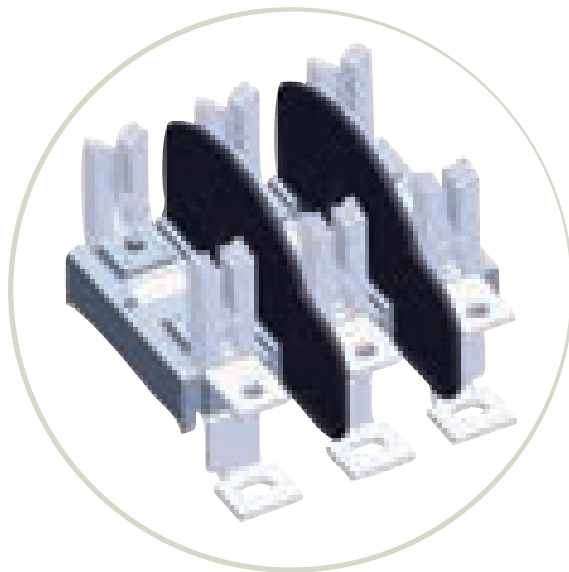
Accessories

Fuse conversion kit

Fuse Conversion Kit is available with knife type (DIN) and bolted type (BS) fuse links. Changeover Switch can be converted to fused version at site.



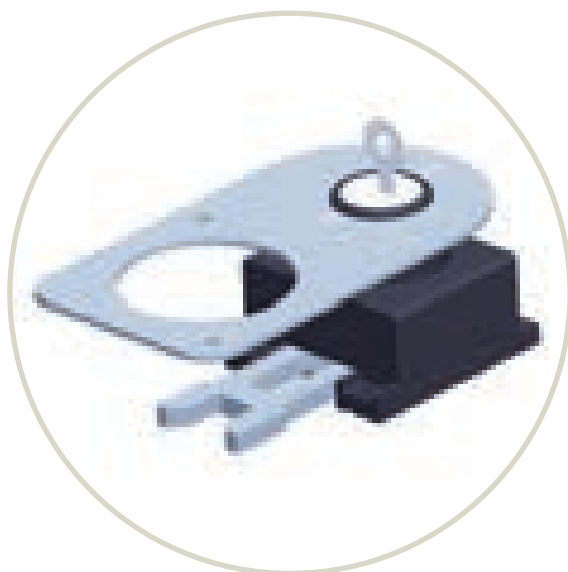
Fuse Conversion Kit Type BS



Fuse Conversion Kit Type DIN

Castell lock

Accessory to lock the Changeover Switch in OFF state and using this can have interlocking schemes with MCCB/ACB.



Ordering Information

Onload changeover switches

| Description | 125 A | 160 A | 200 A | 250 A | 315 A | 400 A | 630 A | 630 A | 800 A | 1000 A |
|---------------------------------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|
| Onload Changeover Switch-Disconnecter | CO212500000 | CO216000000 | CO220000000 | CO325000000 | CO331500000 | CO440000000* | CO463000000* | CO563000000* | CO580000000* | CO510000000* |
| Onload Changeover in SS enclosure | CO212500S00 | CO216000S00 | CO220000S00 | CO325000S00 | CO331500S00 | CO440000S00* | CO463000S00* | CO563000S00* | CO580000S00* | CO510000S00* |

