

Uniswitch OEM Concept for Air Insulated MV Switchgear 12-24 kV



ABB

Terminology

- **OEM** (Original Equipment Manufacturer) a chosen ABB partner.
- **Uniswitch** is an ABB brand-name. Use of the Uniswitch brand-name is only acceptable subject to explicit approval by ABB.



Available options

The client may choose the most suitable of the four basic options to meet with the market requirements and available facilities.

OEM co-operation road map



1 Top Unit Kit

Fully factory-tested SFG Switch, with sheet steel frame, spring mechanism and optional position indicator.

2 Noble Parts Kit

The Noble Parts Kit consists of the main switchgear parts (without sheet steel parts) according to the customer's requirements. For example, an SFG switch, earthing switch, fuse base, etc.

3 Uniswitch Basic Cubicle

(cubicle without protection relays, secondary wires etc.) The cubicle is fully assembled and tested by ABB's factory in Vaasa. The basic cubicle can easily be tailored by OEMs according to the requirements of the local market.

4 Uniswitch Cubicle Kit SKD

(Semi Knock Down)

The kit includes all parts (except standard parts such as screws, bolts, nuts and washers). The switchgear cubicle is delivered in parts (fully and/or partly disassembled). Noble parts such as Top Units and circuit breakers are delivered fully assembled.



ABB Power Partnership Program
More info from Local ABB Contact



SFG

Gas-insulated indoor switch disconnecter

SFG is an SF₆ insulated three-position (close, open, earth on) switch disconnecter. All electrically active parts, including the earthing switch, are in robust epoxy resin housings filled with SF₆ (1.45 bar).

SFG is a virtually maintenance-free, sealed-for-life (30 years) SF₆ unit. Simple and reliable mechanisms in a stainless steel enclosure offer high mechanical endurance. For the SFG, 1000 close/open and 1000 open/earth operations are guaranteed.

The switch disconnecter is available with a single-spring mechanism for independent open/close operation, or alternatively with a double-spring mechanism with a tripping facility (fuse, coil or bush button).

The switches with both types of mechanism can easily be motorized and used as part of remotely controlled system.

For easy installation, the SFG is available with a corrosion-resistant sheet steel (AluZink) frame. The switch with a frame is called a "Top Unit".



