# Operating Mechanism

The operating mechanism allows to operate Disconnectors and/or Earthing Switches can be single-pole or three-pole by motor mechanism or a manual mechanism. For three-pole operation, the poles are interconnected each other with adjustable coupling rods which allows using only one operating mechanism.

All mechanism and control components are attached to the body and installed 7 mm cast aluminum sheet housing. Control cubicles have no hole from inside to outside preventing components from water or humidity with a protection class of IP 55. Operating mechanism contains stainless auxiliary contacts for position indication.





Motor Operating Mechanism consist of of totally closed DC motor to protect windings with gear box, stainless auxiliary switches and control panel with motor control contacts and control push bottoms. Both remote control and local control by push buttons are available. It is possible to operate manually by hand crank which is well located in the cubicle. If the cubicle is opened it's not possible to control remotely to prevent any accident. Up to 10000 times open and close operation is guaranteed.

Depending on customer requirements hydrostat or thermostat options are available allows to operate at outdoor desertic/tropical environment without failure.



## **Quality and Tests**

#### **Type Test Certificates**

The type tests on the disconnectors were performed successfully in ICMET as independent test laboratory in Craiova/Romania. During manufacture, all components are continuously subjected to quality tests at AK-AY High Voltage Test Laboratory in order to ensure consistent high quality of products.



### **Quality Certificates**

AK-AY Disconnector manufacturing site is certified according to ISO 9001,ISO 14001 and OHSAS 18001. AK-AY designs ,manufactures, tests and delivers in accordance with latest IEC 62271 - 102 and IEC 60694 Standards.



#### AK-AY ELEKTRIK DIS TIC. KOLL. STI.

İstanbul Endüstri ve Ticaret Serbest Bölgesi 9. Sokak 113/5B Tuzla - İstanbul / TURKEY Tel: +90 216 394 83 50 Fax: +90 216 394 18 92

www.ak-ay.com - info@ak-ay.com

www.ak-ay.com



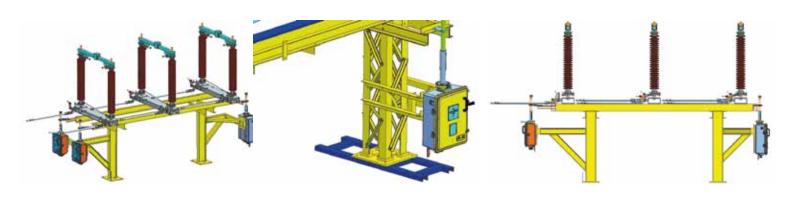
**High Voltage Center-Break Disconnectors**AKY-Type 36kV up to 420 kV



# **Application**

Disconnectors are switches which have the capability to interrupt power to an electrical circuit or to a group of electrical circuits. Disconnectors are used in a wide variety of settings, and are primarily employed as safety devices which deenergize circuits so that people can work on them safely.

AKY Type Center-Break Type Disconnectors are designed and manufactured in compliance with all types of substations. All poles can be equipped with one or two Earthing Switches as per request. Depending on customer requirements Disconnector or Earthing Switches can be motor or manual controlled.



# Design

Center Break Disconnectors are the most frequently used type worldwide, simply consists of three poles which contain a frame, two rotating support insulators and a main blade moves in a horizontal plane. AK-AY's universal design permits the earthing switch to be installed or retrofitted easily at site. All components are protected against atmospheric influences, the steel parts liable to rusting.

- Reinforced design for the toughest climate conditions
- Reliability on Interlocking and Signalisation System
- Easy on site installation and commissioning
- Maintenance-free bearings and contact system
- Precisely adjusted extra-quality moving parts
- Reliable operation at exceptional mechanical and thermal stresses
- Availability of flexible, tailor-made production for extraordinary requirements



## **Advantages**

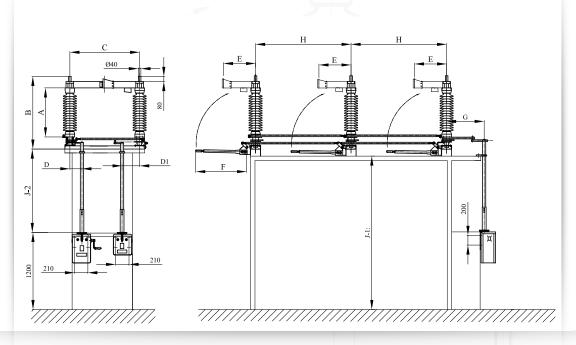
- Highest conductivity due to silver-plated contact surface without lubrication
- All contacts are made of silver plated copper and the main/grounding contacts are designed as finger type to provide maximum safety.
- Chassis, which is made of 4mm steel sheet, and all mechanical parts are fully hot-dip galvanized.
- Current arms are made of aluminum die casting to ensure high conductivity.
- All bolts, washer and nuts used on AKY Type Disconnectors are stainless steel.
- Unique operating mechanism box design provides full protection.

