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SG1 series load-isolation switch

SGR1 series fuse combination units load isolation switch

- Novel, exquisite, practical
- Small volume, be able to operate in making or breaking with load (800A and below)
- Various wiring types, protection grade up to IP30, reliable in safety of use.
- Parallel double breakpoint, big isolation
- Direct indication of contact's on/off status

SHANGHAI HUATONG ELECTRICITY CO.,LTD

ADD: NO.215 Jiangchang Three Road, North New Industrial Zone, Shanghai City
P C: 200436
TEL: 021-51060667 51060668 51060669
FAX: 021-51060665
http://www.huatongw.com E-mail:info@huatongw.com

Catalogue

4 SG1series load-isolation switch SGR1series fuse combination units load isolation switch


实用新型专利证书

证书号 第 485371 号

实用新型名称：低压负荷隔离开关

设计人：刘延芳

专利号：ZL 01 2 32100.1

专利申请日：2001 年 7 月 27 日

专利权人：刘延芳

授权公告日：2002 年 3 月 27 日

局长 王景川

GENERAL RULES FOR LOW VOLTAGE ISOLATION ELECTRIC APPLIANCES

According to the provision in GB50054-95 <<Low-voltage distribution design standard>> and JGJ/T16-92 <<Civil buildings' electric design standard>> that an isolation device must be fitted with when maintenance, test and overhaul of equipments needs cutting off the power supply.

SG1 series isolation switch made in this factory will effectively isolate all loops from live parts and leave an enough space on the contact opening position, with a notable contact on and off status. In addition, it features with the making and breaking capacity, short-time current withstand capacity. SGR1 series fuse combination units load isolation switch has not only all the function above , but also with reliable over-current or short-circuit safe breaking capacity protection.

OTHER MODELS OF THE ELECTRIC APPLIANCE USED FOR BOTH DISTRIBUTION AND ISOLATION

①Drawer-type moulded-case circuit-breaker, such as SM30 series made in this factory, Inm: 400, 630, 1250A drawer-type installation mode and of the requirements of an isolation electric appliance, users may select it.

② Drawer-type Air circuit-breaker, such as ZW1 series, made in this factory, Inm: 2000A (In: 630~2000A), 3200A(In: 2000~3200A), 4000A(In:3200~4000A) etc.

③ Miniature circuit-breaker(MCB) used in the final-end for illumination and distribution section. such as ZB30G miniature isolation switch(In:32, 63A) and ZB30 series(In:6-63A).Free of maintenance, mounted on the clopping rail, quick mountable and removable.

APPLICABLE RANGE OF FOUR-POLE ISOLATION SWITCH

For a safe service in TT grounding system the four-pole isolation switch has to be used. In order to prevent the "N-breaking" accident, other grounding system is unnecessary to be fitted with Four-pole isolation switch.

◆Outline

SG1 series load-isolation switch is an upgrade new product developed by our company with its main structure features in conformity with the state patent (NO: ZL01232100.1).

There are deprived products types of outer-box operation, rear-board wiring, isolation switch with fuse disconnector group, automatic power converting load isolation switch and so on. And widely used in the construction, power, chemical and other industries in transmission and distribution and automated systems.

◆Scope of Application

SG1 series load-isolation switch is applicable in the circuit of AC 50Hz, rated current 100 A~3150 A (1000 A and above only for electric appliance isolation), rated insulating voltage 800 V and below, rated working voltage 690 V and below. And it is used in the circuits of the distribution or the networks of the motors for non-frequent making , breaking, and isolating.

.SGR1 series fuse combination units load isolation switch is applicable in the circuit of AC 50Hz, rated insulating voltage 800V,rated current 100A~630A, rated working voltage 400V and below in the circuits of the distribution or the networks of motors to distribute the power. Normally with utilization for non-frequent making, breaking, short-circuit protection and isolation

◆Conformed standards

IEC60947-1,IEC60947-3, GB/T 14048.1-2000
《Low-voltage switchgear and control-gear general rules》
IEC60947-1,IEC60947-3, GB/T 14048.3-2002
《Low-voltage switchgear and control-gear switches, isolator, disconnector and fuse-combination units 》