Superior features and various advantages

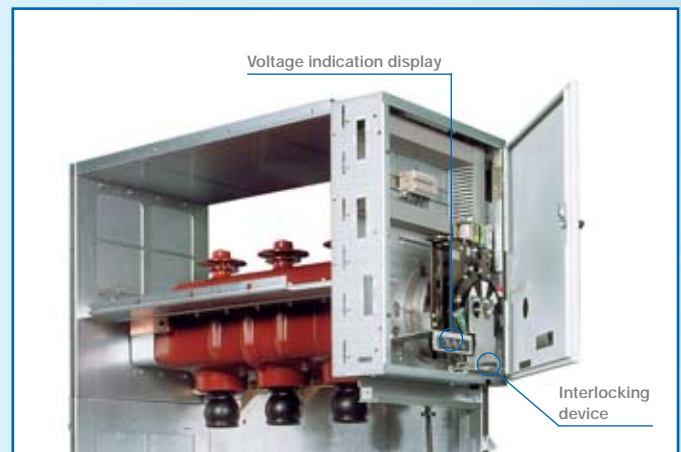
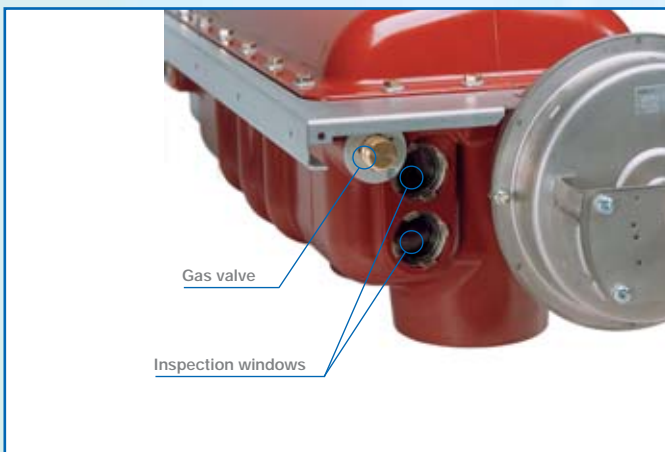
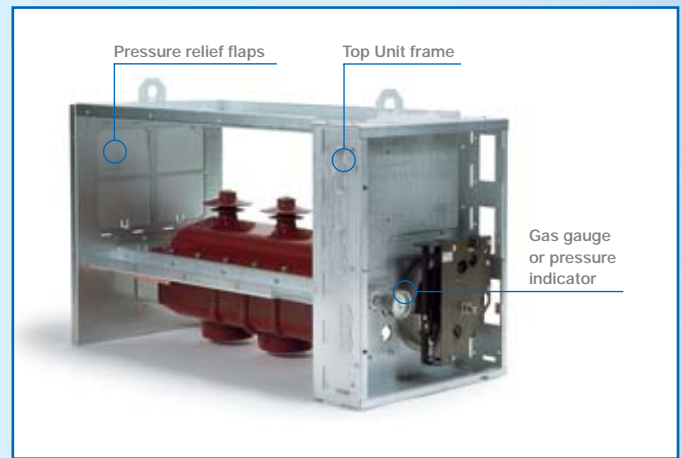
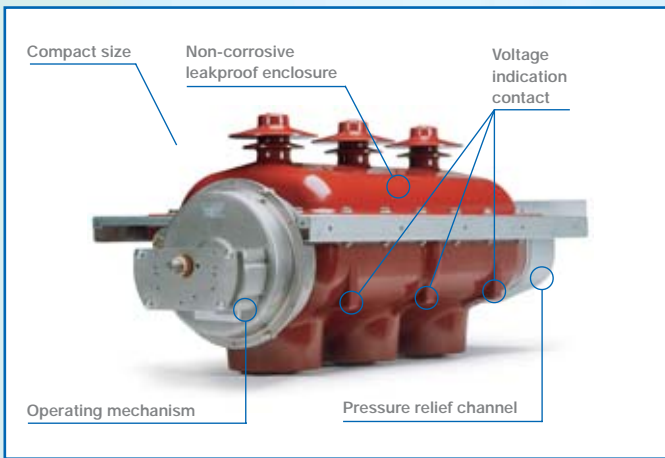




ABB support for OEMs

- Full and broad portfolio of Products and Systems
- Technology developed to fit with OEM demands
- Products tested according to IEC standards and complying with other main standards (ANSI, GOST, GB)
- Experienced project handling from S to XXL
- Products accepted by all end customers
- Service with worldwide access
- Tools available to support OEM businesses (e.g. configurators)
- Power Partnership Program

Safety: user value

Safety of the SFG means safety for the operating personnel. We keep the safety aspect of our apparatus continuously in focus; we concentrate on every step in the manufacturing process to ensure quality right down to the last detail. One way of proving our dedication to safety is compliance with IEC standards.

Highlights of safety aspects:

- Integrated voltage indicator
- Interlocking device
- Gas gauge, pressure indicator
- Inspection windows
- Non-corrosive leakproof enclosure
- Pressure relief channel

Economy: financial value

In all our solutions and applications we pay attention to economic aspects and cost optimisation during the total lifecycle of the product. The SFG is virtually maintenance free and the lifespan is a guaranteed minimum of 30 years.

Highlights of economy aspects:

- Long lifecycle
- High mechanical endurance
- Low maintenance costs
- Low environmental impact

Reliability: performance value

ABB's long experience in switching and isolating technology is an advantage when it comes to ensuring the highest reliability of the SFG.

The highest technical values and the low number of moving parts guarantee reliable operation throughout the entire lifespan of the product. The epoxy resin enclosure prevents negative effects from external disturbances and stresses.

Highlights of reliability aspects:

- Each unit is stringently tested
- Used worldwide in the Uniswitch
- Extremely durable and reliable operating mechanism
- Local ABB support globally

Smart integration: process value

We believe that our customers rate smart integration as one of the most important features.

