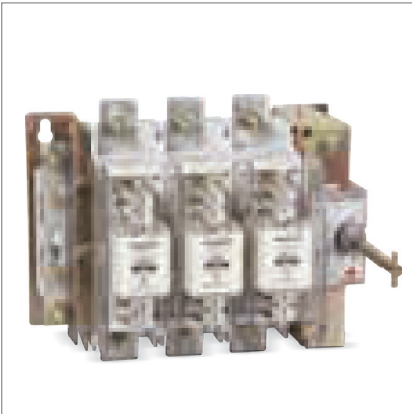




Construction

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Havells SDF has been designed and developed to offer solutions sought by discerning customers where ease of installation and operation is required. The switches are compact and available in ratings 32A, 63A, 100A, 125A, 160A, 200A, 250A, 320A, 400A & 630A with both DIN type and BS type fuses conforming to IEC:947-3 and IS:13947-3. The switch is suitable for use in stringent AC 23-A applications.

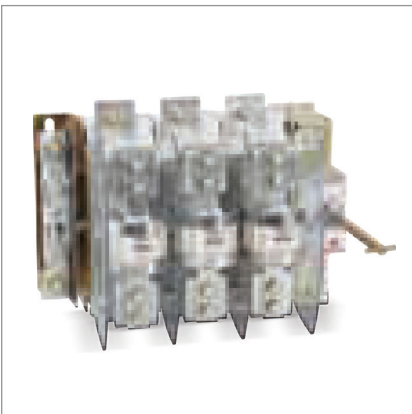


The complete mechanism is enclosed in a fully insulated DMC moulded housing having excellent combination of mechanical & electrical properties. Phase barriers are provided for protection against phase to phase flashover.

The switches are designed for base mounting. All steel components are zinc plated, and current carrying parts are silver plated.

Operating Mechanism

Front handle operation makes possible concise and smaller panels. Sturdy operating handle incorporates features such as fool proof cover locking, inter lock with defeat facility, and padlocking for safety locking in OFF condition. Telescopic adjustable handle shaft is provided for maximum flexibility in order to suit varied mounting positions and to make them compatible to the bus bars.



Contacts and Contact Mechanism

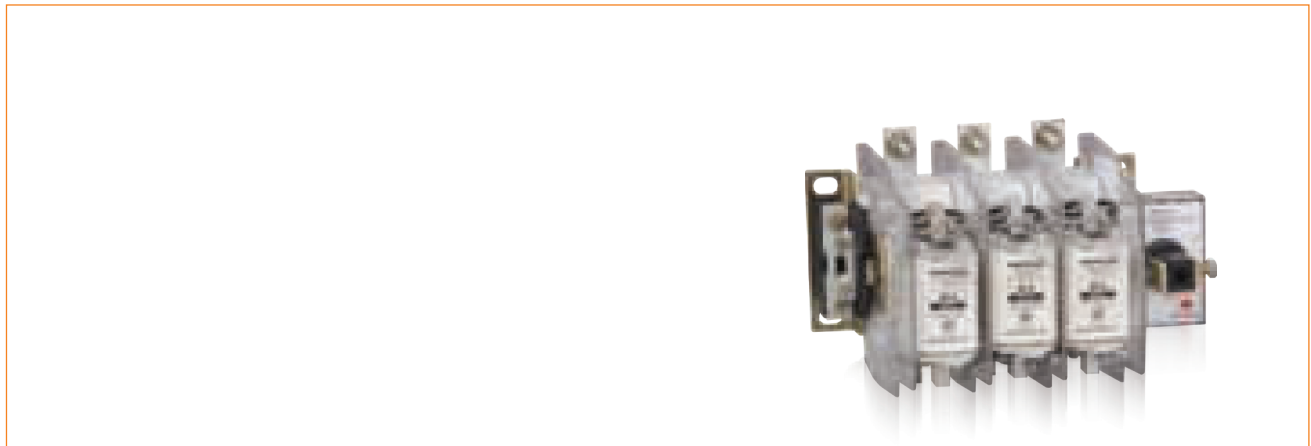
The contact system comprises of knife type double break contact. These are supported by leaf spring.

