



c-line

Onload Changeover Switch-Disconnectors



The Company

Larsen & Toubro is a technology-driven USD 8.5 billion 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 is a 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 four 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 a host of other accessories. Most of our product lines conform to international standards, carry CE markings and are KEMA certified.

L&T has been the market leader for Switch-Disconnecter Fuses for more than two decades. L&T now introduces C-line, the new generation of Changeover Switch-Disconnectors.

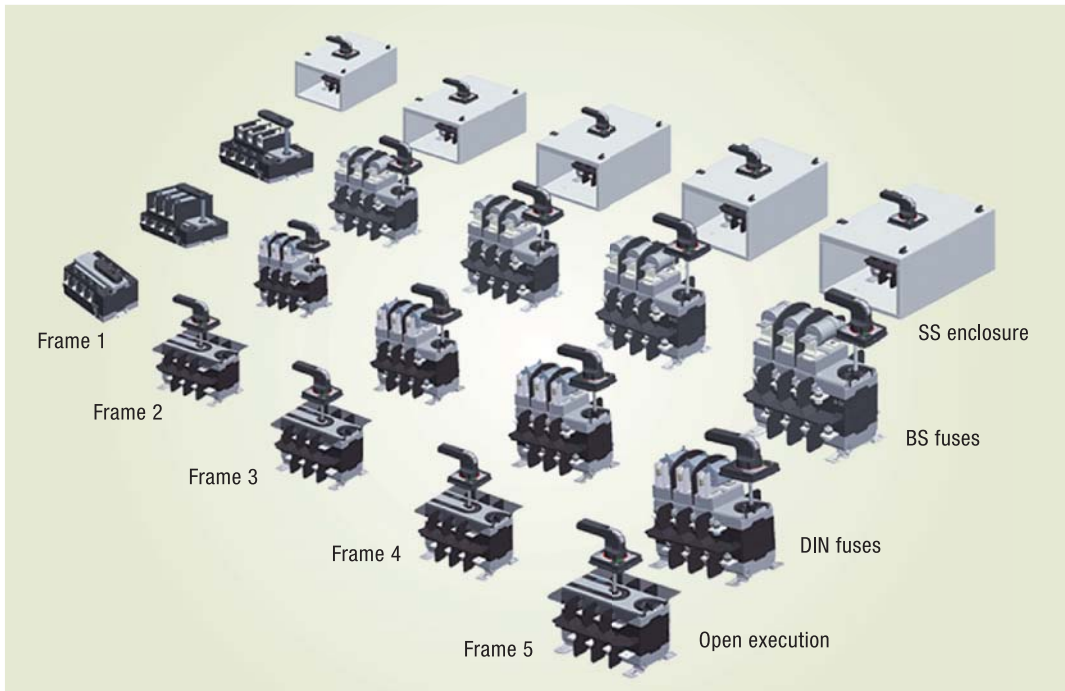


Powai Switchgear Factory, Mumbai.

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 sizes. These changeovers are available in open execution SS enclosures and fused version (type DIN / BS fuses)



