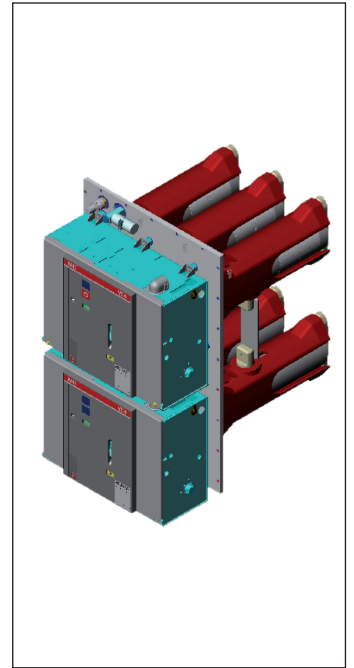
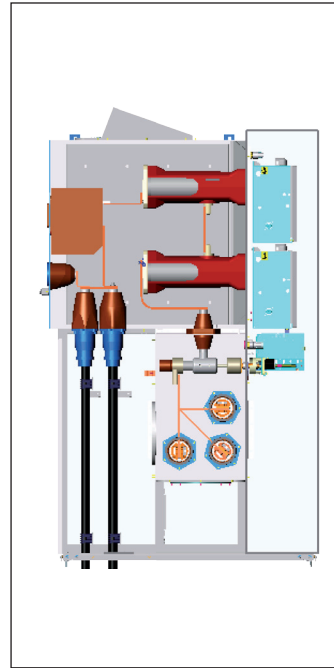




ZX1.2-C
Gas-insulated
medium voltage switchgear

ZX1.2-C

Switching of capacitor banks and filter circuits



Features of ZX1.2-C

- Side by side mounting with standard panels supported
- Low voltage compartment depth 400 mm or 500 mm
- Panel depth 1600 mm / 1700 mm
- Increased panel height 2350 mm
- Panel width 800 mm
- Current transformer in circuit-breaker compartment
- Cable terminations 1x or 2x size 3
- Fitted with auxiliary switches
- Mechanical interlock between circuit-breakers and disconnectors as an option
- Positioning everywhere in the system
- Pressure relief duct as an option
- When positioned at system end, with extended end cover

Features of VD4X-C Double breaker

- Horizontal arrangement of the circuit-breaker poles
- Operating mechanisms outside the gas compartment
- Operating mechanisms connected to the relevant poles via gas-tight thrust bushings
- Also performs the earthing switch function in conjunction with the three position disconnector
- The double breakers are electrically coupled. Release of the two breakers takes place with a maximum difference of 3 ms.
- The “master switch” is the lower breaker. It can be mechanically interlocked with the three position disconnector and has a mechanical opening system for both breakers.
- Operation in the panel is fundamentally performed electrically.
- The double breaker is mounted on an aluminium plate.