* Includes Standard Auxiliary Contact Kit

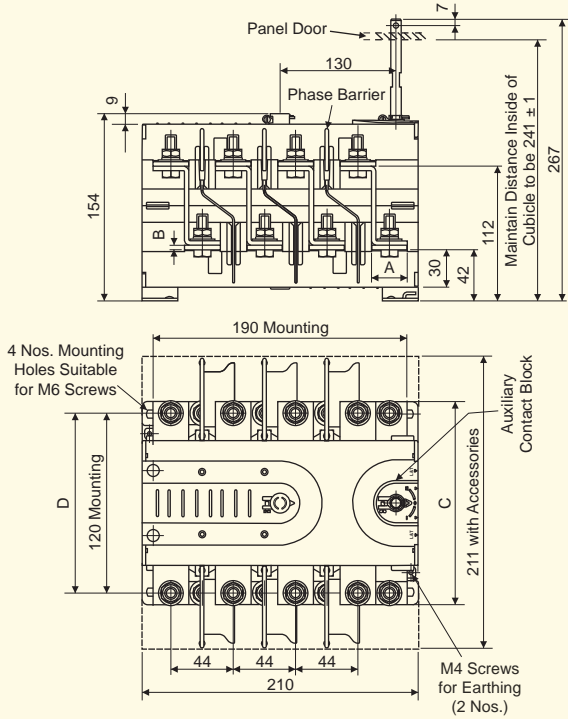
Spares & accessories

| Description | 125 A | 160 A | 200 A | 250 A | 315 A | 400 A | 630 A | 630 A | 800 A | 1000 A |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------|-------------|-------------|-------------|
| Fuse Conversion Kit for DIN type Fuses | CX2125000D0 | CX2160000D0 | CX2200000D0 | CX3250000D0 | CX3315000D0 | CX4400000D0 | NA | CX5630000D0 | CX5800000D0 | NA |
| Fuse Conversion Kit for BS type Fuses | CX2125000B0 | CX2160000B0 | CX2200000B0 | CX3250000B0 | CX3315000B0 | CX4400000B0 | | CX5630000B0 | CX5800000B0 | |
| Operating Handle | CX300010000 | | | | | CX400010000 | | CX500010000 | | |
| Auxiliary Contact Kit | CX200020000 | | CX300020000 | | | CX400020000 | | CX500020000 | | |
| Castell Lock | CX500040000 | | | | | | | | | |