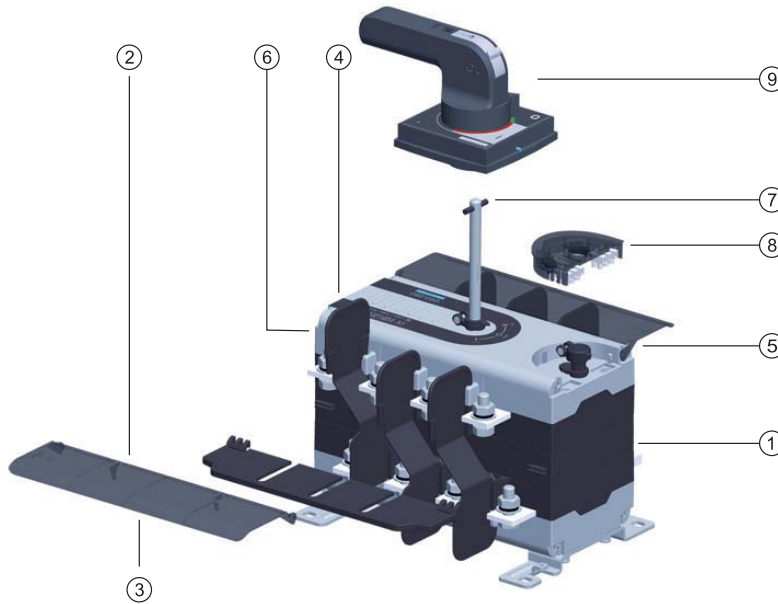
Basic function of Changeover Switches

Onload Changeover S-D consists of two separate set 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	POSITION O	POSITION II
Switch is in ON position with normal supply available at the outgoing terminals.	Switch is in OFF position and both (normal and alternate supplies) are isolated from the outgoing terminals.	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 auxiliary contacts, each with 1 NO + 1 NC. 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 flipable 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 handles



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.

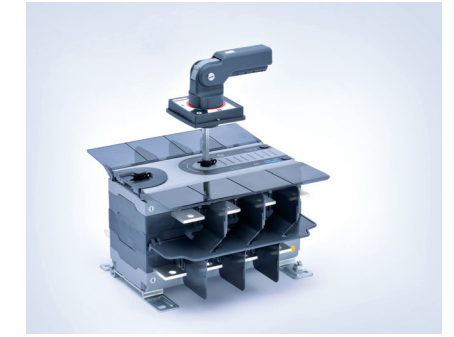
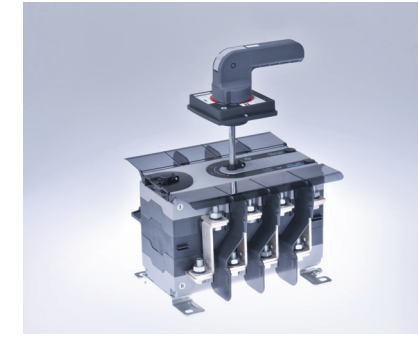
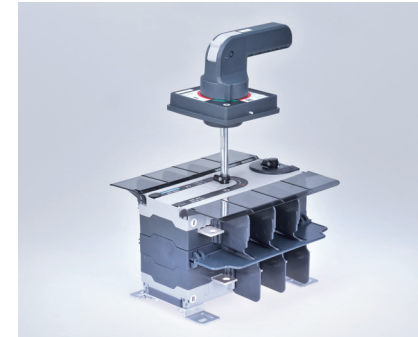
Onload changeover S-D in SS enclosures

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 (BS) fuse links. Use of L&T HN fuse links reduces watt loss.

Technical Specifications



Rating (A)	Unit	Frame 2			Frame 3		Frame 4		
		125 A	160 A	200 A	250 A	315 A	400 A	630 A	
Reference standards	IEC 60947-3, EN 60947-3, IS 13947 (Part 3)								
Type designation		C02-125	C02-160	C02-200	C03-250	C03-315	C04-400	C04-630	
No. of poles		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	
Rated frequency	(Hz)	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	