◆Suitable working environment

- The elevation at the installation place not over 2000m.
- Ambient air temperature -5 ~ +40 ℃, and the average value during 24h not over 35 ℃.
- The RH not over 50% at the maximum temperature +40 C; can be higher at a lower temperature, the average lowest temperature in the most humidity month not over +25 C, the average maximum RH of the said month not over 90%, and the condensed dewdrops produced on the product surface due to Temperature variation should be taken into consideration.
- No bomb danger and storm damage
- Pollution grade: 3
- Installation grade, III and Ⅳ
- Utilization type AC-23A

◆Structure and performance

- Novel,exquisite,practical
- Small volume , on-and-off operation with load (800A and below)
- Various wiring types, the protection grade up to IP30(SG1 series), reliable in safety of use
- Parallel double breakpoint, big isolation
- Indicate directly on/off status of the contacts
- Fast on-and-off with spring stored-energy outfit
- With tight iron-nut to raise the mechanism intensity of the line-connected terminal.
- With the art-extinguishing systems and long quench arc passage design to raise not only the breaking capacity, but also to reduce the residual current and cut Down arc Area insulator acieration.
- With wiring types of three-pole, four-pole, inner-box, outer-box operation and front-board, rear-board (SGR1 without rear-board type)

◆Model and meaning

SG □ 1 - □ □ / □ □ □

- Auxiliary contact code: *, no option no code
- Rear-board wiring code: “B”, no code with front-board
- Pole type, 3 means three-pole, 4 means four-pole
- Operation mode, w means outer-box operation, no code with inner-box operation
- Rated current
- Serial design number
- “R” means isolation switch fuse combination units , no code with load-isolation switch
- Isolation switch enterprise code

***ONE N.O. ONE N.C. “11” 。**

◆Main technical indexes

（See table1, 2, and 3）

The electrical and mechanical performance of AC-23A type of SG1 series

Table 1

Model	Rated working voltage Ue (V)	Rated working current Ie (A)	Rated insulating voltage Ui (V)	Rated impulse-withstand voltage Uimp (kV)	Rated short-time current withstand effective value Icw (kA/1S)	Rated short-circuit making capacity peak value Icm (kA)	Operation cycle times	
							Idle	loaded
SG1-100	400	100	800	8	7	20	8500	1500
	690	50						
SG1-125	400	125	800	8	10	20	7000	1000
	690	63						
SG1-160	400	160						
	690	80						
SG1-200	400	200						
	690	100						
SG1-250	400	250						
	690	125						
SG1-315	400	315	1000	12	20	30	4000	1000
	690	160						
SG1-400	400	400						
	690	200						
SG1-500	400	500						
	690	250						
SG1-630	400	630						
	690	315						
SG1-800	400	800					2500	500
	690	400						
SG1-1000	400	1000	1000	12	50	70		
	690	500						
SG1-1250	400	1250						
	690	630						
SG1-1600	400	1600						
	690	800						
SG1-2000	400	2000	1000	12	60	85		
	690	1000						
SG1-2500	400	2500						
	690	1250						
SG1-3150	400	3150					1500	500
	690	1600						

The electrical and mechanical performance of DC-23A type of SG1 series

Table 2

Model	Rated working voltage Ue (V)	Rated working current Ie (A)	Rated insulating voltage Ui (V)	Rated impulse-withstand voltage Uimp (kV)	Rated short-time withstand current max value Icw (kA/1S)	Rated short-circuit making capacity Icm (kA)	Operation cycle times
SG1-100	250	100	1200	12	7	20	10000
	440	50					
SG1-125	250	125	1200	12	7	20	8000
	440	63					
SG1-160	250	160			10		
	440	80					
SG1-200	250	200					
	440	100					
SG1-250	250	250					
	440	125					
SG1-315	250	315	1200	12	20	30	
	440	160					
SG1-400	250	400					5000
	440	200					
SG1-500	250	500	1200	12	20	30	
	440	250					
SG1-630	250	630					
	440	315					
SG1-800	250	800					3000
	440	400					
SG1-1000	250	1000	1200	12	50	70	
	440	500					
SG1-1250	250	1250					
	440	630					
SG1-1600	250	1600					
	440	800					
SG1-2000	250	2000	1200	12	60	85	
	440	1000					
SG1-2500	250	2500					
	440	1250					
SG1-3150	250	3150					2000
	440	1600					