| External Shorting link | CX216050000 | | CX220500000 | CX300050000 | | CX400050000 | | CX563050000 | CX580050000 | CX510050000 |
| Terminal Shroud | CX200060000 | | | CX300060000 | | CX400060000 | | CX500060000 | | |
| Inter-phase Barriers | CX200070000 | | | CX300070000 | | CX400070000 | | CX500070000 | | |
| Phase Barrier for Fused version | CX200080000 | | | CX300080000 | | CX400080000 | NA | CX500080000 | | NA |
| Source Separator | CX200090000 | | | CX300090000 | | CX400090000 | | CX500090000 | | |

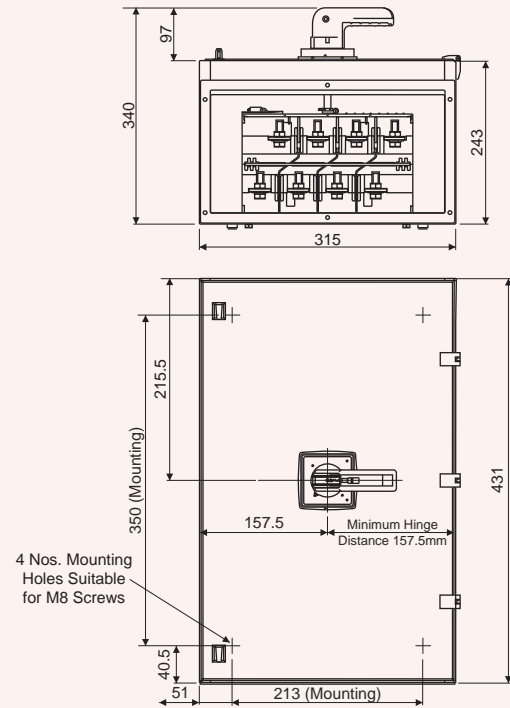
Overall Dimensions CO2 - 125 / 160 / 200

Open Execution

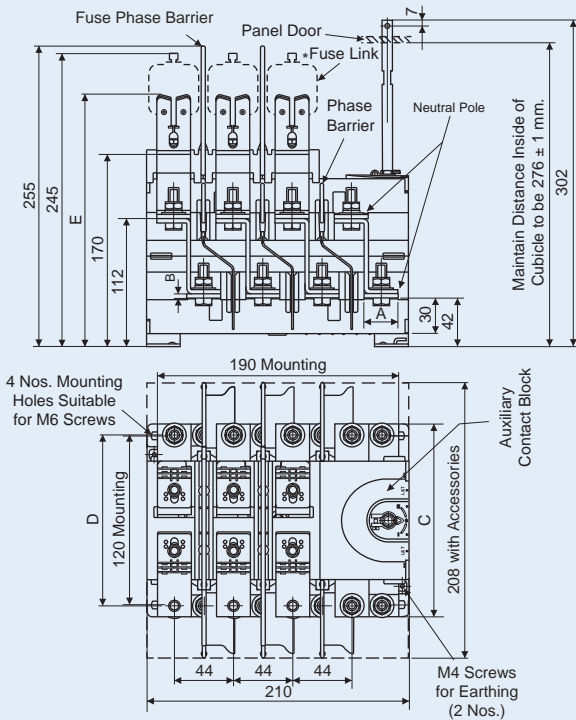
| | A | B | C | D | E |
|---------|----|---|-----|-----|-----|
| CO2-125 | 22 | 3 | 138 | 121 | 220 |
| CO2-160 | 22 | 3 | 138 | 121 | 203 |
| CO2-200 | 26 | 5 | 150 | 121 | 204 |