Pollution degree		3	3	3	3	3	3	3	
Conventional free air thermal current, I _{thb} at 40°C	(A)	125	160	200	250	315	400	630	
Conventional enclosed thermal current, I _{the} at 40°C	(A)	125	160	200	250	315	400	630	
Rated operational current, I _e AC-21 A / AC-22 A / AC-23 A	(A)	125	160	200	250	315	400	630	
Rated operational power for AC-23*	(kW)	65	85	100	132	160	225	315	
Rated breaking capacity for AC-23 A	(A)	1000	1280	1600	2000	2520	3200	5040	
Rated making capacity for AC-23 A	(A)	1250	1600	2000	2500	3150	4000	6300	
Short-time withstand, I _{cw}	1 sec	(kA rms)	8	8	10	16	18	22	26
	0.2 sec	(kA rms)	18	18	18	28	28	35	35
Short-circuit making capacity, I _{cm}	(kA peak)	14	14	17	32	36	46	55	
Endurance (category A)	Mechanical	(O-I-O-II-O cycle)	16000	16000	16000	16000	16000	10,000	10,000
	Electrical	(O-I-O-II-O cycle)	2000	2000	2000	2000	2000	2000	2000
Type and size of fuse	DIN		00	00	0	1	1	2	NA [#]
	BS		A4	B2	B2	B3	B3	B4	
Rated fused short-circuit current at 415 V, 50 / 60 Hz	DIN (kA rms)	100	100	100	100	100	100	100	
	BS (kA rms)	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	
Maximum link width	(mm)	30	30	30	40	40	50	50	
Maximum link thickness	(mm)	5	5	6	8	8	8	2x8	
Termination tightening torque	(N-m)	10	10	20	20	20	27	27	
Operating torque Center / Side operation	(N-m)	10/13	10/13	10/13	20/25	20/25	28/32	28/32	
Weight	(Kg)	4	4	4.5	6.5	7	14	14.5	