Due to the quadrable break per pole (two each on incoming & outgoing), the fuses are positively isolated from both the ends in "OFF" position ensuring safety during maintenance. They are particularly advantageous in ring distribution network where the network is fed from both sides.

Enclosures

These switches are normally used in open execution for panel mounting. However, they are also available in enclosures. The enclosures are made of sheet steel which are robustly built, chemically phosphatized and electrostatically powder painted. They are ideally suited for adverse environmental conditions.

Technical Information

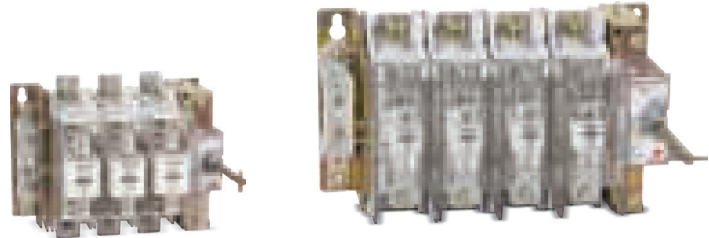


Frame Size			Size I		Size II	
Rated operated Current at 40°C	I_e	A	32	63	100	125
Rated Operational Voltage ac	U_e	V	415	415	415	415
Rated Insulation Voltage	U_i	V	690	690	690	690
Rated Impulse withstand Voltage Conventional enclosed thermal	$U_{imp.}$	kV	8	8	8	8
Rated Frequency		Hz	50	50	50	50
Design temp./ Ambient Temp. Deg. C			40	40	40	40
Utilization category			AC23A			
Rated Enclosed Thermal Current		A	32	63	100	125
Rated Motor Power		KW	15	20	22.2	25
Making Capacity AC23A		A	320	630	1000	1250
Breaking Capacity AC23A		A	256	504	800	1000
Conditional Short ckt current		KA_{rms}	80	80	80	80
Rated Short-time withstand current (1 Sec, rms.)		KA	1.6	2	5	5
Type of HBC Fuse links						
- BS type			H-TIA	H-TSS	H-TSD	H-TSD
- DIN type			H-CD-00	H-CD-00	H-CD-00	H-CD-00
Electrical Endurance	No. of Opers.		1500	1500	1500	1500
Mechanical Endurance	No. of Opers.		10000	10000	10000	10000
Temperature withstand range (Ambient)	°C		5 to 40	5 to 40	5 to 40	5 to 40
Min. Cu cable section	Sq.mm		6	16	35	50
Min. Al. cable section	Sq.mm		10	25	50	70
Terminal Bolt Size Metric thread diameter x length			M6 x 16	M6 x 16	M6 x 16	M6 x 16
Weight Open Execution	kg.		1.2	1.2	1.5	1.5
In Enclosure	kg.		4.2	4.2	4.5	4.5

Technical Information

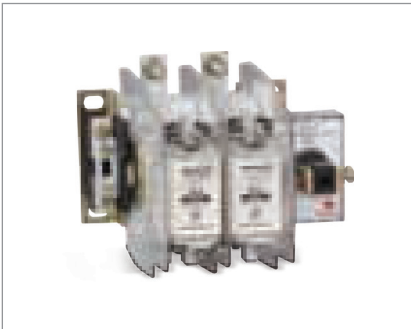
(Kompact Ezo)

