Medium Voltage Distribution

EvoPact HVX

Vacuum circuit-breaker up to 24 kV

Medium-Voltage Switching Devices Selection List

2021

Schneider Electric

Conditions of Delivery

The General Conditions of Delivery as amended shall apply.

Illustrations

The illustrations are not binding.

Contents

Vacuum circuit-breaker

Drawing unit with vacuum circuit-breaker

Fixed-type unit with vacuum circuit breaker

The result of consistent further development for application in modern air-insulated switchgear units

General Description

The EvoPact HVX vacuum circuit-breaker is the result of consistent further development for application in modern air-insulated switchgear units. It is characterized by compact dimensions, good operator guidance and a modern functional industrial design.

Thus, the market requirements, especially regarding small functional compartments without additional solid insulating material in the panel to ensure dielectric strength, can be satisfied optimally.

Essential Features

- compact design
- good operator guidance thanks to the functional arrangement of operating and signalling elements
- no free-standing pole column
- vacuum interrupter chamber suspended free of external forces
- pole envelope with supporting and insulating functions
- high mechanical protection thanks to pole envelope
- flexible application options:
  - for fixed installation
  - for mounting on isolating truck
  - for drawer-type use

Vacuum circuit-breaker (contd.)

- high reliability and availability thanks to mature vacuum switching technology and proven single-shaft spring drive
- world-wide application for all standards
- maintenance-free

Fields of application:

- Overhead cables
- Cables
- Motors
- Transformers
- Generators

Performance characteristics

Rated voltage	Rated lightning impulse withstand voltage	Rated short-time power frequency withstand voltage	Rated short-circuit making current	Rated short-circuit breaking current	Rated current
kV	kV	kV	kA	kA [1]	A
12	75	28	40	16	630 - 1250
			63	25	630 - 2500
			80	31.5	630 - 2500
			100	40	800 - 2500
			125	50	800 - 3150
17.5	95	38	40	16	630 - 1250
			63	25	630 - 2500
			80	31.5	630 - 2500
			100	40	800 - 2500
24	125	50	40	16	630 - 2500
			63	25	630 - 2500
			80	31.5	630 - 2500

[1] Also corresponds to a rated short-time current of 3 seconds.

Design

The EvoPact HVX vacuum circuit-breaker was designed on the basis of the proven post insulator switch principle, i.e. the pole section is secured to the drive casing in two places. In addition to providing insulation between the poles and to the ground, the multifunction pole section performs all supporting and protection functions.

Drawing unit with vacuum circuit-breaker HVX-E ≤ 1250 A with 64-pole connector attachment

Drawing unit with vacuum circuit-breaker HVX-E ≤ 2500 A with 64-pole connector attachment

Drawing unit with vacuum circuit-breaker HVX-E > 2500 A, 50 kA with 64-pole connector attachment

Design (contd.)

Module

Drive unit

Essential features

- Single-shaft system with a single spiral spring for ON and OFF
- Optimum adaptation to the small contact travel of the vacuum interrupter chamber
- Minimum energy requirement

Description

Thanks to the use of modern vacuum interrupter chambers, vacuum circuit-breakers make for an optimization of the entire drive kinematics.

Method of operation:

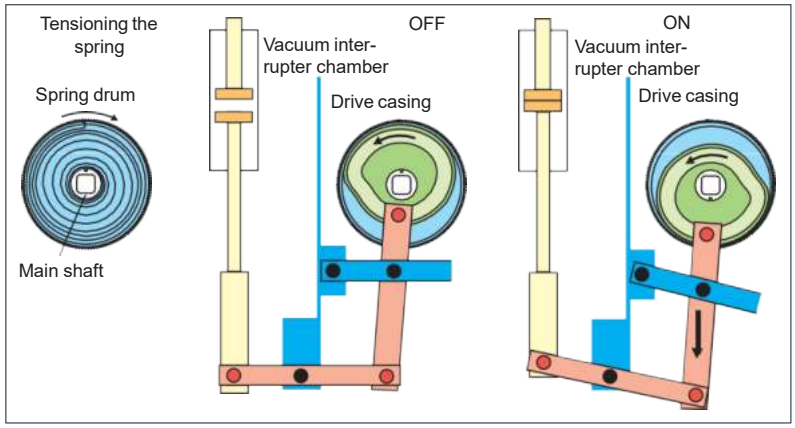
The energy for a complete switching cycle can be stored in the spiral spring. The ON and OFF movement of the vacuum interrupter chamber is controlled via the cam discs. Once closing (ON) has been effected, the spring can be tensioned further, storing the energy for a complete automatic reclosing cycle.

The drive mechanism is available in two basic models, i.e. as manual spring mechanism FH 2-01 or the motorized spring mechanism FK 2-01. Appropriate interlocks rule out faulty switching operations.

In addition to the mechanical actuation of the manual ON/OFF pushbuttons, the drives can be remote-controlled electrically or actuated via primary relays.

Spring-charging mechanism of the drive using a crank

Approx. 15 turns per C-O operating cycle are required.

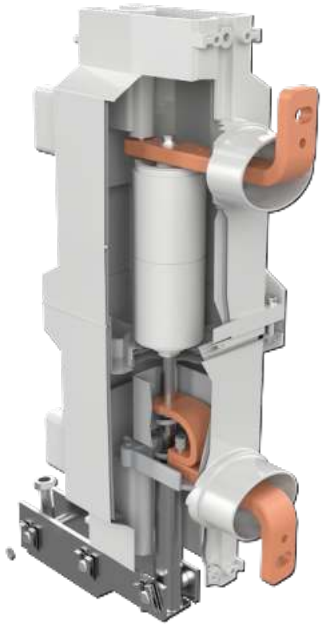


Basic equipment

Type	FH 2-01 (Manual drive)	FK 2-01 (Motor-operated drive mechanism)
Mechanical elements		
OFF push-button	■	■
ON push-button	■	■
Switch position indicator	■	■
Mechanical operations counter•	■	■
Switching spring position indicator	■	■
Electrical equipment		
Spring charging motor		■
Closing coil		■
Opening coil		■
8 auxiliary contacts	■	■

Design (contd.)

Pole section EvoPact HVX ≤ 1250 A



Pole section EvoPact HVX 12/24 kV > 1250 A

Pole section EvoPact HVX ≤ 2500 A

The supporting component of the entire pole section is the multifunctional pole shell. Its functions comprise those of a mechanical supporting device for the top and bottom terminal contacts between which the vacuum interrupter chamber is suspended free of mechanical constraints. In this case, there are no insulating bridges between the phases.

Integrating a wide variety of functions within the pole envelope helped minimize the number of individual parts significantly.

Pole section > 2500 A

The pole section is of extremely robust design. The solid support provides a constraint-free suspension for the interrupter chamber. Due to this statically closed support system, the axial forces produced on closing and opening only act on the contact system, whereas the vacuum interrupter chamber remains free of constraints.

Drawing unit

The drawing unit is the supporting element for:

- the drive unit to move the vacuum circuit-breaker HVX-E into its operating / isolating position
- secondary terminals (64/36-pole)
- interface elements for
  - panel interlocks
  - drawing unit position indications
- drawing unit coding

Drive design

The basic design according to the Table on page 8 can be supplemented optionally by:

- 8 additional auxiliary contacts
- 2nd shunt tripping coil
- undervoltage release
- transformer-operated release
- OFF button*
- ON button*
- primary relay release
- primary relay pulse contact
- anti-pumping relay

* Breaker contact in passing contact circuit