The SFG concept is based on modular construction, which offers many flexible opportunities for you to decide on the best solution. To meet your requirements and fulfil your needs, the SFG concept includes a full range of operating mechanisms and accessories.

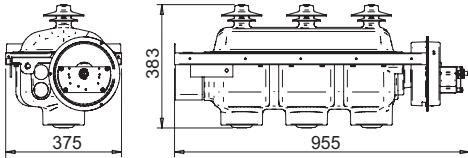
Highlights of smart integration:

- Compact size
- One switch – many applications
- Easy installation
- Part of the ABB solution

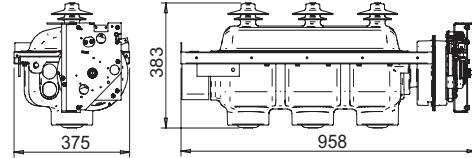


SFG

SFG switch disconnecter

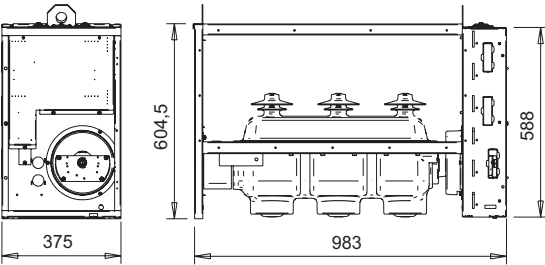


SFG switch disconnecter **1VFS110006R2**
and single spring device **UES-K3/10**

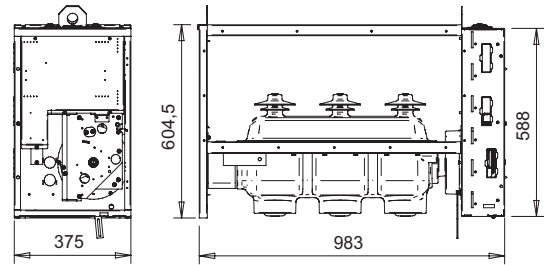


SFG switch disconnecter **1VFS110006R2**
and double spring device **UES-A3/10**

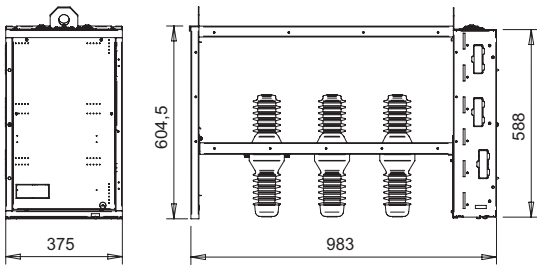
Top Unit 375



SFG Top Unit 375 with single-spring device **1VFM111056R2**

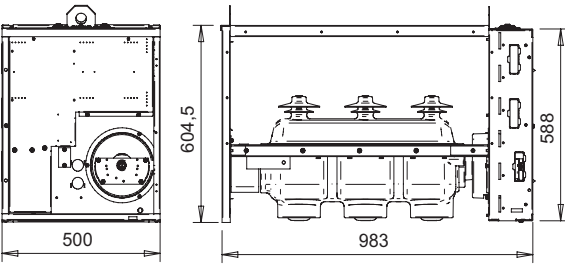


SFG Top Unit 375 with double-spring device **1VFM111063R2**

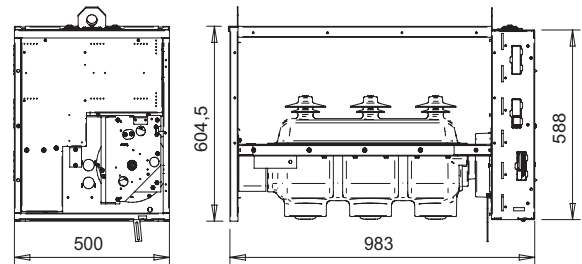


Bushing Unit 375 **1VFM111072R2**

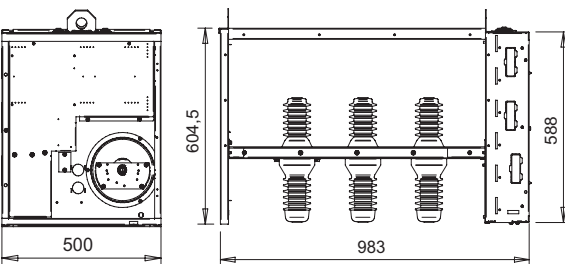
Top Unit 500



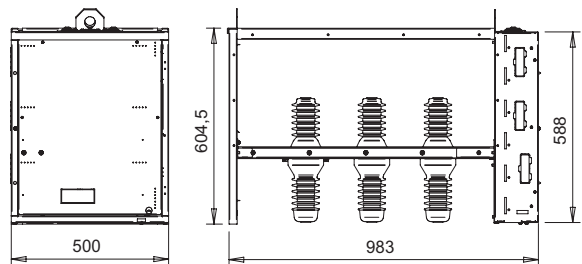
SFG Top Unit 500 with single-spring device **1VFM111057R2**



SFG Top Unit 500 with double spring-device **1VFM111064R2**



Bushing/EM Top Unit **1VFM1110071R2**



Bushing Unit 500 **1VFM111073R2**

Doors

Top Unit door 375	1VFM111010R3
Top Unit door 500	1VFM111011R3
Top Unit door 375 for fuse indication	1VFM111017R3
Top Unit door 500 for fuse indication	1VFM111018R3

Single line diagrams

Single line diagram SDC 375	1VFM187001P1
Single line diagram SDC 500	1VFM187021P1
Single line diagram SDF 375	1VFM187006P1
Single line diagram SDF 500	1VFM187026P1