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Frame Size		Size III			Size IV		Size V	
Rated Operation Current Rating at 40°C		160A	200A	250A	320A	400A	630A	800A
No. of Poles		TPN & FP						
Rated operational Voltage (U_n)	V	415	415	415	415	415	415	415
Rated Insulation Voltage (U)	V	690	690	690	690	690	690	690
Rated Frequency	Hz	50	50	50	50	50	50	50
Rated impulse withstand voltage (U_{imp})	kV	8	8	8	8	8	8	8
Utilization Category		AC 23A						
Rated making capacity	A	1600	2000	2500	3200	4000	6300	8000
Rated breaking capacity	A	1280	1600	2000	2560	3200	5040	6400
Rated fused short-circuit current (I_{cn}) with Havell's fuses	kA	80	80	80	80	80	80	80
Capacitor duty-Connected-415 ,50-60 Hz	kVAr	57	92	115	145	175	250	270
Endurance (operations) Mechanical	Nos.	8000	8000	8000	5000	5000	5000	3000
Endurance (operations) Electrical	Nos.	1000	1000	1000	1000	1000	1000	500
Rated Short-time withstand current (I_{cw}) with shorted links for 1.0 sec.	KArms	5	5	5	10	10	10	10
Type of HBC Fuse links								
- BS type		B2	B2	B3	B3	B4	C2	C3
- DIN type		Size 1	Size 1	Size 1	Size 2	Size 2	Size 3	Size 3
Min. Cu cable section	Sq.mm	70	95	120	185	240	40x5x2 (Bus Bar)	50x5 (Bus Bar)
Min. Al. cable section	Sq.mm	95	150	185	240	300	40x8x2 (Bus Bar)	50x8 (Bus Bar)
Terminal Screw	mm	M10x30	M10x30	M10x30	M10x30	M10x30	M10x30	M10x30
Aprox Wt. of TP Switch (without fuse links)	Kg	6.1	6.1	6.1	12.5	12.5	17.0	17.0

* TPN - Three Pole & Neutral; FP - Four Pole
For ratings 630A and above, bus bar termination is required



Double Pole Size 1				
Current Rating (A)	Open Execution Cat No.	Open Execution with Fuse Cat No.	In S/S Enclosure with Fuse Cat No.	HBC Fuse Type Cat No.
32	IHFDDO4032	IHFDDF4032	IHFDDW4032	IHHTIA0032
32	IHFFDO4032	IHFFDF4032	IHFFDW4032	IHHCD00032
63	IHFDDO4063	IHFDDF4063	IHFDDW4063	IHHTSS0063
63	IHFFDO4063	IHFFDF4063	IHFFDW4063	IHHCD00063

Double Pole Size 2				
Current Rating (A)	Open Execution Cat No.	Open Execution with Fuse Cat No.	In S/S Enclosure with Fuse Cat No.	HBC Fuse Type Cat No.
100	IHFDDO4100	IHFDDF4100	IHFDDW4100	IHHTSD0100
100	IHFFDO4100	IHFFDF4100	IHFFDW4100	IHHCD00100
125	IHFDDO4125	IHFDDF4125	IHFDDW4125	IHHTSD0125
125	IHFFDO4125	IHFFDF4125	IHFFDW4125	IHHCD00125

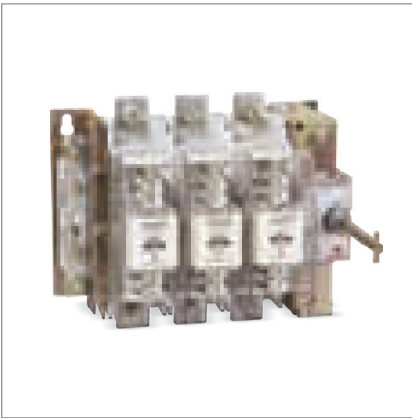


Three Pole & Neutral Size 1				
Current Rating (A)	Open Execution Cat No.	Open Execution with Fuse Cat No.	In S/S Enclosure with Fuse Cat No.	HBC Fuse Type Cat No.
32	IHFDTO4032	IHFDTF4032	IHFDTW4032	IHHTIA0032
32	IHFFTO4032	IHFFTF4032	IHFFTW4032	IHHCD00032
63	IHFDTO4063	IHFDTF4063	IHFDTW4063	IHHTSS0063
63	IHFFTO4063	IHFFTF4063	IHFFTW4063	IHHCD00063

Three Pole & Neutral Size 2				
Current Rating (A)	Open Execution Cat No.	Open Execution with Fuse Cat No.	In S/S Enclosure with Fuse Cat No.	HBC Fuse Type Cat No.
100	IHFDTO4100	IHFDTF4100	IHFDTW4100	IHHTSD0100
100	IHFFTO4100	IHFFTF4100	IHFFTW4100	IHHCD00100
125	IHFDDO4125	IHFDTF4125	IHFDTW4125	IHHTSD0125
125	IHFFTO4125	IHFFTF4125	IHFFTW4125	IHHCD00125