The electrical and mechanical performance of AC-23A type of SGR1

Table 3

Model	Rated working voltage Ue (V)	Rated working current Ie (A)	Rated insulating voltage Ui (V)	Rated impulse-withstand voltage Uimp (kV)	Rated limited short-circuit current		Operation cycle times	
					Fuse protection short-time withstand capacity Icw effective value (kA)	Fuse protection short-time making capacity peak value Icm (kA)	Idle	Loaded
SGR1-100	400	63, 50, 40, 32	800	8	Conformed with selected fuse combination units	Conformed with selected fuse combination units	8500	1500
SGR1-160		160,125,100, 80,63,50,40					7000	1000
SGR1-250		250,224,200, 160,125					4000	1000
SGR1-630		500,425,400, 355,315		12				

◆Main overall and mounting dimensions

(See table 4, 5, 6 and chart 1-9)

● SG1-100A～800A front-board wiring direct operation

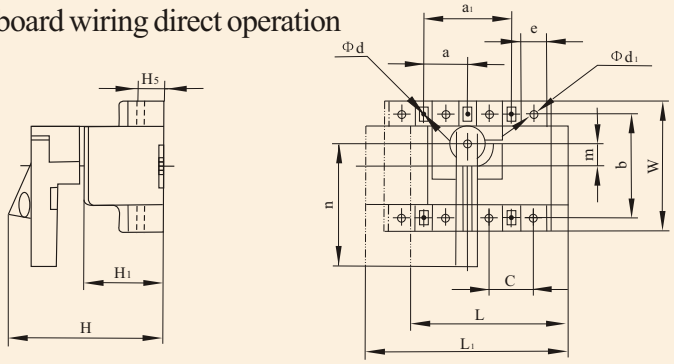


Chart 1

● SG1-100A～800A rear-board wiring direct operation

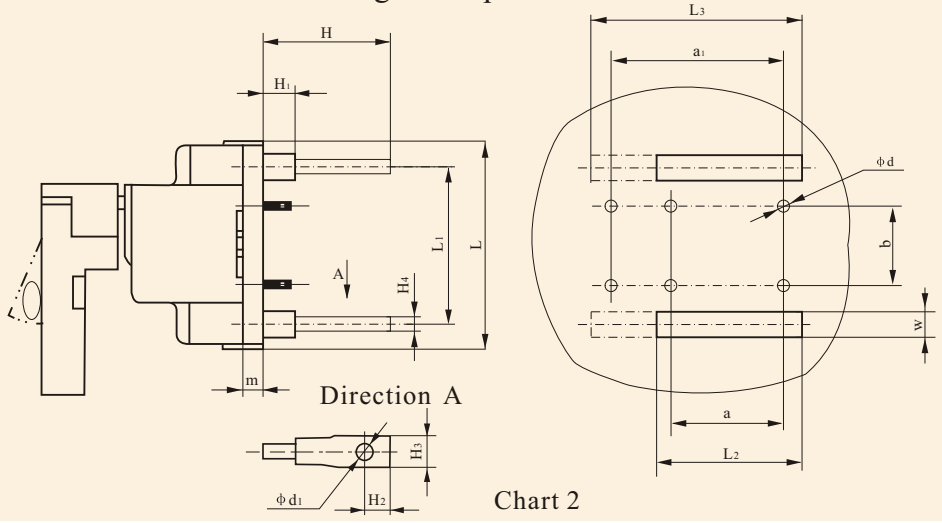


Chart 2

SG1 series front-board direct operation overall and mounting dimensions

Table 4

Unit： mm

Model	Three-pole													Four-pole										
	Overall dimensions									Mounting dimensions				Overall dimensions								Mounting dimensions		
	L	H	H_1	H_5	W	C	ϕd_1	m	n	a	b	e	ϕd	L_1	H	H_1	W	C	ϕd_1	m	n	a_1	b	ϕd
SG1-100	110	100	62	23.5	90	30	6.5	21	70	30	75	16	4.2	140	100	62	90	30	6.5	21	70	60	75	4.2
SG1-125	132	138.5	72.5	24	110	35	8.5	20	105	35	90	22.5	4.2	167	138.5	72.5	110	35	8.5	20	105	70	90	4.2
