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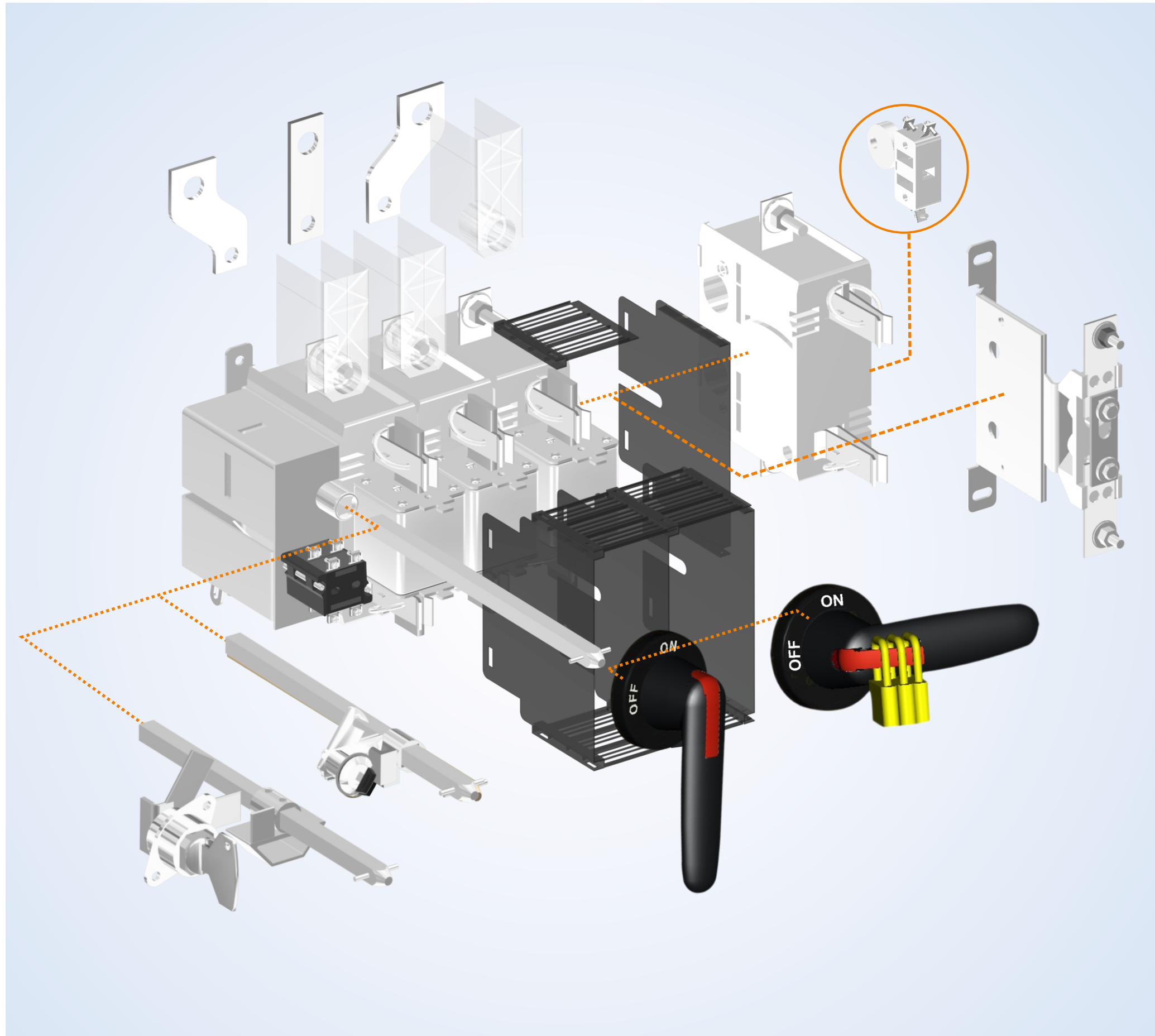
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Switch
Disconnect Fuse

We touch your electricity everyday!



Integrating end user convenience with installation flexibility

C&S offers Switch Disconnecter Fuse Units from 32A to 800A ratings, 3 Pole as well as 4 Pole. These have AC23A utilisation category as per IS/IEC 60947. They are available with DIN as well as BS type fuse holder & suitable for operations upto 690V. They have been tested in independent & internationally acclaimed laboratories of ASTA for compliance to IEC standards, and at CPRI & ERDA for conformity to IS/IEC standards.

Modular yet rugged construction of the Switch Disconnecter Fuse Units gives Add – On pole flexibility while maintaining absolute reliability and 100% rating as the main poles. This arrangement is suitable for 3 Phase 3 Wire, 3 Phase 4 Wire as well as any type of Earthing and even for DC installation.

The mounting flexibility offers matchless benefit for use in MCC / PCC distribution boards or for standalone mountings. It is compact enough to occupy small panel space yet allowing installation as per convenience and rendering it safe for maintenance.

Multiple accessories to suit application requirements enhance flexibility of operation and the safety level of installation. It also ensures use in diverse applications.

The entire range of Switch Disconnecter Fuse Unit integrates end-user convenience with features suiting OEMs & Switchboard builder requirements.

For over 25 years now, with their rugged design combined with ease of operation and maintenance, they have stood the test of adverse environments in all climate of various countries. They have been used successfully in almost every industry, becoming the exclusive choice of every discerning user, be it – Power Plants, Building segments, Telecommunication field or Industries like – Steel, Chemical, Cement, Automobile, etc.

Internationally Endorsed

Tested & Accepted
World over

C&S Switch Disconnecter Fuse Units have been tested for their conformity to International as well as Indian standards at various independent laboratories like-ASTA for conformity to International standards - IEC 60947-3 and CPRI, ERDA for conformity to Indian standards IS 13947-3. These also conform to the safety regulations adopted in the European Union and carry the CE marking.

OEMs and panel assemblers can be re-assured that the design and quality is being used and exported to many countries world over.

ISO 9001 certified manufacturing facilities assure quality & consistency.