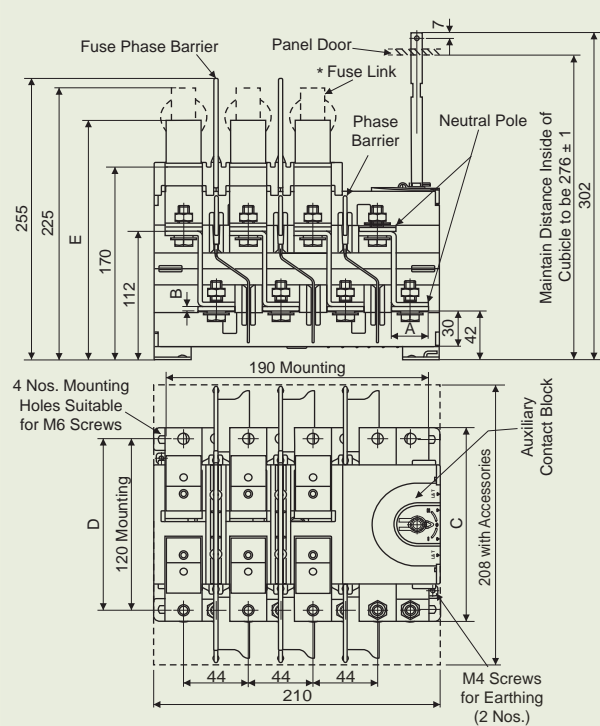
In SS Enclosure



For DIN Type Fuses



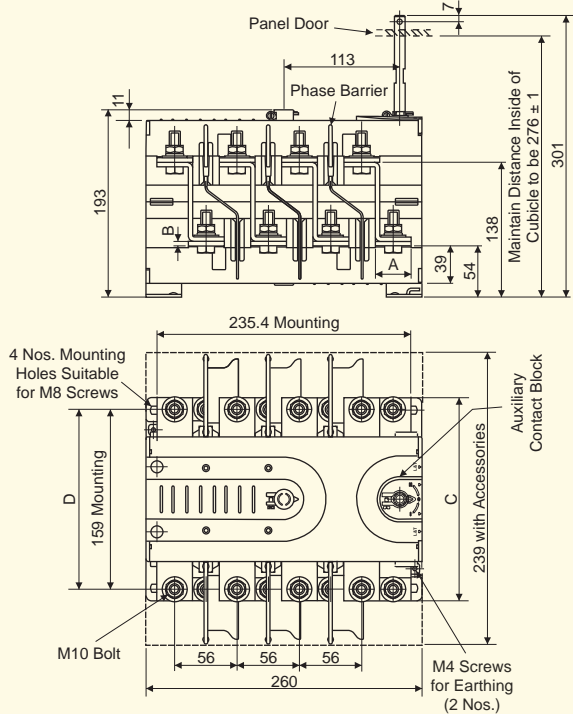
For BS Type Fuses



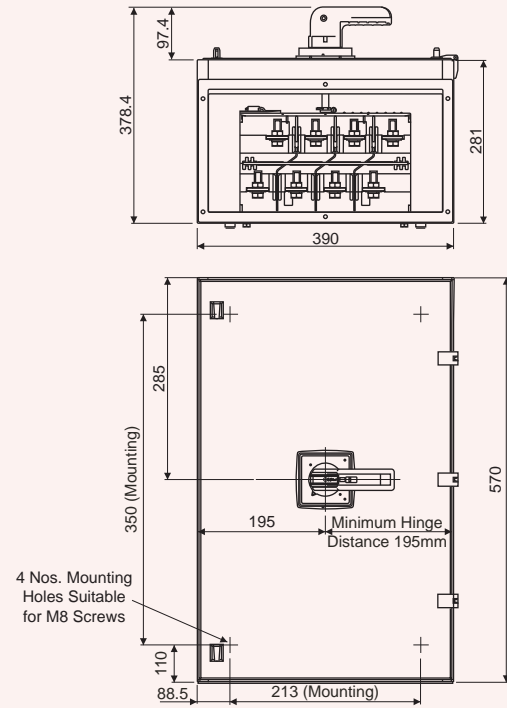
Overall Dimensions CO3 - 250 / 315

Open Execution

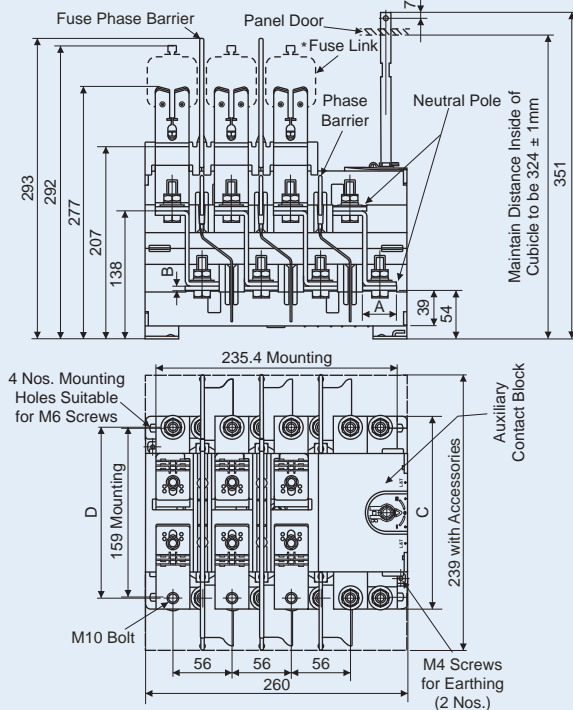
| | A | B | C | D |
|---------|----|-----|-----|-----|
| CO3-250 | 29 | 4.5 | 182 | 156 |
| CO3-315 | 35 | 5 | 198 | 164 |