SG1-160																								
SG1-200																								
SG1-250																								
SG1-315	180	163	94	38.5	150	50	11	30	130	50	120	34	5.2	230	163	94	150	50	11	30	130	100	120	5.2
SG1-400																								
SG1-500	240	180	110	44	200	70	17	37.5	150	70	160	40	6.5	310	180	110	200	70	17	37.5	150	140	160	6.5
SG1-630																								
SG1-800																								

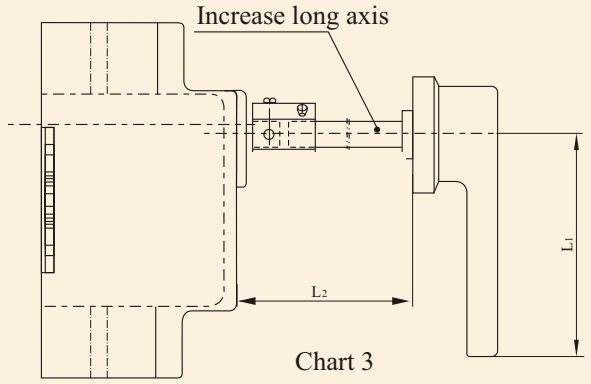
SG1 series rear-board direct operation overall and mounting dimensions

Table 5

Unit： mm

Model	Overall dimensions									Mounting drill dimensions						
	m	L	L_1	H	H_1	H_2	H_3	H_4	ϕd_1	b	ϕd	w	3-pole L_2	4-pole L_3	3-pole a	4-pole a_1
SG1-100	12	94	75	75	20	15	18.5	6	8.5	27	5	17	80	110	60	90
SG1-125	12	114	90	75	20	15	18.5	6	10.5	50	5	18	90	125	70	105
SG1-160																
SG1-200	12	114	90	75	20	15	18.5	6	10.5	50	5	18	90	125	70	105
SG1-250																
SG1-315	16	154	120	106	30	17	34	10	10.5	45	6	27	136	186	100	150
SG1-400																
SG1-500	20	206	164	110	40	20	35	12	12.5	90	7	32	185	255	140	210
SG1-630																
SG1-800																

SG1-100A～800A SGR1-100A～630A outer-box operation panel drill dimensions



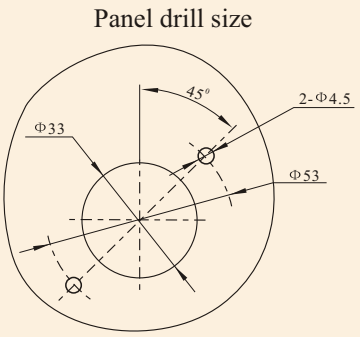


Chart 3

Products model		Dimensions L1	Dimensions L2
SG1-100	SGR1-100	65	150
SG1-125～SG1-400	SGR1-160～SGR1-250	95	150
SG1-500～SG1-800	SGR1-630	125	150

Notes: the standard length L2 added to the long axis is 150,any special requirement please claim when order.