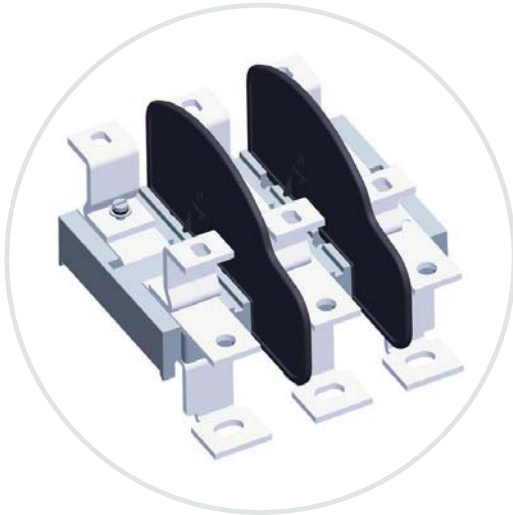
*These values are for 4 pole squirrel cage induction motors and are provided only for guidance and may vary as per the motor manufacturer.

[#]Fused version is not available in 630 A

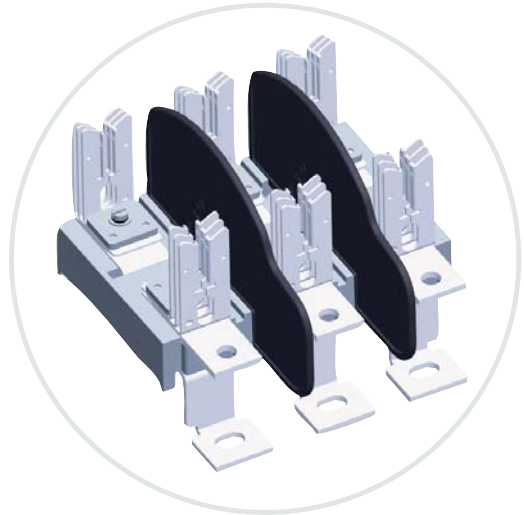
Accessories

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.