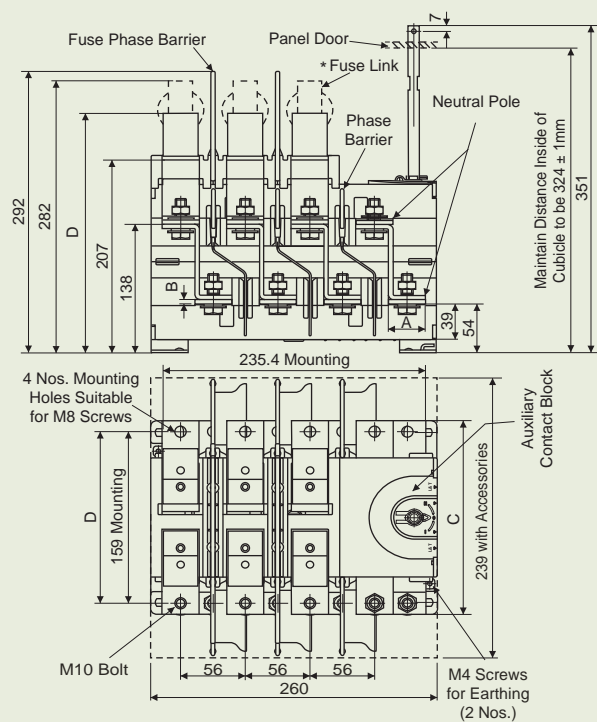
In SS Enclosure



For DIN Type Fuses



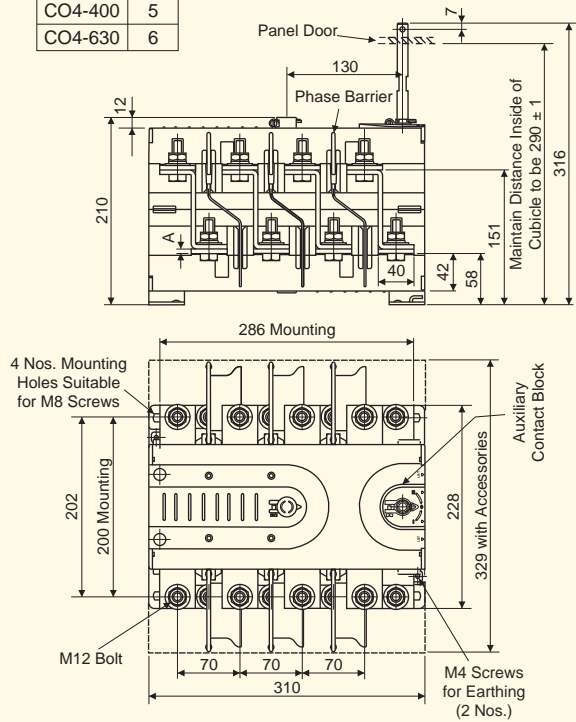
For BS Type Fuses



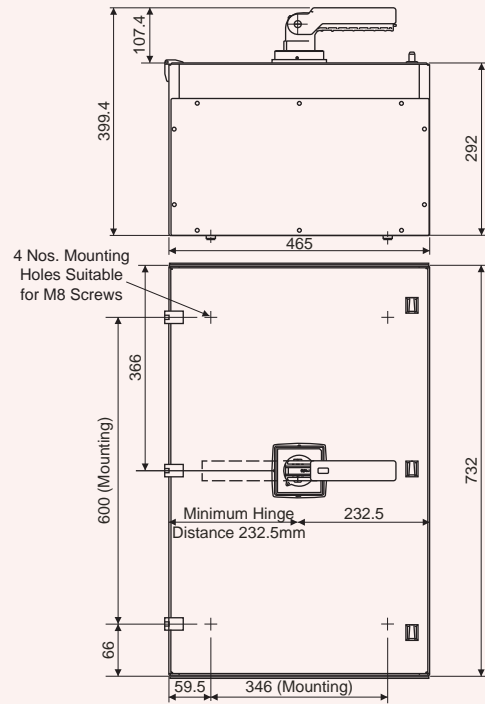
Overall Dimensions CO4 - 400 / 630

Open Execution

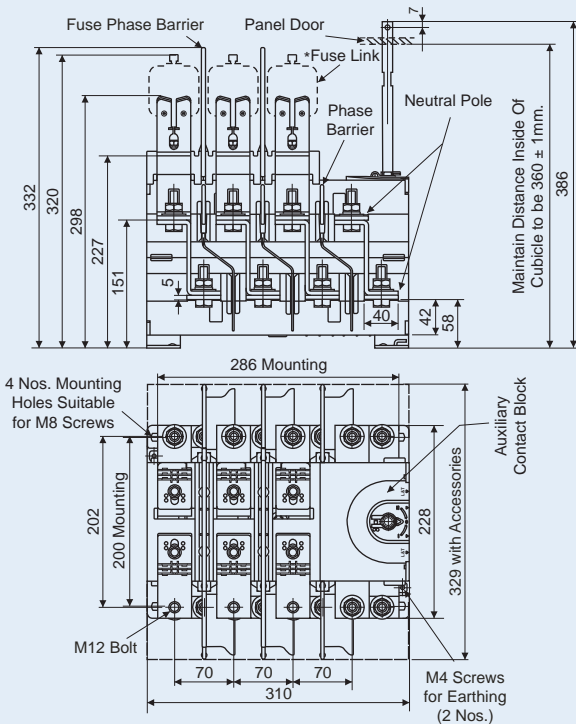
| | A |
|---------|---|
| CO4-400 | 5 |
| CO4-630 | 6 |