Flexible Design

Modular yet reliable
construction

C&S Switch Disconnecter Fuse Units have a modular assembly design, allowing 1 Pole to a 4 Pole combination. The flexibility of design lets the spring operating mechanism also to be placed in the side or in between the poles.

Thus all possible combination like the TP / TP + Isolable Neutral / FP in 2 options - switched neutral or fused neutral are obtainable. And each additional pole retains the same reliability and 100% rating as the main phase pole. As each pole is independent of the other, its maintenance or replacement is easy and economical in the event of damage.

Unique Contact Mechanism

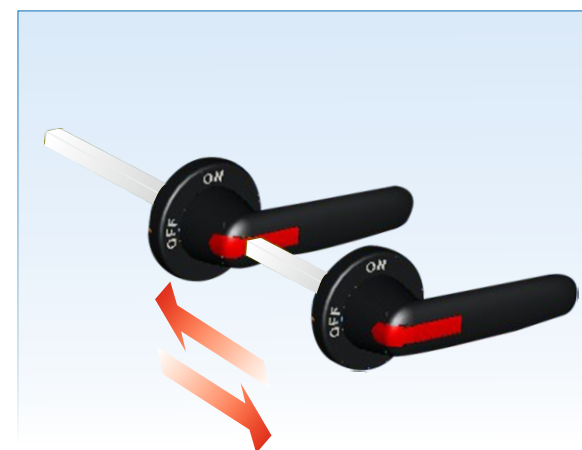
Efficient Switching
& Long life

Switch Disconnecter Fuse units having **Double Break** or **Quad Break** contact mechanism.

Switch Disconnecter Fuse units employ unique knife contact mechanism on both sides of the fuse. It uses the magnetic attraction principle in iron circuit on the moving contacts. When current increases, the contact force too increase, ensuring - good contacts at all times, high making and breaking capacity upto 690V and low temperature rise leading to long electrical life.

The special form of fixed contacts alongwith arc-chute fins blows away the arc in the Arc-chute where it is swiftly extinguished under controlled conditions making it safer.

With every switching, the knife contacts clean themselves. This makes them perfectly suited for applications like Motors and capacitor switching. All these qualities makes them ideally suited for Indian conditions in general and for high pollution and corrosive conditions as in chemical plants, cement plants, steel plants, etc.



Easy Installation

Convenient, Swift
& Economical

The handle in the C&S switch disconnecter fuse unit has a telescopic shaft. The handle & shaft assembly adjusts to wide depth of the panel so there is no need to place a bracket below the switch while aligning it with enclosure door. It permits installation of the same switch in installations of different depths, without any modification or addition to the enclosures. Four hole handle fixing on the door permits last minute rotation of the switch inside the panel by 90 degrees or 180 degrees as per convenience, again without any modification to the door.

These time saving features increase the ease and flexibility of installation, and also reduce installation cost.

Accessories

Flexibility to
suit Application

These units come with a multiple accessories to increase their suitability for diverse application, to enhance operational flexibility and to improve installation safety.

Handle mounting kit permits fixing complete Switch Disconnecter Fuse Unit inside the enclosure door so that switch can be operated only after opening the door. Auxiliary contacts permit electrical interlocking, remote indication and alarm. Key Lock and Castle Lock help interlocking with different category of products.

Extended terminals allow further liberal termination or termination of large number of cables with higher clearances. Shrouds encase the terminals so that no falling hardware may get embedded between the terminals resulting in flashovers.

Switch Construction

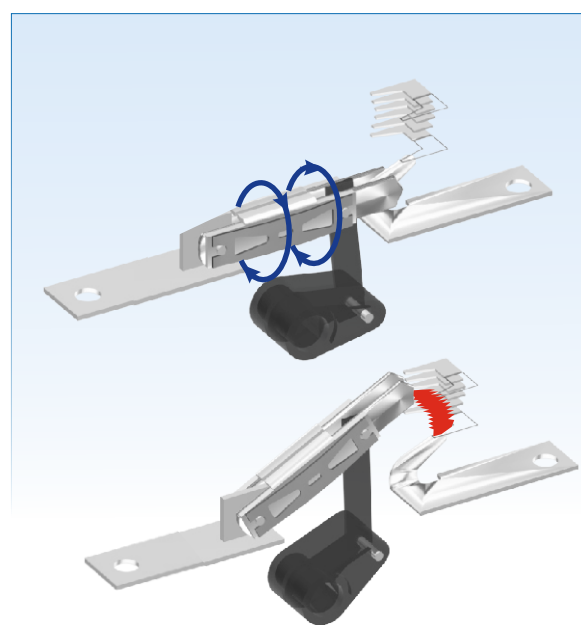
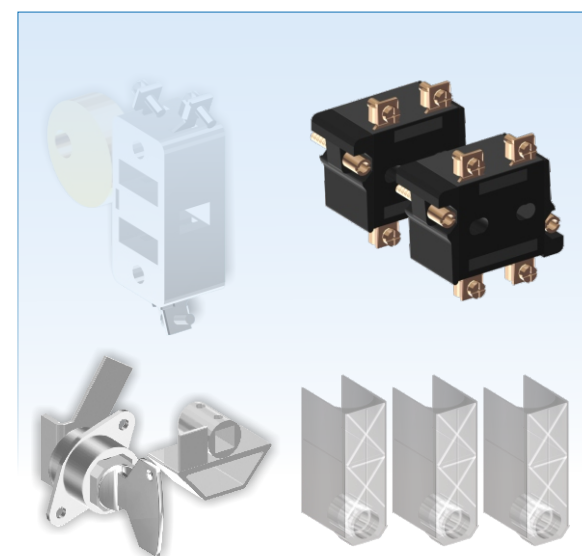
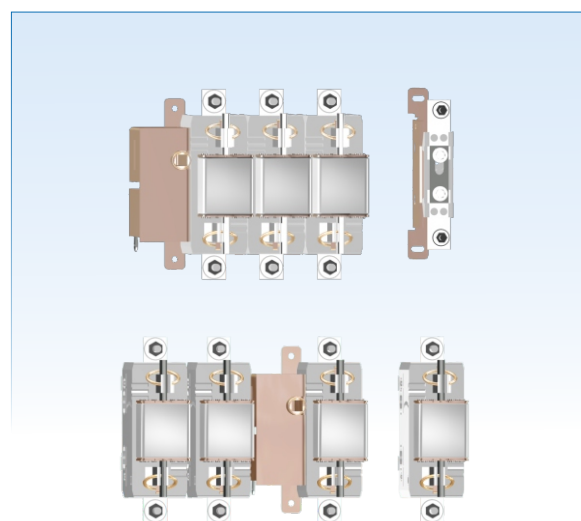
Safety Built-in

C&S design introduced the concept of protection in case of welded contacts. In the event of high current and fuse fails to operate, this leads to welding of contacts. In C&S switches, the handle will not turn beyond 45 degrees from the ON position, which clearly indicates that the supply is ON and contacts get welded.