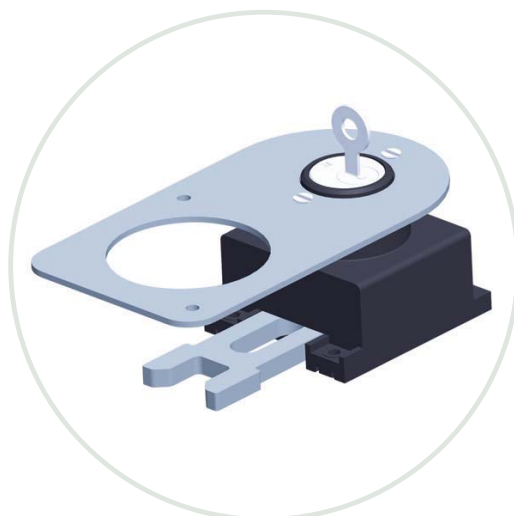
Fuse Conversion Kit Type BS



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
Onload Changeover Switch-Disconnecter	C0212500000	C0216000000	C0220000000	C0325000000	C0331500000	C0440000000	C0463000000
Onload Changeover in SS enclosure	C0212500S00	C0216000S00	C0220000S00	C0325000S00	C0331500S00	C0440000S00	C0463000S00
Changeover Switches with DIN type Fuses	C0212500D00	C0216000D00	C0220000D00	C0325000D00	C0331500D00	C0440000D00	NA
Changeover Switches with BS type Fuses	C0212500B00	C0216000B00	C0220000B00	C0325000B00	C0331500B00	C0440000B00	

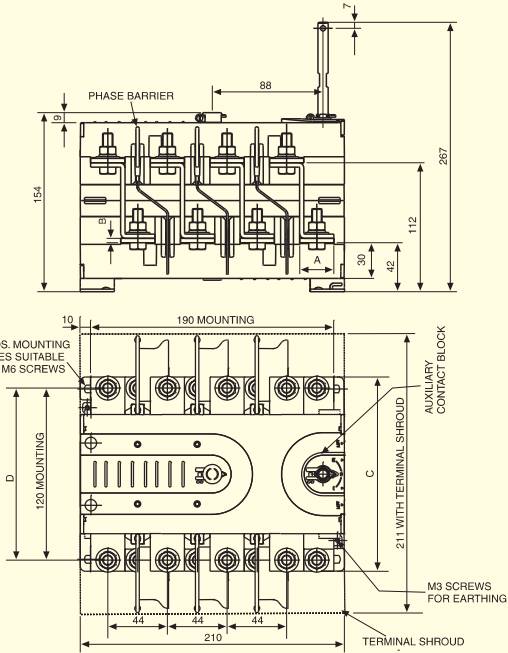
Spares & accessories

Description	125 A	160 A	200 A	250 A	315 A	400 A	630 A
Fuse Conversion Kit for DIN type Fuses	CX212500D00	CX216000D00	CX220000D00	CX325000D00	CX331500D00	CX440000D00	NA
Fuse Conversion Kit for BS type Fuses	CX212500B00	CX216000B00	CX220000B00	CX325000B00	CX331500B00	CX440000B00	
Operating Handle	CX200010000					CX400010000	
Auxiliary Contact Kit	CX200020000		CX300020000			CX400020000	
Castell Lock	CX200040000						
External Shorting link	CX216050000		CX220050000	CX300050000		CX400050000	
Terminal Shroud	CX200060000			CX300060000		CX400060000	
Inter-phase Barriers	CX200070000			CX300070000		CX400070000	
Phase Barrier for Fused version	CX200080000			CX300080000		CX400080000	NA
Source Separator	CX200090000			CX300090000		CX400090000	

