

Horizontal centre break disconnecter
Type SGF 36kV to 362kV
Maximum reliability and minimal
maintenance

Horizontal Centre Break Disconnecter Type SGF

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ABB disconnectors have been in service across the world for over two decades providing maintenance-free service with the highest records of operational reliability. The worldwide experience, often under severe climatic conditions, is applied for continual product improvement.

A mechanical device for providing isolation of power equipment from the network, a disconnector is suitable for switching very small currents or where no significant change in voltage occurs across the terminals. The option of earthing sections of power systems can be made available by providing each disconnector pole with one or two earthing switches.

The horizontal centre break disconnectors type SGF are available for rated voltages from 36kV to 362kV.

Regulations

The SGF Disconnectors are designed as per IEC 62271-102 and IEC 60694 standards. Other international regulations can be met on request.

Type tests on the disconnectors are carried out by accredited testing laboratories in accordance with the latest regulations. Comprehensive electrical and mechanical routine tests are carried out on the poles and operating mechanism of each disconnector ensuring world class quality.



66kV SGF Disconnector

Maximum reliability and minimal maintenance

- **Minimized contact resistance**

The current carrying aluminium conductors are welded to minimize joint resistance.

- **No external springs in contact fingers for maximum reliability**

The contact fingers of the moving contacts of disconnecter type SGF are designed from special conducting material and without external springs for increased reliability.

- **Easy and quick erection**

The current carrying conductors and rotary pedestals are designed for easy adjusting and alignment.

- **Low friction design for smooth operation**

Maintenance-free linkages with stainless steel rod-end bearings require less drive power for operation and provide smooth motion transmission without any disturbance in the settings.

- **Dead centre interlocking for reliability under extreme conditions**

The dead centre interlocking of operating mechanisms ensures there are no inadvertent changes in the open

or close switching position even under extreme external conditions such as storms, earthquakes etc.

- **Superior design of mechanical interlock**

The mechanical interlock between the earth switch and main blade is designed such that there is no scope for malfunction.

- **Ice breaking capacity**

The disconnectors are capable of operating under severe ice conditions.

- **Strong rotary pedestals**

This ensures that the deflection remains unchanged at high static mechanical loads.

- **Suitable for wide range of environmental conditions**

The disconnectors can operate in a wide range of temperatures as well as under polluted environmental conditions.

- **Minimal maintenance**

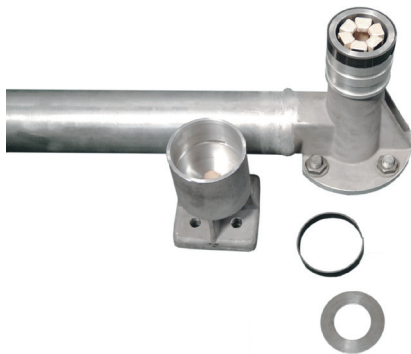
Superior material and lubricant used in the encapsulation of the pedestals and rotary terminal pads makes the disconnectors practically maintenance-free.

Design based on cutting-edge technology and experience

The horizontal centre break disconnectors type SGF consist of a steel base frame with two rotary pedestals, insulators, current carrying conductors (current path) and driving mechanisms. Steel components are hot dip galvanized to protect against atmospheric influences.

Each of the three phases of the disconnector consists of two insulators mounted on maintenance free, sealed rotary

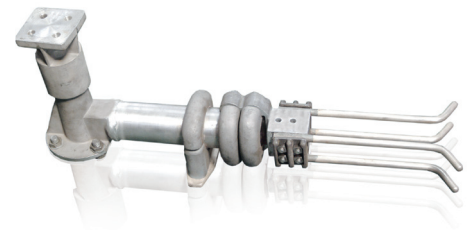
pedestals which are carried by the steel base frame. The support post insulators carry the current paths consisting of two halves, with finger contacts and fist contacts. The current transfer takes place at the rotary heads of the two current paths via tulip-type contact fingers. The rotary heads can be turned 360° and therefore the installation of a pipe connection or the straining of connection cable is possible in any direction. Flat terminal plates can be provided as per DIN standard 46203, NEMA or any other standards.