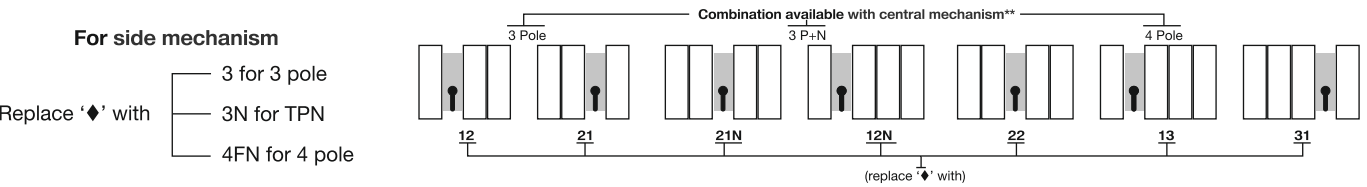
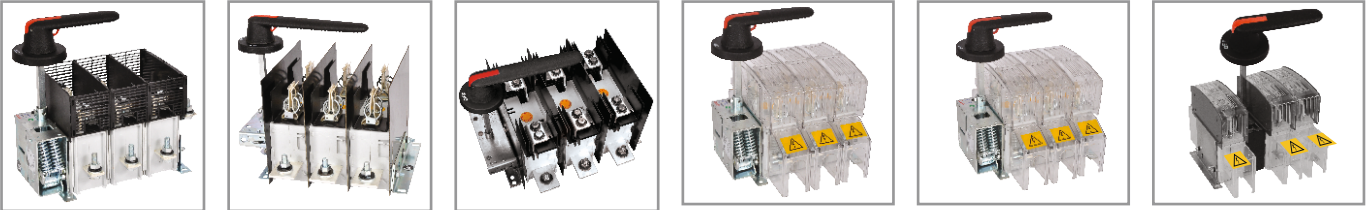
In OFF position, the fuse is discharged from both sides, permitting safe inspection or removal.

The individual pole is housed in fibreglass re-inforced insulating material that is self-extinguishing and can withstand high temperatures. The high tracking index makes these switches almost flashover proof and highly safe.

Door interlocking prevents it's opening in the ON position, guarding the operator against an accidental mishap. As a standard upto 3 padlocks are provided in the OFF position to prevent closing the circuit during maintenance work. They can also be provided for the ON position. Using a suitable gasket along with handle enhances ingress protection level to IP 65.

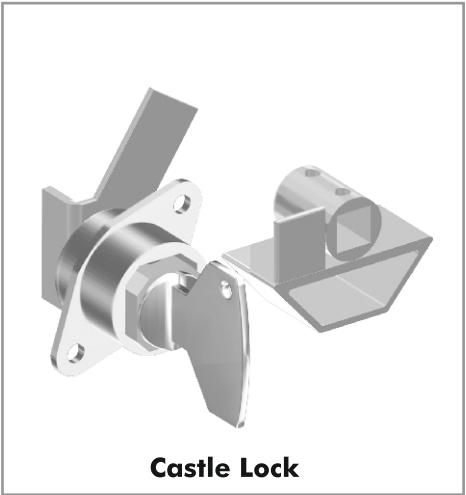
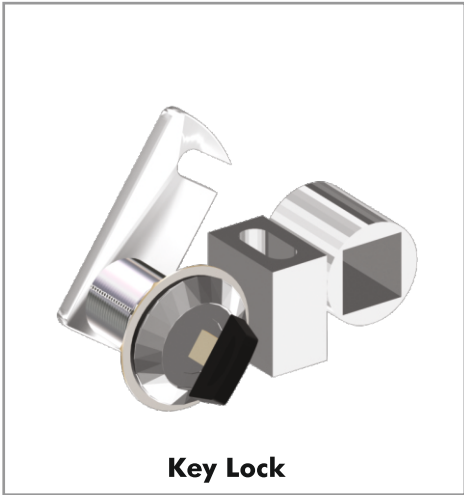
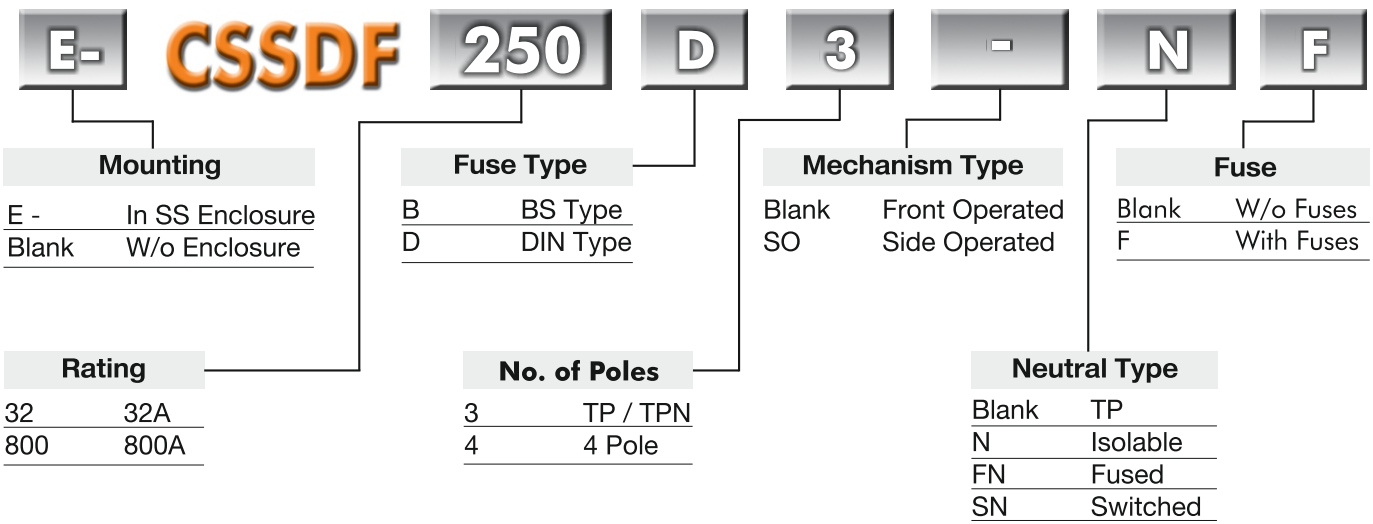