Three Pole & Neutral - Kompact Ezo Size 5				
Current Rating (A)	Open Execution Cat No.	Open Execution with Fuse Cat No.	In S/S Enclosure with Fuse Cat No.	HBC Fuse Type Cat No.
630	IHFSTO4630	IHFSTF4630	IHFSTW4630	IHHMLM0630
630	IHFKTO4630	IHFKTF4630	IHFKTW4630	IHHCD03630
800	IHFSTO4800	--	IHFSTW4800*	BS Type
800	IHFKTO4800	--	IHFKTW4800*	Din Type

* FSTW4800 and FKTW4800 are without Fuse Links



Three Pole & Neutral - Kompact Ezo Size 3 & 4				
Current Rating (A)	Open Execution Cat No.	Open Execution with Fuse Cat No.	In S/S Enclosure with Fuse Cat No.	HBC Fuse Type Cat No.
160	IHFSTO4160	IHFSTF4160	IHFSTW4160	IHHTSF0160
160	IHFKTO4160	IHFKTF4160	IHFKTW4160	IHHCD01160
200	IHFSTO4200	IHFSTF4200	IHFSTW4200	IHHTSF0200
200	IHFKTO4200	IHFKTF4200	IHFKTW4200	IHHCD01200
250	IHFSTO4250	IHFSTF4250	IHFSTW4250	IHHTSF0250
250	IHFKTO4250	IHFKTF4250	IHFKTW4250	IHHCD01250
315	IHFSTO4320	IHFSTF4320	IHFSTW4320	IHHTSK0315
315	IHFKTO4320	IHFKTF4320	IHFKTW4320	IHHCD02315
400	IHFSTO4400	IHFSTF4400	IHFSTW4400	IHHTSMF400
400	IHFKTO4400	IHFKTF4400	IHFKTW4400	IHHCD02400



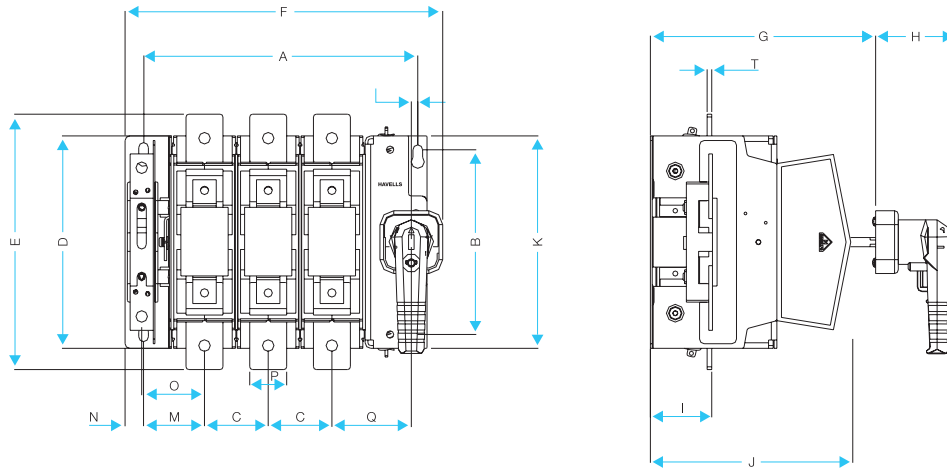
Four Pole Size 1 & 2				
Current Rating (A)	Open Execution Cat No.	Open Execution with Fuse Cat No.	In S/S Enclosure with Fuse Cat No.	HBC Fuse Type Cat No.
32	IHFDFO4032	IHFDF4032	IHFDFW4032	IHHTIA0032
32	IHFFFO4032	IHFFFF4032	IHFFFW4032	IHHCD00032
63	IHFDFO4063	IHFDF4063	IHFDFW4063	IHHTSS0063
63	IHFFFO4063	IHFFFF4063	IHFFFW4063	IHHCD00063
100	IHFDFO4100	IHFDF4100	IHFDFW4100	IHHTSD0100
100	IHFFFO4100	IHFFFF4100	IHFFFW4100	IHHCD00100
125	IHFDFO4125	IHFDF4125	IHFDFW4125	IHHTSD0125
125	IHFFFO4125	IHFFFF4125	IHFFFW4125	IHHCD00125