Operating and interlocking devices

Central locking system	1VFJ220030R2
Position indicator	1VFJ120037R2
Operating handle	1VFJ220002R2

Motor operating device for single-spring device

Motor operating device	1VFU110001R2-24VDC
Motor operating device	1VFU110001R2-48VDC
Motor operating device	1VFU110001R2-60VDC
Motor operating device	1VFU110001R2-110VDC
Motor operating device	1VFU110001R2-125VDC
Motor operating device	1VFU110001R2-220VDC

Motor operating device for double spring device

Motor operating device	1VFU110002R3-24VDC
Motor operating device	1VFU110002R3-48VDC
Motor operating device	1VFU110002R3-60VDC
Motor operating device	1VFU110002R3-110VDC
Motor operating device	1VFU110002R3-125VDC
Motor operating device	1VFU110002R3-220VDC

Control units for motor operating device

Control unit	UEZJ 1-24 VDC/7
Control unit	UEZJ 1-48 VDC/7
Control unit	UEZJ 1-60 VDC/7
Control unit	UEZJ 1-110 VDC/7
Control unit	UEZJ 1-125 VDC/7
Control unit	UEZJ 1-220 VDC/7
Control unit	UEZJ 1-110 VAC/7
Control unit	UEZJ 1-230 VAC/7

Auxiliary contacts

Auxiliary contacts, switch disconnecter	1VFJ120008R3
Auxiliary contacts, earthing switch	1VFJ120010R3

Voltage indication system (VIS) fixed mode

Bracket for VIS	1VFM115055R2
Indicator (CATU CL497) 12...24 kV	1VFM170037P1
Cable 1.7 m (3-phase) 12 kV	1VFM170040P1
Cable 1.7 m (3-phase) 17.5 kV	1VFM170041P1
Cable 1.7 m (3-phase) 24 kV	1VFM170042P1

Bottom units

Bottom unit 16-375	1VFM112001R3
Bottom unit 16-500	1VFM112003R3
Bottom unit 18-375	1VFM112002R3
Bottom unit 18-500	1VFM112004R3
Locking lug for cable compartment door	1VFM132002R3

Fuse tripping and indicating system

Fuse tripping device with blown fuse indicator	1VFM113039R2
Blown Fuse indicator	1VFM113040R2