Tulip Contacts of 1600A current path terminal head



Fist side current path rated for 1600A



Finger side current path rated for 1600A with earthing fixed contact mounted

Technical details

Technical Data		36 kV	72.5 kV	123 kV	
Disconnecter	for 1600A	SGF36n...**	SGF72.5n...**	SGF123n...**	
	for 2500A	SGF36p...**	SGF72.5p...**	SGF123p...**	
	for 3150A	SGF36pc...**	SGF72.5pc...**	SGF123pc...**	
	for 4000A	SGF36q...**	SGF72.5q...**	SGF123q...**	
Additional designation for design with					
	One Built-on earthing switch	+1E...**	+1E...**	+1E...**	
	Two Built-on earthing switches	+2E...**	+2E...**	+2E...**	
Rated voltage	kV	36	72.5	123	
Rated normal current	A	1600	1600	1600	
		2500	2500	2500	
		3150	3150	3150	
		4000	4000	4000	
Rated short time current 1 s for *	kA	40	40	40/50	
Disconnecter and earthing switch					
Rated peak withstand current of	kAp	100	100	100/125	
Disconnecter and earthing switch					
Rated 1 min power frequency withstand voltage (50 Hz)					
	to earth and between poles	kV	70	140	230
	across the isolating distance	kV	80	160	265
Rated Lightning impulse withstand voltage 1.2/50µs					
	to earth and between poles	kVp	170	325	550
	across the isolating distance	kVp	195	375	650
Rated switching impulse withstand voltage 250/2500µs					
	to earth and between poles	kVp	–	–	–
	across the isolating distance				
	Class A	kVp	–	–	–
	Class B	kVp	–	–	–
Discharge inception voltage	Kv	>27	>46	>80	
Radio interference voltage	µV	<500	<500	<500	
at voltage	kV	23	46	78	
3 phase breaking capacity	A	2	2	2	
					inductive, capacitive
Insulator design :					
	minimum failing load	N	4000	4000	4000-6000-8000
	overall height	mm	508	770	1220
	minimum creepage distance	mm	900	1813	1970
Admissible mechanical terminal load***					
	static and dynamic	N	2500	2500	3000-4000-6000
	static portion	N	500	500	1200-1500-1500

* 3 s on demand

** The type designation is complemented by data for the rated peak withstand current

*** The values of the mechanical terminal loads are dependent on the minimum failing load of the built-in insulator given in the table. Insulator designs with higher strength and extended creepage distance are possible.

145 kV	170 kV	245 kV	300 kV	362 kV
SGF145n... ^{**}	SGF170n... ^{**}	SGF245n... ^{**}	SGF300n... ^{**}	SGF362n... ^{**}
SGF145p... ^{**}	SGF170p... ^{**}	SGF245p... ^{**}	SGF300p... ^{**}	SGF362p... ^{**}
SGF145pc... ^{**}	SGF170pc... ^{**}	SGF245pc... ^{**}	SGF300pc... ^{**}	SGF362pc... ^{**}
SGF145q... ^{**}	SGF170q... ^{**}	SGF245q... ^{**}	SGF300q... ^{**}	SGF362q... ^{**}
+1E... ^{**}	+1E... ^{**}	+1E... ^{**}	+1E... ^{**}	+1E... ^{**}
+2E... ^{**}	+2E... ^{**}	+2E... ^{**}	+2E... ^{**}	+2E... ^{**}
145	170	245	300	362
1600	1600	1600	1600	1600
2500	2500	2500	2500	2500
3150	3150	3150	3150	3150
4000	4000	4000	4000	4000
40/50	40/50	40/50	40/50	40/50
100/125	100/125	100/125	100/125	100/125
275	325	460	380	450
315	375	530	435	520
650	750	1050	1050	1175
750	860	1200	1050 (+170)	1175 (+205)
-	-	-	850	950
-	-	-	850	950
-	-	-	700 (+245)	800 (+295)
>95	>110	>160	>230	>230
<500	<1000	<500	<1000	<2500
92	108	156	230	230
2	2	1.5	1	1
4000-6000-8000	4000-6000-8000	4000-6000-8000	6000-8000	6000-8000
1500	1700	2300	2650	2650
2300	2700	4800	5600	5800
3100-4700-6000	3200-4800-6000	3400-5100-6000	3400-5100-6000	3400-5100-6000
1200-1500-1500	1300-1500-1500	1300-1500-1500	1300-1500-1500	1300-1500-1500

Mode of operation

The disconnecter and earthing switch are operated via independent operating mechanisms.

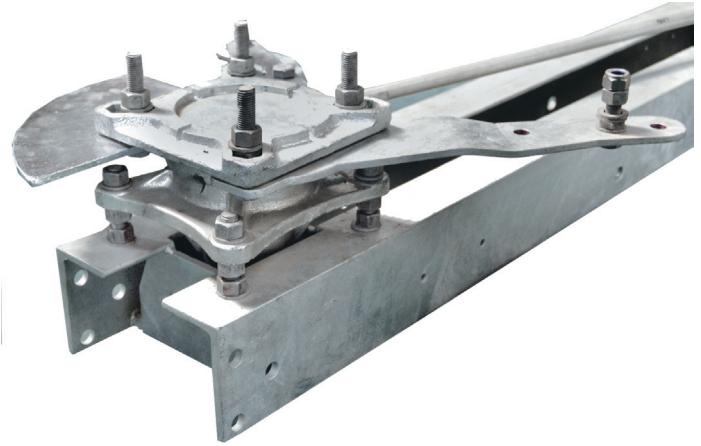
The operating energy from the operating mechanism of the disconnecter is transmitted to one of the rotary pedestals of one phase. A diagonal rod connects both the rotary pedestals of each column ensuring simultaneous operation of both columns. The three phases of the disconnecter are connected by gang operating linkages for three phase operation. During opening and closing operation both the current paths rotate through an angle of 90°. The current paths will be at right angles to the base frame in open position.