SG1-1000A～1600A front-board wiring direct operation

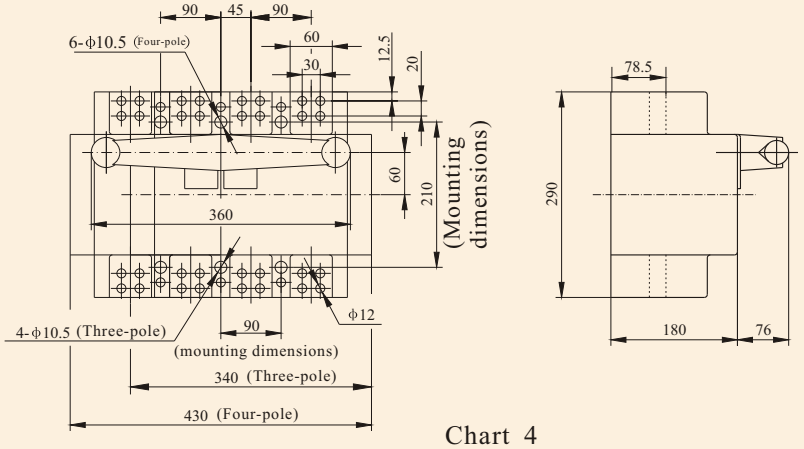


Chart 4

SG1-1000A～1600A outer-box operation panel drill dimensions

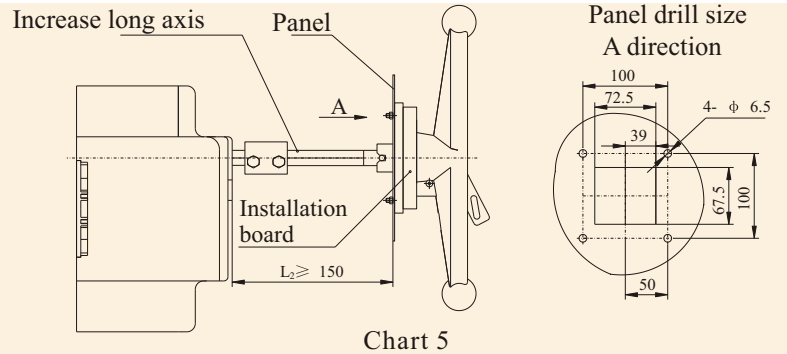


Chart 5

Notes: the standard lengh added to the long axis is 150, any special requirement please claim when order.

●SG1-1000A～SG1-1600A rear-board wiring overall and mounting dimensions

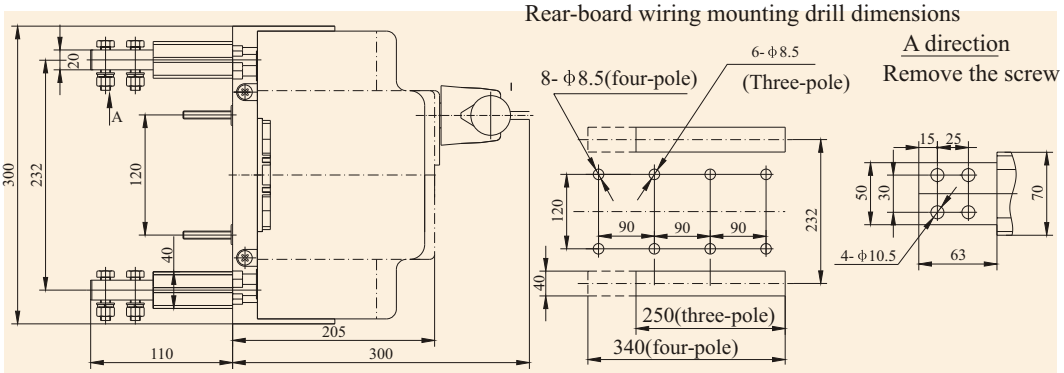
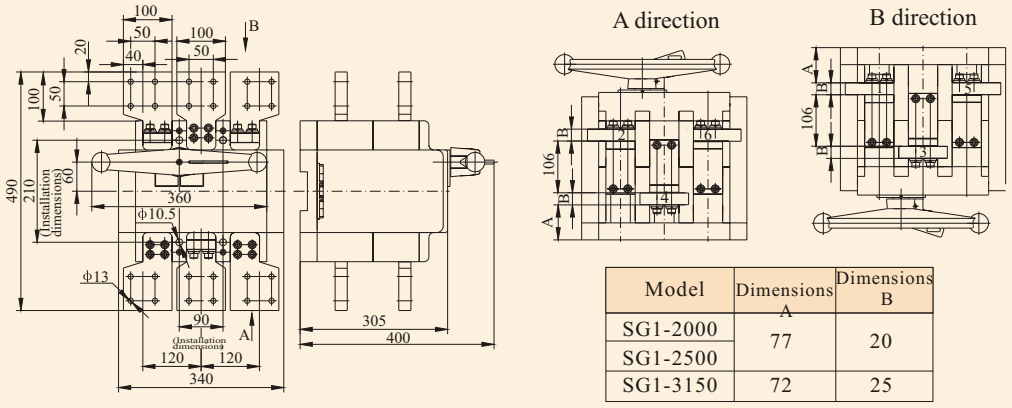