Common Characteristics		
Conformity to Standards	-	IEC 60947-3 / IS 13947-3
Rated Operational Voltage (Ue)	V	415
Rated Operational Frequency	Hz	50 / 60
Suitability for Isolation	-	YES
Pollution Degree as per IEC / IS	-	3
Ambient / Cubicle Service Temp.	°C	45
IP Level after mounting	-	IP 54
Number of Poles (4P Neutrals-100%)	-	3P/TPN/4P



Characteristic				32	63	100	125	160	200	250	315	400	630	800
Rated insulation voltage		V		750	750	750	750	750	1000	1000	1000	1000	1000	1000
Dielectric strength	Pollution Degree 3	50/60 Hz	kV	8	8	8	8	8	10	10	10	10	10	10
Rated impulse withstand voltage			kV	12	12	12	12	12	12	12	12	12	12	12
Rated thermal current in ambient 40°C	In open Air		A	32	63	100	125	160	200	250	315	400	630	800
	In Enclosure		A	32	63	100	125	160	200	250	315	400	630	720
Min. cable cross section	Cu		mm ²	6	16	35	50	70	95	120	185	240	2x185	2x240
Rated operational voltage AC-20 and DC-20			V	750	750	750	750	750	1000	1000	1000	1000	1000	1000
Rated operational current AC -21 A	upto 500 V		A	32	63	100	125	160	200	250	315	400	630	800
	690 V		A	-	63 ²⁾	100 ²⁾	125	160 ²⁾	200	250	315	400	630	800
Rated operational current AC-22 A	upto 500 V		A	32	63	100	125	160	200	250	315	400	630	800
	690 V		A	-	63 ²⁾	100 ²⁾	125 ²⁾	135 ²⁾	200	250	315	400	630	800
Rated operational current AC-23 A	upto 500 V		A	32	63	100	100	100	200	250	315	400	630	720
	690 V		A	-	40 ²⁾	50 ²⁾	50 ²⁾	50 ²⁾	200	250	315	400	630	720
Rated operational current/poles in series DC - 21 A	48 V		A	-	-	-	-	-	200/2	250/2	315/2	400/2	630/2	800/2
	110 -220 V		A	32/3	63/3	100/3	125/3	160/3	200/2	250/2	315/2	400/2	630/2	800/2
	440 V		A	32/4	63/4	100/4 ²⁾	125/4 ²⁾	160/4 ²⁾	200/2	250/2	315/2	400/2	630/2	800/2
	500-750 V		A	-	-	-	-	-	200/3	250/3	315/3	400/3	630/3	800/3
	48 V		A	-	-	-	-	-	200/2	250/2	315/2	400/2	630/2	800/2
Rated operational current/poles in series DC - 22 A	110 -220 V		A	32/3	63/3	100/3	125/3	160/3	200/2	250/2	315/2	400/2	630/2	800/2
	440 V		A	32/4	63/4	100/4 ²⁾	100/4 ²⁾	100/4 ²⁾	200/2	250/2	315/2	400/2	630/2	800/2
	500-750 V		A	-	-	-	-	-	200/3	250/3	315/3	400/3	630/3	800/3
	48 V		A	32/3	63/3	100/3	125/3	160/3	200/2	250/2	315/2	400/2	630/2	800/2
Rated operational current/poles in series DC - 23 A	110 -220 V		A	-	-	100/4 ²⁾	100/4 ²⁾	100/4 ²⁾	200/3	250/3	315/3	400/3	630/3	800/3
	440 V		A	-	-	-	-	-	-	-	-	-	630/4	800/4
	230 V	The KW - ratings are accurate for three - phase 1500 R.P.M standard asynchronous motors.	kw	7.5	15	30	30	30	57	70	90	110	180	200
Rated operational power AC- 23 ³	400 V		kw	11	30	55	55	55	100	132	160	210	315	350
	415 V		kw	15	30	55	55	55	110	140	180	230	340	380
	500 V		kw	15	30	70	70	70	140	170	220	280	400	470
	690 V		kw	-	30	45	45	45	180	230	290	330	540	600
Rated breaking capacity in category AC -23	upto 500 V		A	256	504	800	800	800	1600	2000	2520	3200	5040	5760
	690 V		A	-	320	400	400	400	1600	2000	2520	3200	5040	5760
Rated breaking capacity/poles in series in category DC -23	upto 220 V		A	128/3	256/3	640/3	640/3	640/3	1000/2	1000/2	1600/2	1600/2	3200/2	3200/2
	440 V		A	-	-	400/4	400/4	400/4	1000/2	1000/2	1600/2	1600/2	3200/2	3200/2
	500-750 V		A	-	-	-	-	-	1000/3	1000/3	1600/3	1600/3	3200/3	3200/3
	80kA, 415 V	The cut off current refer to single phase fuse tests.fuse selection tables on request.	kA	6	10	17	20	20	40	40	40	40	75	
Rated conditional short circuit current r.m.s and allowed cut off corresponding max. current, peak value.	50kA, 690 V		kA	4	6	10	10	10	35	35	35	35	60	60
	400 V	The capacitor rating of the switch-fuse is limited by the fuse link.	kVAr	15	30	50	50	57	90	105	145	180	250	340
	415 V		kVAr	16	32	55	55	62	100	115	160	200	270	340
Rated capacitor power	690 V		kVAr	-	50	90	90	100	160	190	250	325	450	550
	With rated current, without fuse		W	0.7	4	5	5	9	5	11	13	30	55	77
Power loss/ pole	Divide by two for operational cycle		Operations	20000	20000	20000	20000	20000	16000	16000	16000	16000	10000	10000
Mechanical endurance	DIN 43620			00	00	00	00	00	1	1	1-2	1-2	3	3
	BS 88			A2-A3	A2-A3	A4	A4	B1-B3	B1-B2	B1-B3	B1-B3	B1-B4	C1-C2	C1-C3
	Size/distance of fuse-link bolts		mm	M5/73	M5/73	M6/94	M6/94	M8/111	M8/111	M8/111	M8/111	M8/111	M10/133&184	M10/133&184
Weight without accessories	3-Pole Switch Fuses		kg	1.6	1.6	1.8	1.8	1.8	6.9	6.9	7.3	7.8	15.5	17
	4-Pole Switch Fuses		kg	1.9	1.9	2.3	2.3	2.3	7.9	7.9	8.3	8.8	19	21
Terminal bolt size	Metric thread diameter x length		mm	-	-	M8X25	M8X25	M10X40	M10X30	M10X30	M10X40	M10X40	M12X40	M12X40
Terminal tightening torque	counter torque required		Nm	5	5	15...22	15...22	30...44	30...44	30...44	30...44	30...44	50...75	50...75
Fuse - links bolts tightening torque			Nm	3.5	3.5	M5:3.5/M8:10	M5:3.5/M8:10	10	15	15	15	15	40	40
Operating torque	Typical for 3 Pole switch fuses		Nm	3	3	5	5	5	22	22	22	22	28	28

