Indoor live tank SF$_6$ circuit breaker
Type EDI SK 1-1
ABB’s Power technologies offer electric, gas and water utilities as well as industrial and commercial customers a wide range of products, system and service solutions for power generation, transmission and distribution including complete electrics, generation plants, utility automation and bulk power transmission.

ABB’s power technologies cover the entire voltage range including indoor and outdoor circuit breakers, air and gas insulated switchgear, disconnectors, capacitor banks, reactive power compensators, power and distribution transformers as well as instrument transformers.

Ongoing research and development and constant innovation ensures that ABB products, systems and solutions remain at the cutting edge of technology and at the same time are safe to use and environmentally friendly.
EDI SK is a live tank SF₆ Autopuffer™ indoor circuit breaker in the voltage range of 36-84kV with rated breaking current up to 31.5kA.

The 3-pole circuit breaker is operated by springs for opening and closing. The springs are situated in the operating mechanism. The circuit breaker together with the operating mechanism and the truck carriage forms a complete withdrawable unit for indoor installation.

**Main features and advantages**
The EDI SK circuit breaker is based on the latest developments in arc research and meets varied customer demands, offering the following advantages:

- Restrike free interruption of capacitive currents on account of high inherent di-electric strength of SF₆ gas and optimised contact movement
- Low over-voltages when switching inductive currents as a result of optimum quenching at current zero
- High di-electric strength even at atmospheric pressure due to wide contact gap
- Compact design
- Low operating energy requirement, resulting in reduced mechanical stress and low reaction forces on the foundation
- Low noise level – suitable for installation in residential areas
- Easy installation and commissioning. Each circuit breaker is pre-tested and adjusted using an indoor fixture (switchgear cell) in the workshop. No adjustments are necessary at site
- Low weight, easy to move between switchgear cells
- Multiple plug-in contact for the operating circuits
- Ground frame (the ground frame and the multi-plug contact can be delivered in advance in order to minimise installation and commissioning time)

**Design**
The circuit breaker pole includes the breaking unit, the polymeric supporting insulator and the pole linkage housing. The three poles of the breaker are mounted on a common supporting frame. The operating mechanism is arranged in front of the breaker. The breaker poles have a common SF₆ gas system. The system is filled with SF₆ gas at a pressure of 0.7 Mpa (abs) at a temperature of +20°C for an operating temperature range of 40°C to ~30°C.

High operating reliability and service life of SF₆ circuit breaker is achieved by maintaining the SF₆ gas pressure and neutralising the effects of moisture and decomposed products in the gas.

This is achieved by:

- O-rings of nitrile rubber used for sealing purpose
- Each breaking unit is provided with an absorber, which absorbs the moisture and gaseous decomposed products
- To monitor the density of SF₆ gas, the circuit breaker is provided with a density monitor common for all the three poles. The density monitor consists of a temperature independent pressure switch
- Temperature dependent pressure variations of SF₆ gas are compensated by hermetically sealed reference gas volume. An alarm signal is triggered when the pressure drops due to leakage

**Breaker carriage**
- The motion of the breaker can be carried out by motor or hand-crank operation

**Mechanical and electrical interlocking**
- Closing operation is blocked during circuit breaker truck motion
- Truck motion is blocked with the circuit breaker in closed position

**Operating mechanism type FSA 1**
The circuit breaker has a motor charged spring operating mechanism which is installed in a splash proof corrosion protected housing.

**Optional equipment**
Fixed contact and earth switch arrangement in the circuit breaker cell including support beams and insulator. Please refer to Fig. 4 & 5.

**Options**
- EDI SK for fixed installation
- EDI SK with insulator sheds
Fig. 2
Sectional view of a circuit breaker pole:
1. Upper connection flange
2. Stationary arcing contact
3. Nozzle
4. Moving arcing contact
5. Stationary continuous current contact
6. Moving continuous current contact
7. Breaking unit insulator
8. Lower connection flange
9. Support insulator
10. Operating insulator
11. Pole linkage housing

Fig. 3. The motion of the circuit breaker can be carried out by motor or hand-crank operation

Fig. 4. Fixed contact with earth switch arrangement (optional)
**Dimension drawings**

Fig. 6. Dimensions of the fixed contact arrangement

Dimensions in mm

Fig. 7. EDI SK withdrawable with polymer insulator

Dimensions in mm

* Other values on request.
Fig. 8. EDI SK withdrawable with porcelain insulator

Dimensions in mm

Fig. 9. EDI SK for fixed installation with polymer insulators

Dimensions in mm
**Transportation and installation**

The EDI SK circuit breaker is transported as a complete unit with SF₆ gas filled to a slight over-pressure. As the circuit breaker is assembled, adjusted and routine tested in the factory, the installation and commissioning work at site is made very simple. Provided that the ground frame and multi-plug contact for control circuits are already installed, the commissioning of the circuit breaker can be done in just a few hours.

Filling of the SF₆ gas to specified over-pressure can be facilitated by using one specified control valve for connection to the SF₆ gas bottle and a hose with a connector.

**Shipping data**

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</tbody>
</table>
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