Four Pole - Kompact Ezo Size 3				
Current Rating (A)	Open Execution Cat No.	Open Execution with Fuse Cat No.	In S/S Enclosure with Fuse Cat No.	HBC Fuse Type Cat No.
160	IHFSFO4160	IHFSFF4160	IHFSFW4160	IHHTSF0160
160	IHFKFO4160	IHFKFF4160	IHFKFW4160	IHHCD01160
200	IHFSFO4200	IHFSFF4200	IHFSFW4200	IHHTSF0200
200	IHFKFO4200	IHFKFF4200	IHFKFW4200	IHHCD01200
250	IHFSFO4250	IHFSFF4250	IHFSFW4250	IHHTSF0250
250	IHFKFO4250	IHFKFF4250	IHFKFW4250	IHHCD01250

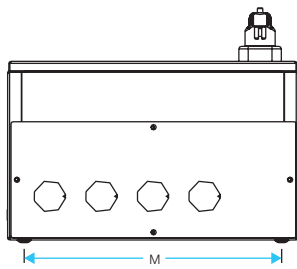
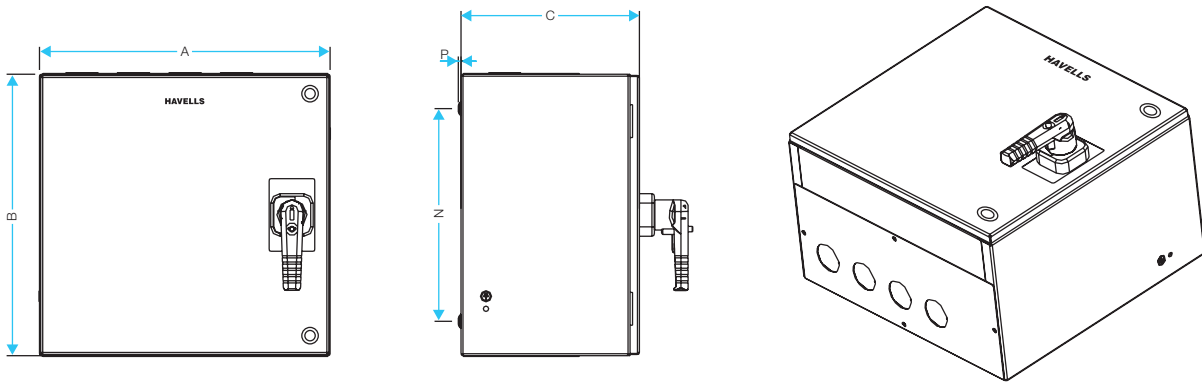
Four Pole - Kompact Ezo Size 4 & 5				
Current Rating (A)	Open Execution Cat No.	Open Execution with Fuse Cat No.	In S/S Enclosure with Fuse Cat No.	HBC Fuse Type Cat No.
320	IHFSFO4320	IHFSFF4320	IHFSFW4320	IHHTSK0315
320	IHFKFO4320	IHFKFF4320	IHFKFW4320	IHHCD02315
400	IHFSFO4400	IHFSFF4400	IHFSFW4400	IHHTSMF400
400	IHFKFO4400	IHFKFF4400	IHFKFW4400	IHHCD02400
630	IHFSFO4630	IHFSFF4630	IHFSFW4630	IHHTLM0630
630	IHFKFO4630	IHFKFF4630	IHFKFW4630	IHHCD03630
800	IHFSFO4800	--	IHFSFW4800*	BS Type
800	IHFKFO4800	--	IHFKFW4800*	Din Type

* FSFW4800 and FKFW4800 are without Fuse Links

Dimensions (in mm)