1. Ambient Temperature 60 C derating 20%. Mounting on “ceiling” derating 10%.Mounting on wall,horizontal fuses : derating 8% 2. Utilization category B 3. Some fuses links limit these figures further. Starting current characteristics must be considered separately.



Parameters
Catalogue Reference with Enclosure
Rated Operational Current
Handle
Handle Shaft
Handle Mounting Kit
Auxiliary Contact - 1 NO + 1 NC
Auxiliary Contact - 2 NO + 2 NC
Extended Terminals, 3P/ 4P
Terminal Shrouds
Key Interlock
Castle lock
Neutral Links
Side Operated Mechanism

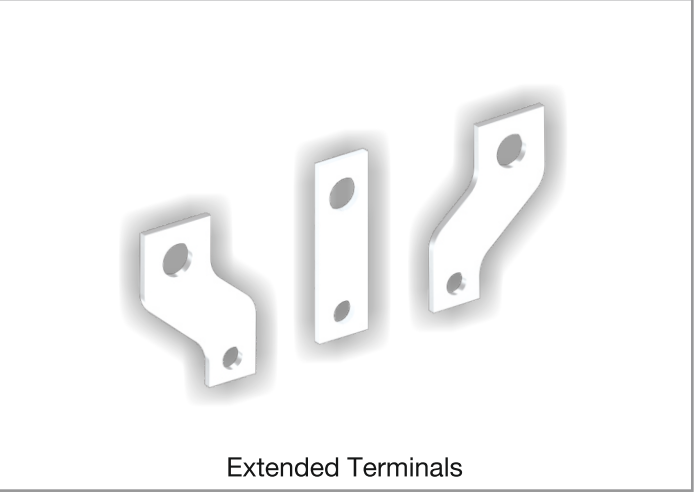
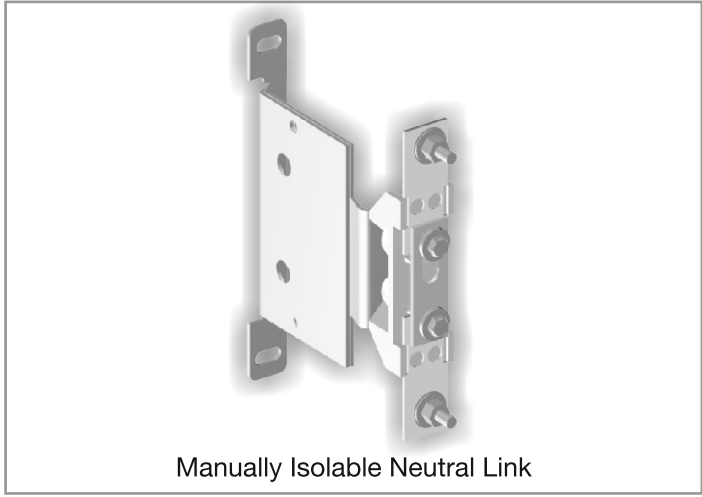
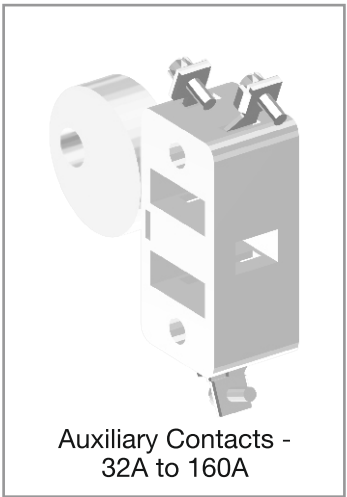
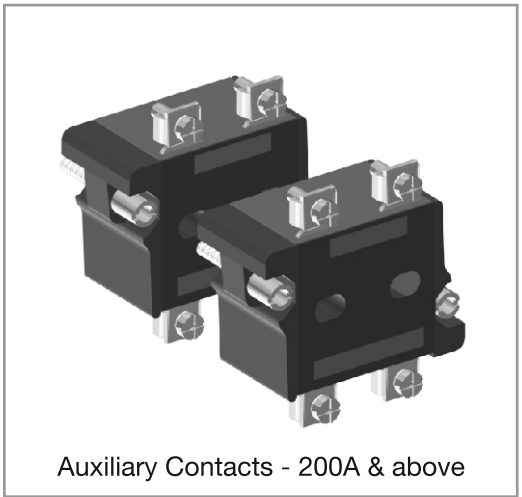
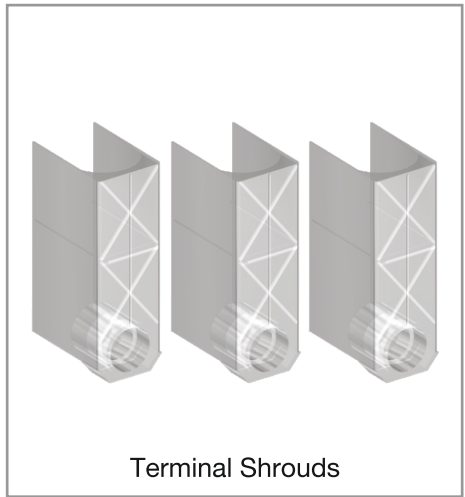
32A	63A
E-CSSDF32	E-CSSDF63
32	63
CSWH 80 S6	
CSP6 X 165	
-	
CSSDFZX 46	
CSSDFZX 32	
ET323 / ET324	
-	
CSSDFZW-16	
CSSDFZW-15	
CSSDF ZX 87	
Available	