Tripping coils

Tripping coil	1VFJ120007R2-24VDC
Tripping coil	1VFJ120007R2-48VDC
Tripping coil	1VFJ120007R2-60VDC
Tripping coil	1VFJ120007R2-110VDC
Tripping coil	1VFJ120007R2-125VDC
Tripping coil	1VFJ120007R2-220VDC

Pressure indication

Gas density alarm contact	1VFS120003R3
Pressure gauge	1VFS120008R2

Connection parts for SFG/cable side

Connection bars (3-phase) 12...17.5 kV	1VFM114023R3
Connection bars (3-phase) 24 kV	1VFM114024R3

Fuse bases

Fuse base with EF (w/o capacitor) 12...24 kV	1VFM113048R2
Fuse base with EF & C1 (w/ capacitor) 12 kV	1VFM113068R2
Fuse base with EF & C1 (w/ capacitor) 17.5 kV	1VFM113055R2
Fuse base with EF & C1 (w/ capacitor) 24 kV	1VFM113069R2

Primary connection cable for VT

Primary connection cable VT, 12...24 kV	KREZ 15
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Busbars (3 phase sets)

Busbar 630 A, 375, 12...17.5 kV	1VFM114001R2
Busbar 630 A, 500, 12...17.5 kV	1VFM114002R2
Busbar 630 A, 375, 24 kV	1VFM114007R2
Busbar 630 A, 500, 24 kV	1VFM114008R2

Connection parts for SFG/busbar side

Mid panel 12...17.5 kV, 630 A	1VFM114013R2
Mid panel 12...17.5 kV, 1250 A	1VFM114028R2
Right or left panel 12...17.5 kV, 630 A	1VFM114027R2
Right or left panel 12...17.5 kV, 1250 A	1VFM114029R2
Mid panel 24 kV, 630 A	1VFM114014R3
Right panel 24 kV, 630 A	1VFM114015R3
Left panel 24 kV, 630 A	1VFM114063R3

Technical data

Compliance with GOST and IEC standards: IEC 62271-200, IEC 60694, IEC 62271-100, IEC 60265-1, IEC 62271-102 and IEC 62271-105.

Ratings	Unit	Value	Value	Value
Rated voltage	kV	12	17.5	24
Rated lighting impulse withstand voltage				
Common value	kV	75	95	125
Across the isolating distance	kV	85	110	145
Rated short duration power frequency withstand voltage				
Common value	kV	28 ¹⁾	38 ¹⁾	50
Across the isolating distance	kV	32 ¹⁾	45 ¹⁾	60
Rated frequency	Hz	50 / 60	50 / 60	50 / 60
Rated current I _r	A	800	800	630
Rated short time withstand current	kA	25	20	20
Rated duration of short circuit	s	2	3	3
Rated peak withstand current	kA	62.5	50	50

Making and breaking tests (IEC 60265-1, Class E3) for the SFG switch

Mainly active load current	A	800	800	630
Closed-loop distribution circuit current	A	800	800	630
Cable charging current	A	50 and 10	50 and 10	50 and 10
Line charging current	A	20	20	20
Cable and line charging current under earth faults	A	87	87	87
Short circuit making current	kA	62.5	50	50

Making and breaking tests (IEC 60420) for the SFG switch – fuse combination

Rated cut-off current of the fuse-switch combination	kA	25	20	20
Breaking test with long pre-arcing time of fuse		ok	ok	ok
Breaking capacity at rated transfer current	A	1530	1260	920

Mechanical performance

Mechanical endurance of switch close / open	Operations	1000	1000	1000
Mechanical endurance of switch open / earth	Operations	1000	1000	1000
Ambient temperature				
Maximum value	°C	+40	+40	+40
Maximum value of 24 h mean	°C	+35	+35	+35
Minimum value	°C	-5 ²⁾	-5 ²⁾	-5 ²⁾
Altitude above sea level	m	< 1000 ³⁾	< 1000 ³⁾	< 1000

¹⁾ Higher values in accordance with national standards on request.

²⁾ Lower ambient temperature on request.

³⁾ Higher altitudes on request.



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