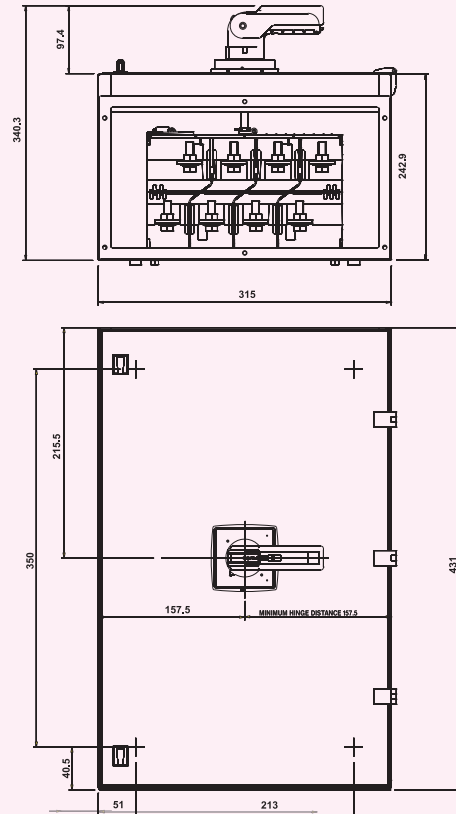
Overall Dimensions CO2-125 / 160 / 200

Open Execution

	A	B	C	D	TERMINATION BOLT
CO2-125	22	3	138	121	M8
CO2-160	22	3	138	121	M8
CO2-200	26	5	145	124	M10

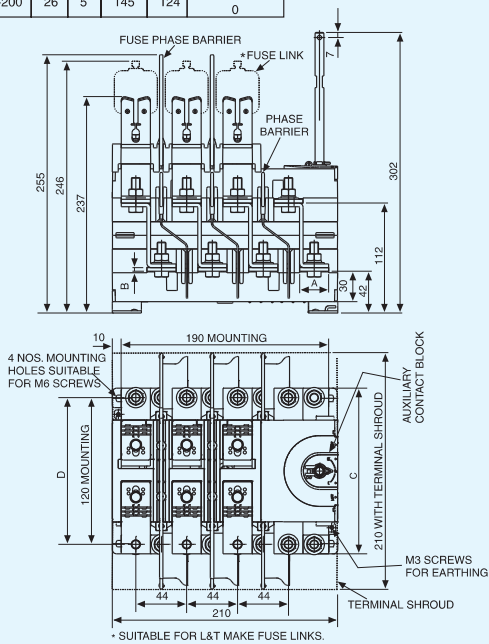


In SS Enclosure



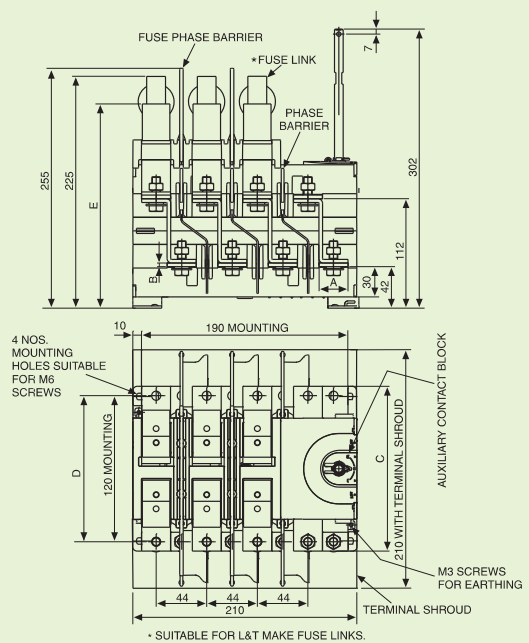
For DIN Type Fuses

	A	B	C	D	SIZE OF FUSE
CO2-125	22	3	138	121	SIZE 00
CO2-160	22	3	138	121	SIZE 00
CO2-200	26	5	145	124	SIZE 0



For BS Type Fuses

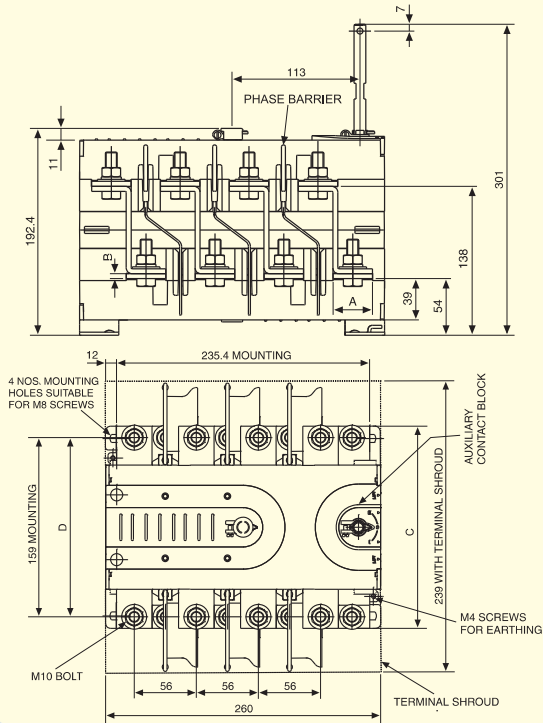
	A	B	C	D	E	SIZE OF FUSE
CO2-125	22	3	138	121	220.3	A4
CO2-160	22	3	138	121	203.3	B2
CO2-200	26	5	145	124	204.3	B2