100A	125A	160A
E-CSSDF100	E-CSSDF125	E-CSSDF160
100	125	160
CSWH 80 S6		
CSP6 X 165		
-		
CSSDFZX 1		
CSSDFZX 16		
ET327 / ET328		
SF702		
CSSDFZW-16		
CSSDFZW-15		
CSSDF ZX 86		
Available		

200A	250A
E-CSSDF200	E-CSSDF250
200	250
CSWH 145 S12	
CSP12 X 255	
HMK-1-2	
CSSDFZX 33	
CSSDFZX 34	
ET329 / ET330	
SF703	
CSSDFZW-5	
CSSDFZW-4	
CSSDF ZX 85	
Not Available	

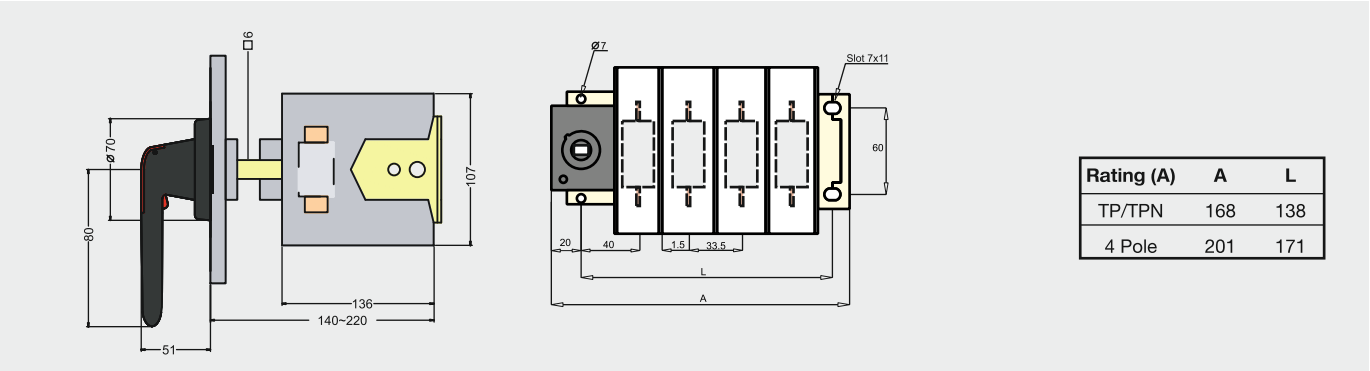
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315	400
CSWH 145 S12	
CSP12 X 255	
HMK-1-2	
CSSDFZX 33	
CSSDFZX 34	
ET329 / ET330	
SF703	
CSSDFZW-5	
CSSDFZW-4	
CSSDF ZX 85	
Not Available	

630A	800A
E-CSSDF630	E-CSSDF800
630	800
CSWH 220 S12	
CSP12 X 255	
HMK-3-2	
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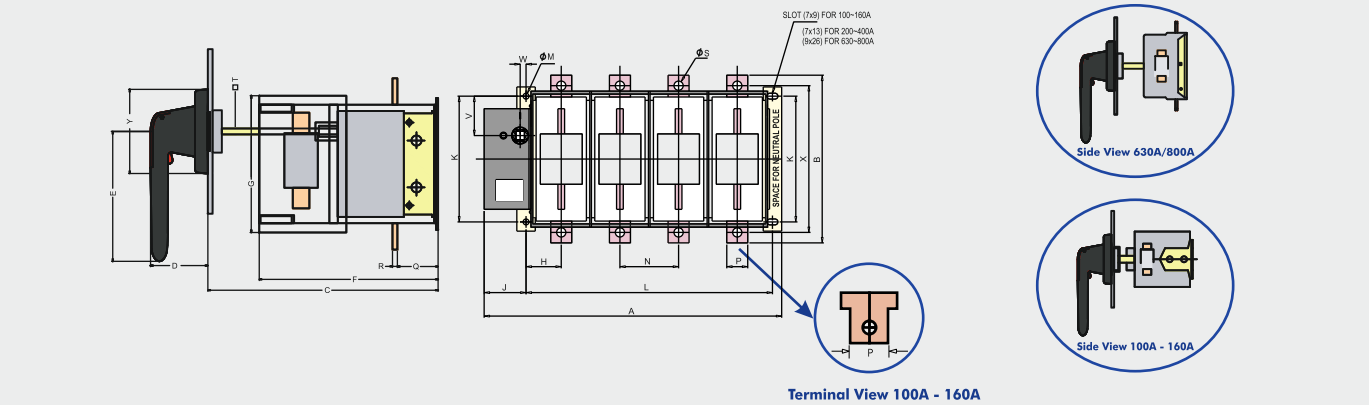