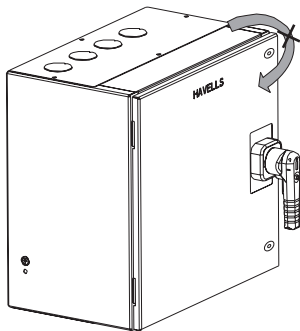


Rating	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	T
32A to	TPN	134	60	34	75	117	182	150-225	86.5	40	137	74	2	30	9	32	12	38	2
63A	4P	168	60	34	75	117	216	150-225	86.5	40	137	74	2	30	9	32	12	38	2
100A to	TPN	134	60	34	107	156	182	150-225	86.5	40	137	74	2	30	9	32	20	38	2
125A	4P	168	60	34	107	156	216	150-225	86.5	40	137	74	2	30	9	32	20	38	2
160A to	TPN	235	159	57	190	190	284	160	86.5	50	172	179	4	48.5	19	51.5	30	68.5	4
250A	4P	292	159	57	190	190	341	160	86.5	50	172	179	4	84.5	19	51.5	30	68.5	4
320 to	TPN	302	200	70	230	326	349	260	86.5	67	212	230	7	70	20	67.5	40	85	5
400A	4P	372	200	70	230	326	419	260	86.5	67	212	230	7	70	20	67.5	40	85	5
630A	TPN	340	200	82.5	240	282	387	290	86.5	71	261	230	7	74	20	78.5	50	94	7
	4P	422.5	200	82.5	240	282	469.5	290	86.5	71	261	230	7	74	20	78.5	50	94	7



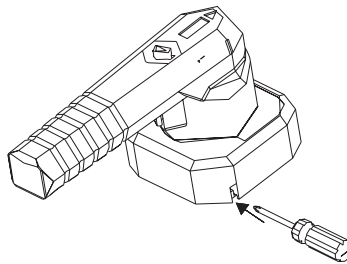
In Enclosure						
Ratings	A	B	C	M	N	P
32A-125A	250	230	160	200	180	5
160A-250A	350	300	210	300	240	5
320A-400A	430	355	260	350	290	5
630A-800A	465	450	290	412	340	5

Door Interlock



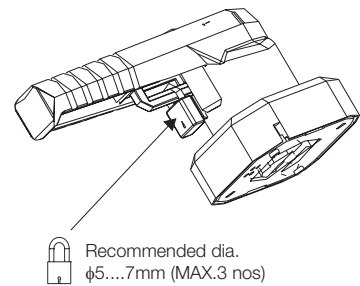
The Handle allows opening of the door in off condition only. In ON position, the door cannot be opened. The interlock can however be by-passed (defeat option on the handle) for maintenance / testing / commissioning. The interlock is restored automatically, on reclosing the panel door

Defeat Facility

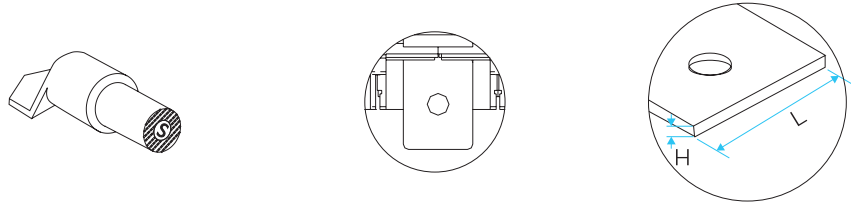


For safety reasons the door cannot be opened when the handle is padlocked. The defeat function allows qualified personnel to by-pass the door interlock when the switch is in on position.

Padlocking



Handle can be padlocked in OFF position as well as in ON position



Aluminium / Copper Cable / Bus Bar Size for External Termination

I_n	ϕT	Nm	S max. (Al)mm ²	S max. (Cu)mm ²	H (Cu)mm	L (Cu)mm	Switch mounting fastner
32 A	M6	3.7	10	6	2	12	M6 x 12
63 A	M6	3.7	25	16	2	12	
100 A	M8	9	50	35	2	20	
125 A	M8	9	70	50	2	20	
160 A	M10	48	95	70	4	30	M6 x 15
200 A	M10	48	150	95	4	30	
250 A	M10	48	185	120	4	30	
320 A	M10	48	240	185	5	40	
400 A	M10	48	300	240	5	40	
630 A	M10	48	2x40x8	2x40x5	7	50	
800 A	M12	48	2x50x8	2x50x5	7	50	

Switch mountings and fitments have been detailed in installation sheets which are supplied with every switch.