Chart 6

●SG1-2000A～3150A three-pole inner-box operation front-board wiring overall and mounting dimensions



Model	Dimensions A	Dimensions B
SG1-2000	77	20
SG1-2500		
SG1-3150	72	25

Notes: SG1-2000A~3150A without rear-board wiring, four-pole not available temporary

Chart 7

●SG1-2000A～3150A outer-box operation panel drill dimensions

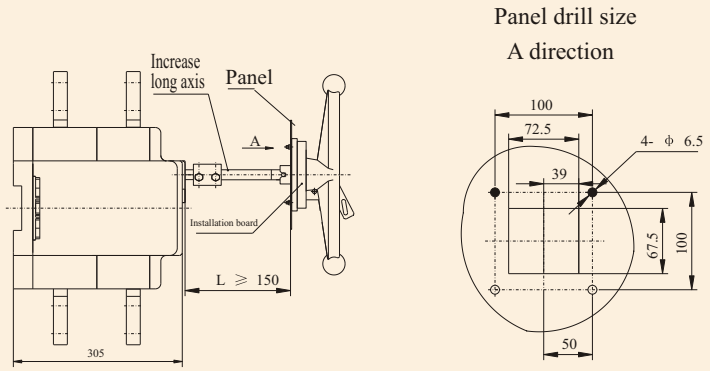


Chart 8

Notes: the standard length added to the long axis is 150, any special requirement please claim when order.

● SGR1-100A~630A overall and mounting dimensions (see chart9, table 6)

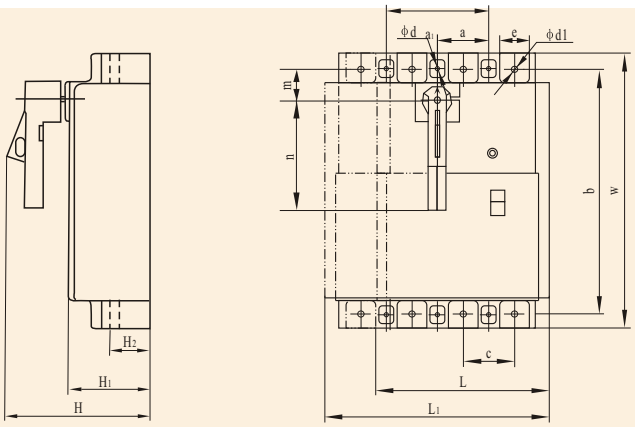


Chart 9

SGR1 series overall and mounting dimensions

Table 6 Unit： mm

Model	Rated working Current(A)	Three-pole													Four-pole									
		Overall dimensions								Mounting dimensions					Overall dimension						Mounting dimensions			
		L	H	H_1	H_2	W	C	m	n	ϕ d_1	a	b	e	ϕ d	L_1	H	H_1	W	C	ϕ d_1	a_1	b	e	ϕ d
SGR1-100	63，50，40，32	110	100	62	23.5	173	30	16.5	70	6.5	30	158	16	4.2	140	100	62	173	30	6.5	60	158	16	4.2
SGR1-160	160，125，100，80，63，50，40	132	138.5	72.5	24	210	35	25	105	8.5	35	190	22.5	4.2	168	138.5	72.5	210	35	8.5	70	190	22.5	4.2
SGR1-250	250，224，200，160，125	182	163	94	38.5	300	50	30	130	11	50	270	34	5.2	232	163	94	300	50	11	100	270	34	5.2
SGR1-630	500，425，400，355，315	237	180	110	44	375	70	42.5	150	17	70	335	40	6.5	306	180	110	375	70	17	140	335	40	6.5

● SGR1 series isolation switch fuse combination units model and overall dimensions (see chart 10, 11, and table7) (the fuse combination units provided separately)