Dimensional Details

32A & 63A, DIN / BS

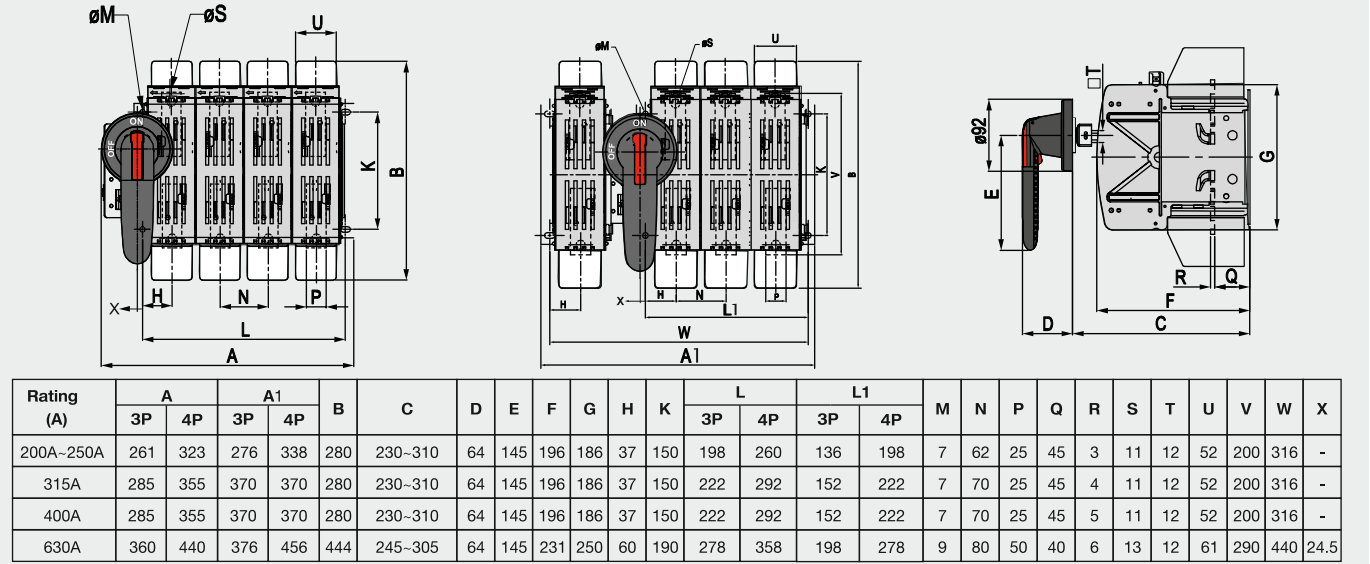


100A - 800A, DIN / BS



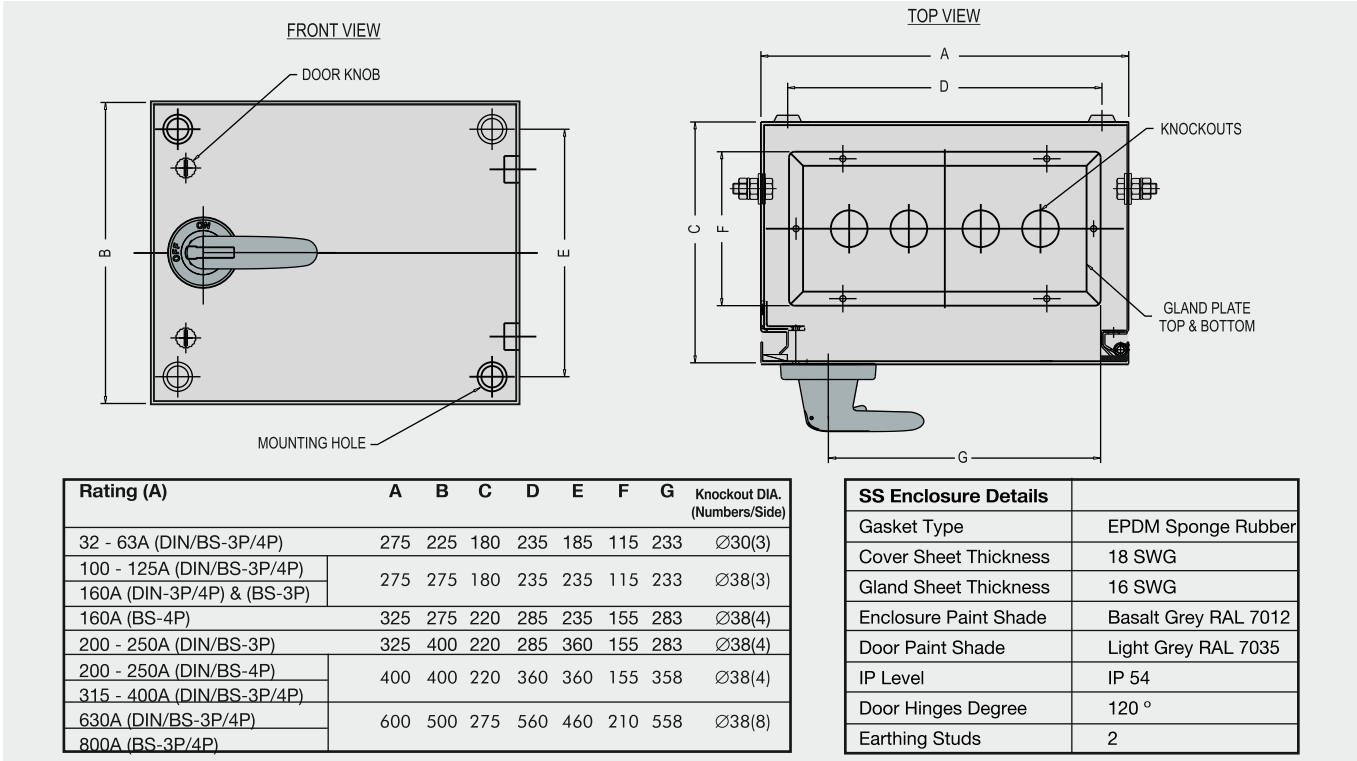
Rating (A)	A		B	C	D	E	F	G	H	J	K	L		M	N	P	Q	R	S	T	V	W	X	Y
	TPN	4P										TPN	4P											
100 - 125	190	230	142	135 - 225	51	80	134	98	44.5	20	60	160	200	7	40	20	40	2	9	6	30	0	122	70
160 DIN	190	230	142	135 - 225	51	80	134	98	44.5	20	60	160	200	7	40	20	40	3	9	6	30	0	122	70
160 BS	212	260	142	135 - 225	51	80	134	98	44.5	20	60	182	230	7	48	20	40	3	9	6	30	0	122	70
200 - 250	261	323	200	220 - 310	64	145	184	162	38	50	150	199	260	7	62	25	45	3	11	12	47	7	175	92
315	285	355	200	220 - 310	64	145	184	162	42	50	150	223	294	7	70	25	45	4	11	12	47	7	175	92
400	285	355	200	220 - 310	64	145	184	162	42	50	150	223	294	7	70	25	45	5	11	12	47	7	175	92
630 DIN	343	423	320	240 - 310	64	220	223	244	59	52.5	190	278	358	9	80	50	40	6	13	12	95	24.5	266	92
800 DIN	373	463	320	240 - 310	64	220	223	244	59	52.5	190	308	398	9	90	50	40	6	13	12	95	24.5	266	92
630-800BS	403	503	320	240 - 310	64	220	223	244	64	52.5	190	338	438	9	100	50	40	6	13	12	95	24.5	266	92