Operating mechanism

All disconnecters can be supplied by manual or motor operated mechanism, as required by the customer. Each three-pole disconnecter or earthing switch group requires only one operating mechanism. The coupling rods between the individual poles can be continuously adapted.

Operating mechanisms contain auxiliary switches for control and signaling as well as provisions for electrical interlocks.

For maximum reliability the main contacts of the disconnecter and earthing switch pass through the dead centre positions shortly before they reach the end positions. This prevents accidental opening or closing of the units due to external influences (e.g. short-circuits, storm, earthquake).



Bearing on frame assembly



Linkages with spherical bearings

Quality and Environment systems

All aspects of product quality are ensured by integrated quality systems in the manufacturing process. Environment friendly processes are followed to ensure minimum footprint. The manufacturing facilities are certified for ISO 9001 - Quality Systems, ISO 14001 – Environment Management Systems and ISO 18001 – Occupational Health and Safety Systems.

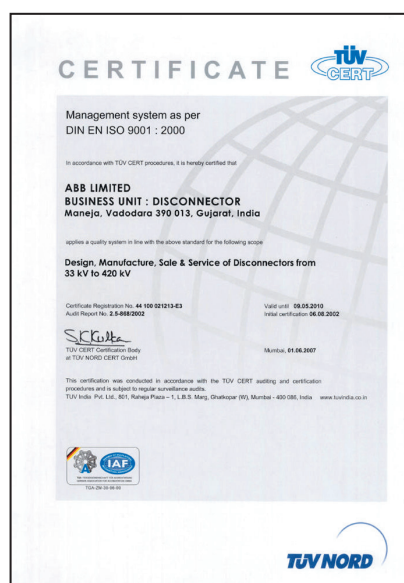
In case of the earthing switch, the operating energy is transmitted to the earthing switch shaft. The tubular contact arm swings upwards when the unit is closing. Three phase operation is conducted via gang operation.

Interlocks

The disconnecter and earthing switch are mechanically interlocked. In operating mechanisms a blocking magnet can be installed as an additional interlocking facility, which in disconnected condition, makes operation of the operating mechanism impossible.

Earthing switch unit

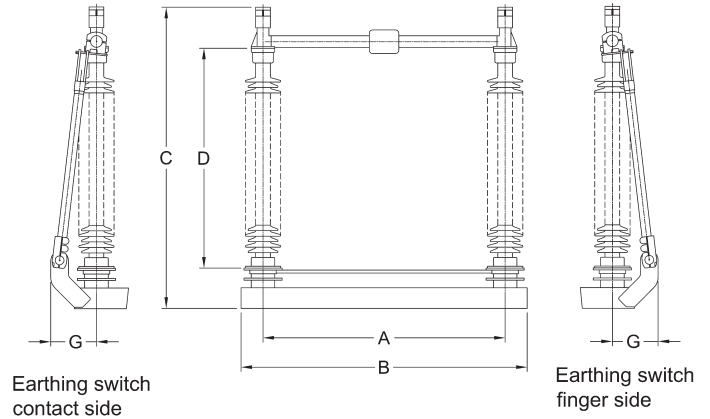
The earthing switch unit, an optional assembly, consists of a hinged-type earthing switch fixed at the base frame. The unit can be mounted on either of the contact sides or on both sides as required.



Easy installation

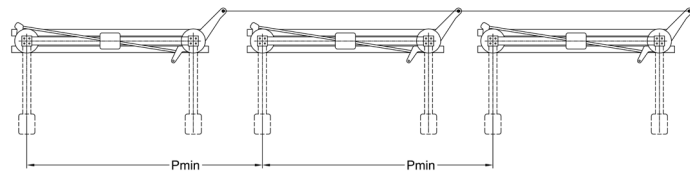
The disconnectors are delivered in following assemblies - lower part with rotary pedestals and diagonal rod, current path halves, support insulators and operating mechanism. As all mechanical adjustments are carried out in the factory, only mounting of the assemblies, installation of the coupling rods between the poles, connection of the high-tension leads and the electrical connection leading to the operating mechanisms is required at the site.

Stud bolts are provided to compensate rapidly and exactly any inaccuracies in insulator position caused due to tensile forces.