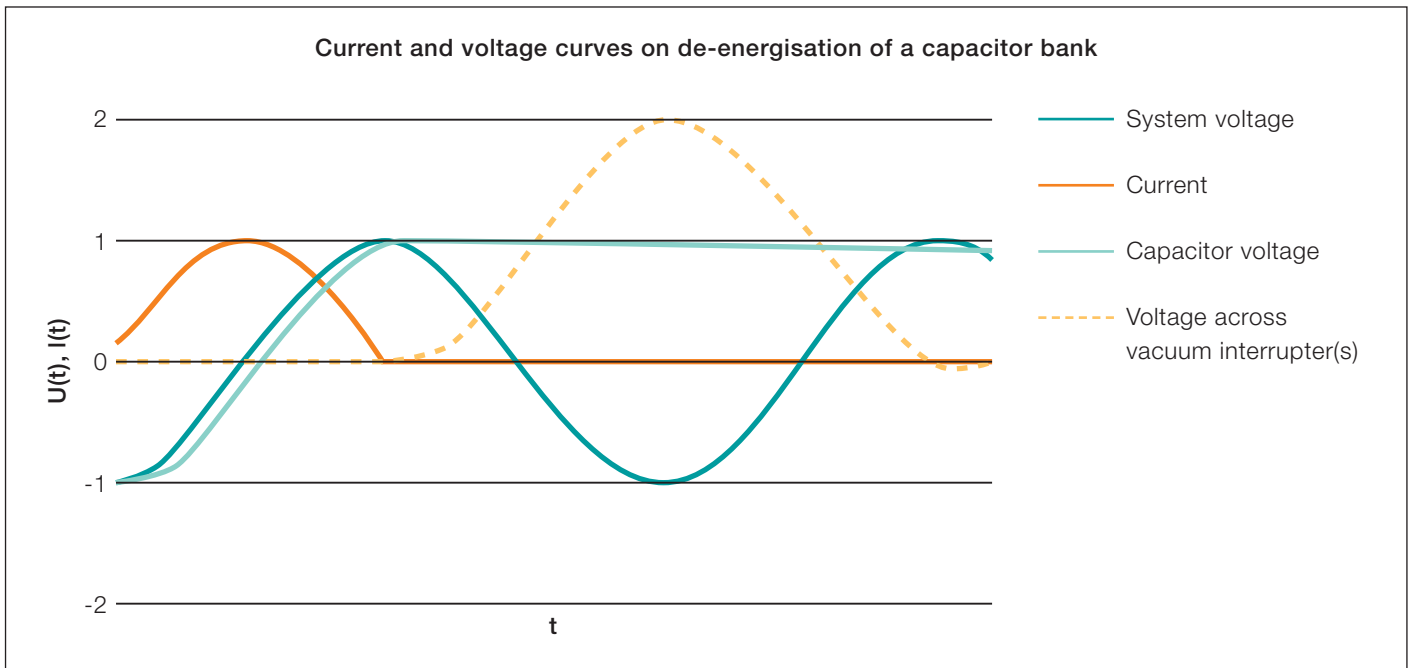
Technical data

Rated voltage	kV	... 36 ¹⁾
Rated frequency	Hz	50 / 60
Rated capacitive current of feeder	A	... 800
Rated short-circuit breaking current	kA	... 31.5
Rated short-circuit making current	kA	... 80
Rated inrush current in back-to-back configuration	kA	... 20

¹⁾ 40.5 kV on request

CESI type test

- Demonstrated breaking capacity for capacitive currents of 800 A at 40.5 kV in accordance with the maximum IEC requirements of Class C2, i.e. very low probability of restriking during capacitive current breaking.
- Handles back to back switching of parallel capacitor banks with 20 kA making current.



Dielectric stresses when switching a capacitor bank or filter circuit off

As a result of the phase lead of 90 degrees at the capacitor, the voltage across the open contact gap oscillates after the current zero to twice the peak value of the phase to earth voltage - - - - -.

This load can theoretically be handled with one vacuum interrupter only. Should however restriking occur across the open contact gap, the voltage will then rise at the capacitor bank. On quenching of the current at the next zero, a voltage of 3 times the peak value arises. Each further restrike brings about a recharging process, renewed quenching of the current and a further increase in the voltage across the open contact gap.

Restriking is promoted by any inhomogeneities in the electrical field between the open contacts, and is thus dependent on the

history of the interrupter. The probability of restriking on de-energisation of a capacitor is a statistical variable which cannot be influenced in relation to given interrupters. Only series connection of two interrupters reduces the probability of restriking across the two contact gaps to a considerable extent.

Furthermore, the isolating distance is doubled, and the dielectric stress per isolating distance is significantly reduced. The probability of restriking is therefore drastically lower with two contact gaps in series.

For switching of capacitors with an operating voltage greater than 27 kV (ANSI), series connection of two vacuum interrupters provides the greatest statistical safety. This is demonstrated by type tests to IEC62271-100, Class C2 *, i.e. 104 switching operations in a 3-phase configuration.

* The IEC standard defines two classes of circuit-breakers on the basis of their restriking properties:

- Class C1: Low probability of restrike during capacitive current breaking
- Class C2: Very low probability of restrike during capacitive current breaking

The following test duties apply to Class C2 to demonstrate the very low probability of restriking:

IEC 62271-100 – 6.111.9.1.4

Current switching tests on a 3-phase capacitor bank (single or back-to-back):

- Test duty 1 (BC1) comprises 24 OFF switching operations
- Test duty 2 (BC2) comprises 80 ON-OFF switching operations

No restrike may occur during this test.

Contact

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More product information: www.abb.com/productguide

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