200A - 630A, DIN / BS (with fuse cover and terminal shrouds)

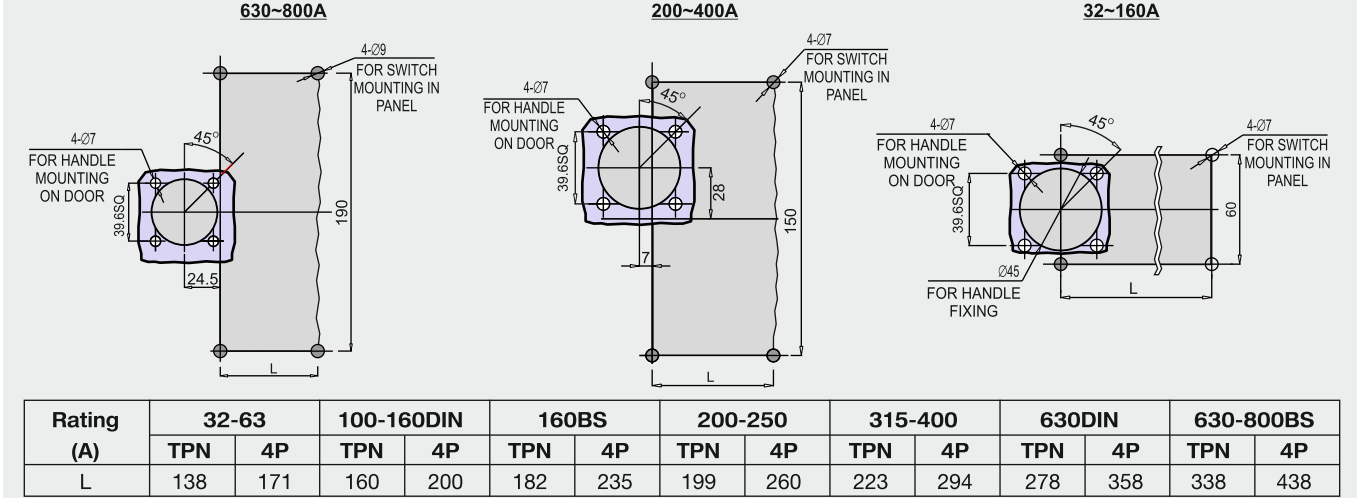


ILLUSTRATIONS NOT TO SCALE

SS Enclosure 32A - 800A



Mounting Details, 32A - 800A

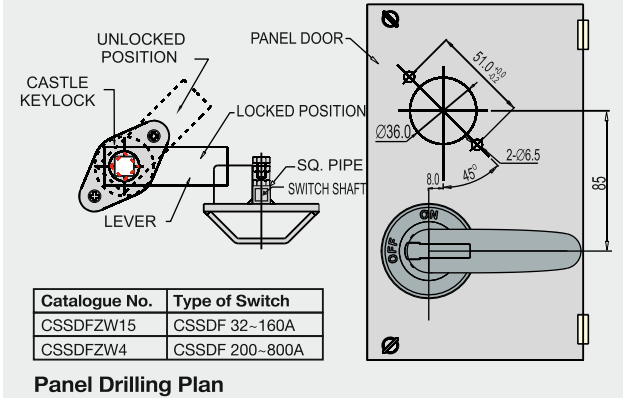


Handle Mounting Instructions:

- 1) Minimum distance from hinge should be 175mm for proper door locking
- 2) Drill Ø45mm for Handle mounting and take impression from telescopic shaft on inside of the panel door for drilling Ø45 hole.

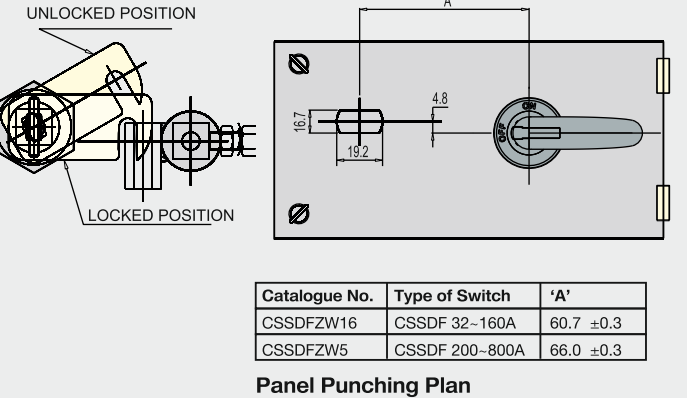
- 3) Do not tighten the fixing screws till the panel door is closed and Handle has taken its position.

Castle Lock



Panel Drilling Plan

Key Interlock



Panel Punching Plan

ILLUSTRATIONS NOT TO SCALE