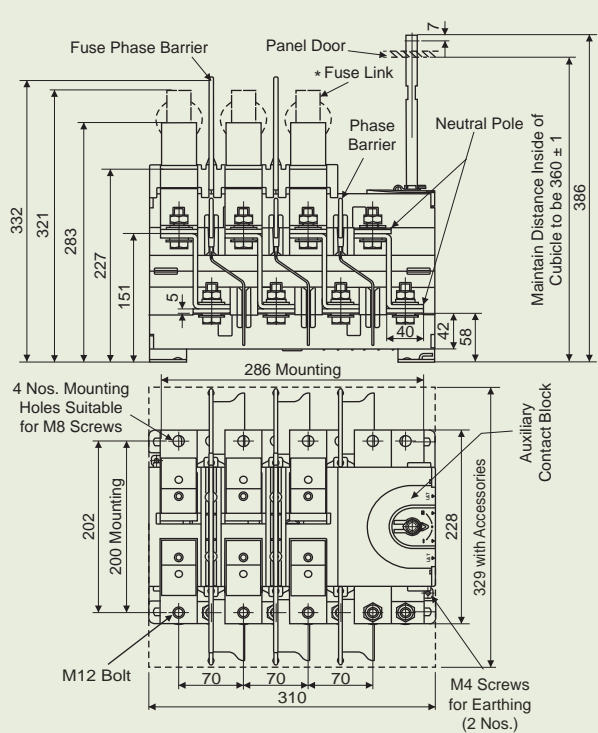
In SS Enclosure



For DIN Type Fuses



For BS Type Fuses

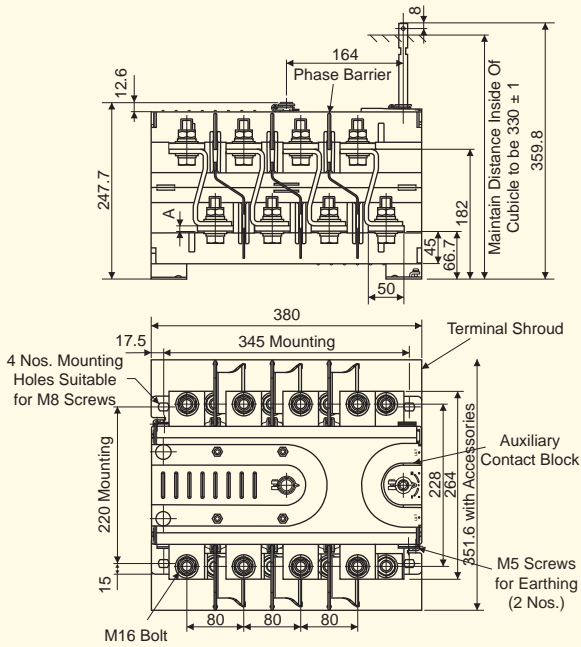


All Dimensions are in mm. *Fused version available in 400 A only.

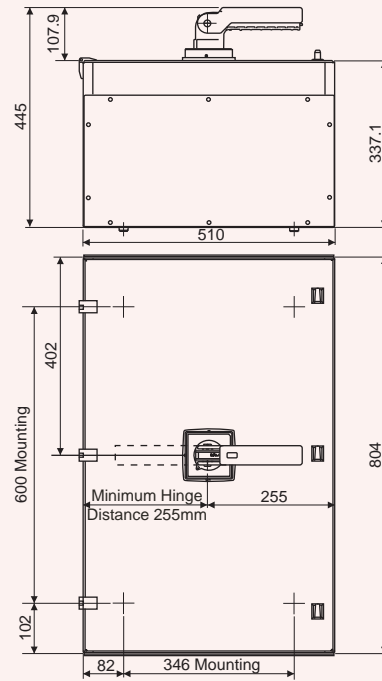
Overall Dimensions CO5 - 630 / 800 / 1000

Open Execution

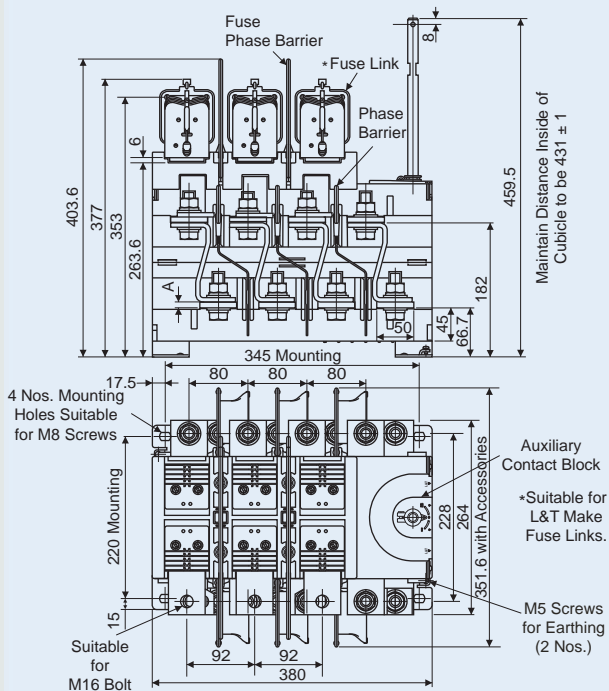
| | A |
|----------|---|
| CO5-630 | 6 |
| CO5-800 | 8 |
| CO5-1000 | 8 |



In SS Enclosure



For DIN Type Fuses*



For BS Type Fuses*