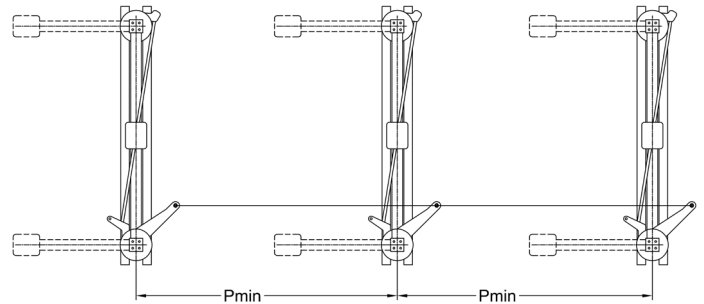


Type	Installation (without or with switch)	
	in series Pmin(mm)	in parallel Pmin(mm)
SGF36	1790	1270
SGF72.5	1790	1270
SGF123	2700	1970
SGF145	3150	2330
SGF170	3530	2640
SGF245	4920	3570
SGF300	5350	4000
SGF362	6925	5350

Series installation



Parallel installation



Main dimensions drawing

Dimensions	Type	Type								
		SGF36	SGF72.5	SGF123	SGF145	SGF170	SGF245	SGF300	SGF362	
A Support insulator distance	mm	1000	1000	1400	1650	1830	2620	2620	3200	
B Base frame length	mm	1300	1300	1700	1950	2130	2920	2920	3500	
C Isolator height	SGF ... n	mm	1093	1325	1775	2055	2255	2855	3205	3255
	SGF ... p	mm	1143	1375	1825	2105	2305	2905	3255	3255
	SGF ... pc	mm	1193	1425	1875	2155	2355	2955	3305	3305
	SGF ... q	mm	1193	1425	1875	2155	2355	2955	3305	3305
D Support insulator height	mm	508	770	1220	1500	1700	2300	2650	2650	
E Isolator width (open)	mm	560	560	760	925	1030	1370	1370	1725	
F Isolating distance	mm	800	800	1200	1450	1630	2420	2300	2700	
G Length of earthing switch attachment	mm	450	450	450	450	450	450	450	450	

Contact us

ABB Limited

H V switchgear (Disconnectors)

Maneja, Vadodara 390 013, India

Phone: +91-265-2642141

Dir: +91-265-2604082

Fax: +91-265-2638927

South Zone

1st floor, Apple towers

Palarivattom bypass junction

Cochin 682 024

Phone: +91-484-2330342

Fax: +91-484-2330343

5th floor, Ardee building, Plot no.1

Siripuram, Balajinagar

Visakhapatnam 530 003

Phone: +91-891-2795837

Fax: +91-891-2538188

5th floor, Splendid towers

S P road, Begumpet

Hyderabad 500 016

Phone: +91-40-27906713/15, 27906728

Fax: +91-40-27906648

Chennai Zone

2nd floor, West wing

Rajananarayan towers

70, Race course road

Coimbatore 641 018

Phone: +91-422-2300371

West Zone

Plot no.34, Sector – A

Next to Bhopal Medical Centre

Indrapuri, Raisen road, Bhopal 462 023

Phone: +91-0755-6463601-08

Fax: +91-0755-2550397

Neel square, 1st floor, Plot no.8

Sanghvinagar, near Parihar chowk

Aundh, Pune 411 007

Phone: +91-20-66243800

www.abb.com/highvoltage

Sai-Rish, 5 - Gawande layout

Near Chhatrapati square, Ring road

Nagpur 440 015

Phone: +91-712-6461146

A-101, Shapath - 4, opp. Karnawati club

S.G. highway, Ahmedabad 380 051

Phone: +91-79-66090113

R&D Centre, Marketing department

P.O. Maneja, Vadodara

Phone: +91-265-2604496

East Zone

Kashikunj building, Road no.2

Contractors area, Bistupur

Jamshedpur 831 001

Phone: +91-657-6450118

1st Floor, City center, Plot no.A5/1

Sachivalaya marg, unit 9

Bhubaneshwar 751 022

Phone: +91-674-6548715

Maruti heights, 5th floor

Aamanaka, G E road

Raipur 492 099

Phone: +91-771-4213202 / 4213203

North Zone

SCO-no.13, 14, 15, 3rd floor, 34 A

Chandigarh 160 022

Phone: +91-172-4231800

C-116, Alaknanda, II floor

Behind Vidhan Sabha

Janpath 302 015, Jaipur

Phone: +91-141-2744024

Fax: +91-141-2744027

C-2/201, Vaibhav Place, Indira nagar

Dehradun 248 006

Phone: +91-135-2762731

Fax: +91-135-2760655

SCO - 124, 5th floor, Gurtej tower

Firooz Gandhi market

Ludhiana 141 002

Phone: +91-161-4656830 / 6831

29/9, Raina Pratap marg, 2nd floor

Raj chambers, Lucknow 226 001

Phone: +91-522-2209436

Fax: +91-522-2209478

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