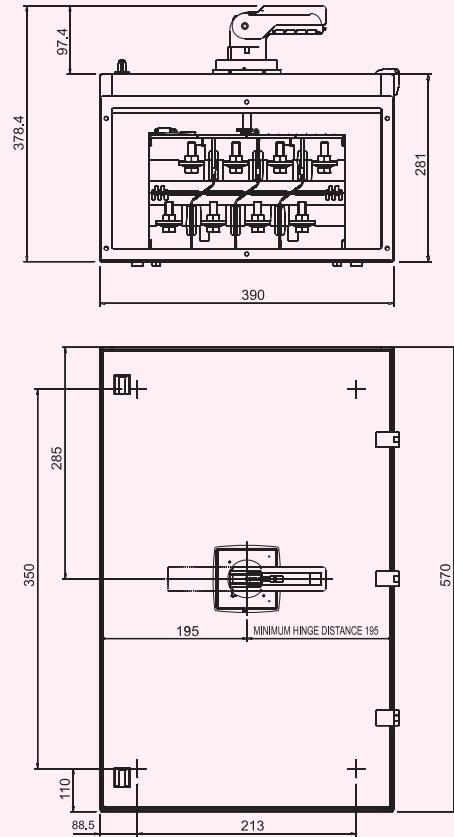
Overall Dimensions CO3-250 / 315

Open Execution

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

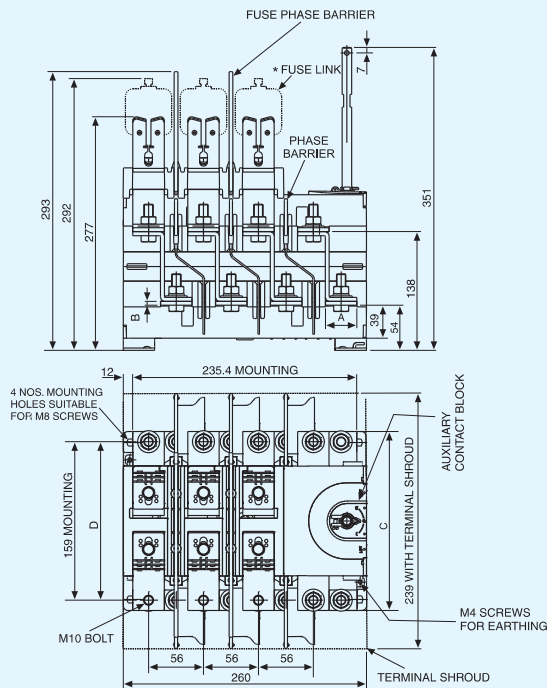


In SS Enclosure



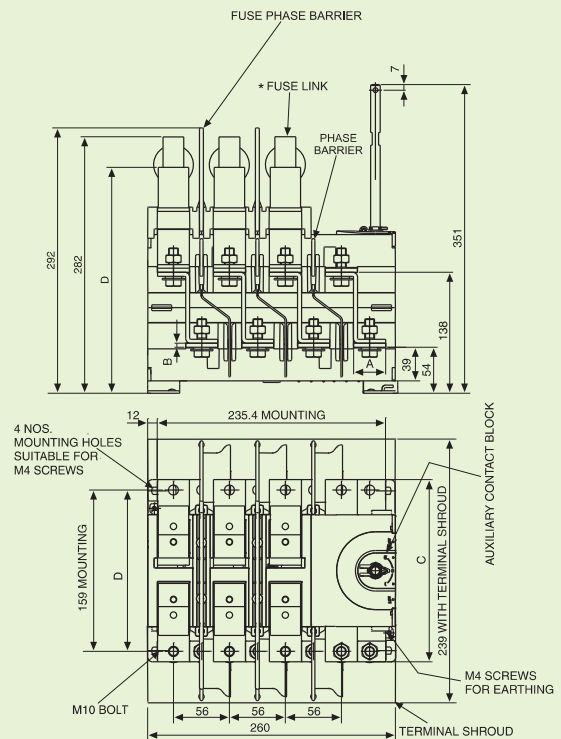
For DIN Type Fuses

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



For BS Type Fuses

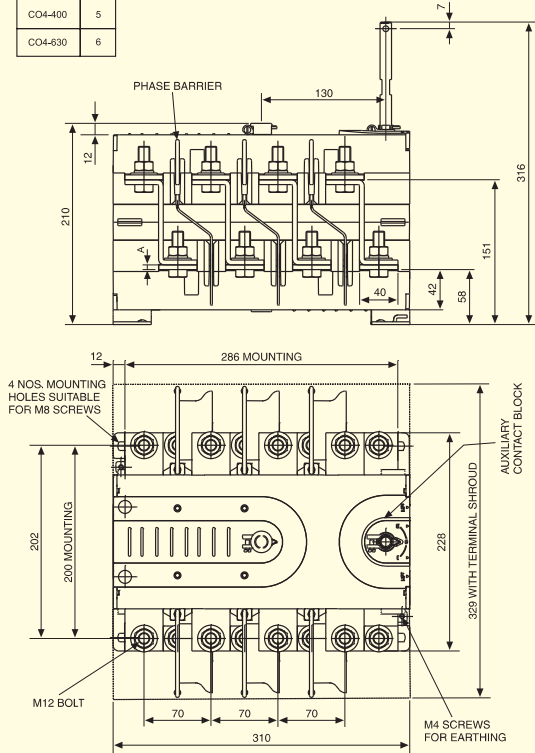
	A	B	C	D
CO3-250	29	4.5	182	156
CO3-315	35	5	198	164