#### **Guaranteed Characteristics**

| Center Break Type Disconnector                              |                               | Unit     | AKY-36       | AKV-52               | AKY-72.5  | AKY-123   | AKY-145       | AKY-170       | AKY-245       | AKY-362        | AKY-420               |
|---|-------------------------------|----------|--------------|----------------------|-----------|-----------|---------------|---------------|---------------|----------------|-----------------------|
| Rated Voltage   |                               | kV       | 36           | 52                   | 72.5      | 123       | 145           | 170           | 245           | 362            | 420                   |
| Rated Normal Current  |                               | А        | 630-<br>1600 | 630 <b>-</b><br>2000 | 1250-2500 | 1250-2500 | 1250-<br>4000 | 1250-<br>4000 | 1250-<br>4000 | 1250-<br>4000  | 1250 <b>-</b><br>4000 |
| Rated Peak Withstand Current                                |                               | kA(peak) | 80           | 80                   | 80        | 100       | 100           | 100           | 100           | 125            | 125                   |
| Rated Short Time Current(3 s.)                              |                               | kA(rms)  | 40           | 40                   | 40        | 40        | 50            | 40            | 50            | 50             | 50                    |
| Rated 1 min Power<br>Frequency Withstand<br>Voltage (50 Hz) | To earth and<br>between Poles | kV(rms)  | 70           | 95                   | 140       | 230       | 275           | 325           | 460           | 460            | 520                   |
|   | Across the isolating Distance | kV(rms)  | 80           | 110                  | 160       | 265       | 315           | 375           | 530           | 530            | 610                   |
| Rated Lightning Impulse<br>Withstand Voltage (1,2/50<br>Ms) | To earth and between Poles    | kV(peak) | 170          | 250                  | 325       | 550       | 650           | 750           | 1050          | 1175           | 1425                  |
|   | Across the isolating Distance | kV(peak) | 195          | 290                  | 375       | 630       | 750           | 860           | 1200          | 1175<br>(+205) | 1425<br>(+240)        |
| Three-Phase Breaking<br>Capacity                            | Inductive,<br>Capacitive      | А        | 2            | 2                    | 2         | 2         | 2             | 2             | 1.5           | 1              | 1                     |
|   | Resistive                     | А        | 3            | 3                    | 3         | 3         | 3             | 3             | 3             | 2              | 2                     |
| Admissible Mechanical<br>Terminal Load                      | Static and<br>Dynamic > c     | N        | 4000         | 4000                 | 4000      | 4000      | 4000          | 4000          | 5600          | 5600           | 5600                  |
|   | Static                        | N        | 1000         | 1000                 | 1000      | 1000      | 1000          | 1000          | 2000          | 2000           | 2000                  |
| Overall Height of Support Insulator                         |                               | mm       | 445          | 560                  | 770       | 1220      | 1500          | 1700          | 2300          | 3100           | 3350                  |
| With Earthing Switch Type Designation                       |                               | +E       | +E           | +E                   | +E        | +E        | +E            | +E            | +E            | +E             | +E                    |

### **Overall Dimensions**

#### Reference Drawing



#### Dimensions

| Disconnector<br>Type | Unit | AKY-36                       | AKY-52 | AKY-72.5 | AKY-123 | AKY-145 | AKY-170 | AKY-245 | AKY-362 | AKY-420 |  |
|----------------------|------|------------------------------|--------|----------|---------|---------|---------|---------|---------|---------|--|
| А                    | mm   | 445                          | 560    | 770      | 1220    | 1500    | 1700    | 2300    | 3150    | 3650    |  |
| В                    | mm   | 721                          | 870    | 1150     | 1600    | 1890    | 2100    | 2670    | 3490    | 4300    |  |
| C                    | mm   | 620                          | 620    | 1000     | 1300    | 1700    | 2050    | 2600    | 3500    | 3500    |  |
| D                    | mm   | -                            | -      | 190      | 367     | -       | -       | 921     | 140     | 1495    |  |
| DI                   | mm   | -                            | -      | -        | -       | -       | 865     | 1020    | -       | -       |  |
| E                    | mm   | 310                          | 310    | 500      | 650     | 850     | 1025    | 1300    | 1750    | 1750    |  |
| F                    | mm   | 619                          | 690    | 800      | 1288    | 1615    | 1842    | 2400    | 3090    | 3840    |  |
| G                    | mm   | 370                          | 520    | 640      | 640     | 640     | 638     | 165     | 844     | 100     |  |
| Н                    | mm   | 1000                         | 1250   | 1500     | 1750    | 2600    | 3000    | 4000    | 5000    | -       |  |
|                      | mm   | 60                           | 60     | 80       | 100     | 100     | 100     | 120     | 120     | 120     |  |
| J                    | mm   | defined by substation layout |        |          |         |         |         |         |         |         |  |