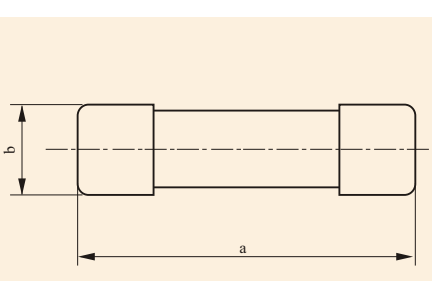


Chart 10 RT14 dimension 22*58
Dimensions of tubular cylinder hat-shape type of fuse combination

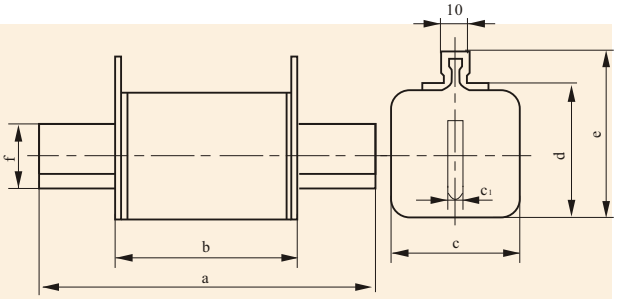


Chart 11: NT00、NT1、NT3
The dimensions of the knife-shaped fuse combination units

SGR1 series selected matching fuse combination units specification and overall dimensions

Table 7

Model	Rated Working Current, A	Matching reference model selected for the fuse combination units	Fuse combination units rated voltage, V	Fuse combination units rated current A	Maximum power loss W	Fuse combination units overall dimensions, mm						
						a	b	c	c1	d	e	f
SGR1 -100	63	RT14	380	63	≤9.5	58	Φ22					
	50			50								
	40			40								
	32			32								
SGR1 -160	160	NT00		160	9.6	78.5	49	29	6	46.5	56.5	15
	125			125	7.8							
	100			100	7.3							
	80			80	6							
	63			63	4.6							
	50			50	4.5							
	40			40	4.3							
SGR1 -250	250	NT1		250	18.3	135	68	48	6	52	62	21
	224			224	16.8							
	200			200	15.2							
	160			160	13							
	125			125	10.2							
SGR1 -630	500	NT3		500	32	150	68	67	6	74.5	84.5	33
	425			425	28.9							
	400			400	26.8							
	355			355	22.7							
	315			315	21.7							

Notes: the selected matching fuse combination units must be in conformity with state standards GB13539.1-2002.
The one made in Shanghai electric appliance ceramics factory is recommended

◆Utilization and maintenance

The switch should be vertically mounted, and before mounting, check if the nameplate conforms to the requirements of utilization.

Before installation turning the operation handle, when the arrow on the handle points at "O" and the viewing window on the front of the switch also indicates the green "O", which means the switch is in off-state; While in on-state when the arrow points at " | " and the viewing window also indicates the red " | ".

The wire has to be wrapped with an insulator if it is a bared one and the wrapping length should not be less than 200mm in order to prevent short-circuit between phases.

When breaking a bigger current during use of the switch, a general overhaul has to be carried out to see if the on and- off operation is normal and the contact position indication is correct, then use it after overhaul. (Please set it on position of “break” when need to overhaul the circuit or maintain the device or need to change over the fuse combination units)

Maintenance should be taken once every six months of use. To coat with MP-3 lubricating oil if the moving part of the switch is found inflexible and check if the fastener is loose. take repair upon different conditions and stop use in case of serious damages.

◆ Ordering notice

Please make a note of the switch's model, norm, quantity etc. to be selected at order.
Example: SG1-400W/3B11 ～380V 5 pcs, i.e. 5 pcs of the isolation switch with the rated current 400A, rated working voltage 380V, outer-box operation, three-pole, rear panel wiring, with an auxiliary contact of 1 N.O. and 1 N.C..
Example: SGR1-160w/311~380V 5 purchase
i.e. 5pcs of the SGR1 series with the rated current 160A, the rated working voltage AC 380V, outer-box operation, three-pole , with an auxiliary contact of one of N.O and one of N.C. the fuse combination units supply separately.
Please provide the related technical data if you have the special requirements on the elevation, ambient temperature etc., We may supply it upon an agreement.