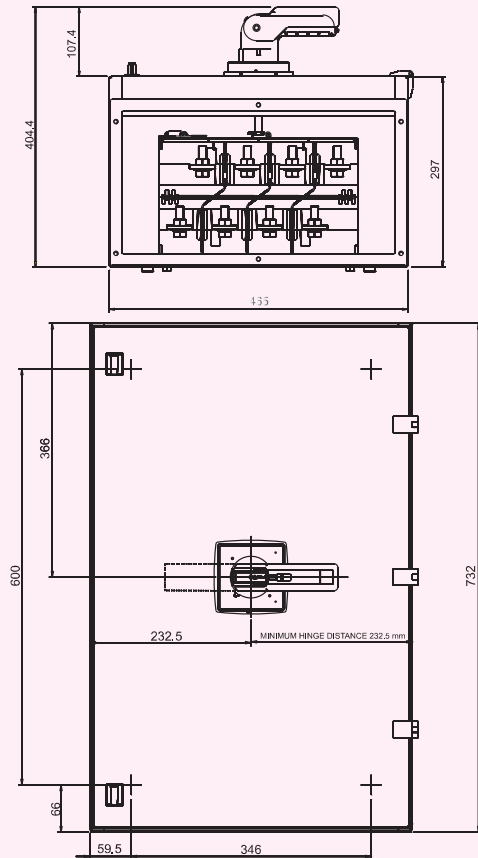
Overall Dimensions C04-400 / 630

Open Execution

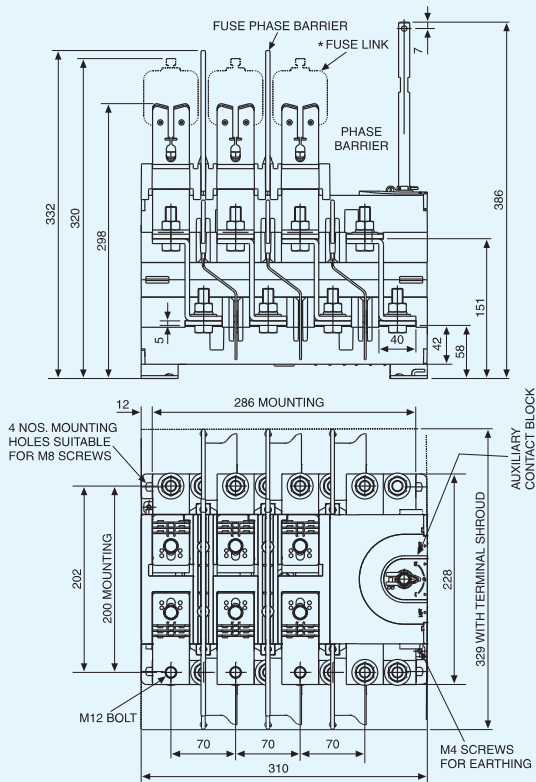
	A
C04-400	5
C04-630	6



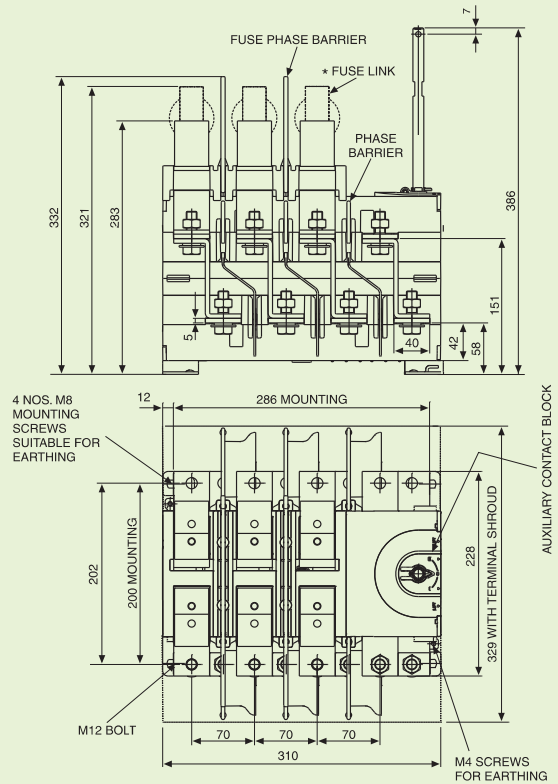
In SS Enclosure



For DIN Type Fuses *

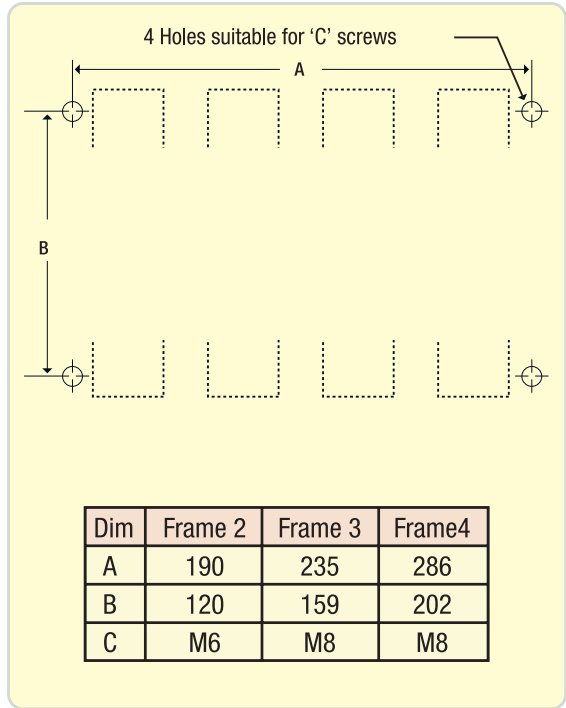


For BS Type Fuses *



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

Mounting Dimension



Notes:

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