Product brochure

HMB-8 operating mechanism
The product for high-voltage circuit-breakers from 420 to 800 kV
HMB-8 improves the circuit-breaker application by delivering adaptability, compactness and reliability.

The well-proven HMB-8 technology is in service world-wide for 30 years. Serving all kinds of high-voltage circuit-breakers with solid performance.

Applications
Operating mechanisms are a key component of high-voltage circuit-breakers. Mechanisms of the HMB family are an ideal partner for the entire portfolio of circuit-breakers in high-voltage engineering, like live tank breakers, dead tank breakers, generator circuit-breakers and gas-insulated switchgear.

So far more than 110,000 operating mechanisms of HM type have been delivered – with a share of 24,000 for HMB-8.

Life cycle cost
The HMB-8 is a compact and reliable operating mechanism, designed with easily accessible modules.

Each HMB-8 consists of only a few pre-mounted modules or functional components. They are submitted to the most stringent quality and functional testing prior to their delivery.

Due to its advanced design the HMB-8 has only minimum scheduled maintenance for 10,000 CO-operations. This will result in very low life cycle costs.

One operating mechanism of type HMB-8 has undergone an endurance test certified by KEMA and has reached 22,000 CO-operations without any maintenance or failure.

Adaptation and time to market
The general design of HMB allows superior adaptability compared to other operating mechanism principles.

Shortest time-to-market is also guaranteed by the well-proven adaptation process that supports the application owner in releasing his product.

The HMB-8 features
- Energy range suitable for 420 – 800 kV circuit-breakers
- Lowest life-cycle cost due to
  - minimum scheduled maintenance for 10,000 CO-operations
  - easily accessible modules
  - well-proven and optimized over the years
  - Low-number of moving parts reducing reaction forces to the breaker and its foundation
  - Integrated wear-free damping
  - Integrated condition monitoring
  - Shortest time-to-market due to
    - simple and easy adaptation to all circuit-breaker types
    - complete system including housing for outdoor application
  - Highest power density on the market for most compact design of switchgear

The well-proven HMB-8 technology is in service world-wide for 30 years. Serving all kinds of high-voltage circuit-breakers with solid performance.

Technical data of exemplary variants

<table>
<thead>
<tr>
<th></th>
<th>HMB-8.3</th>
<th>HMB-8.6</th>
<th>HMB-8.7</th>
<th>HMB-8.12</th>
</tr>
</thead>
<tbody>
<tr>
<td>stroke</td>
<td>205 mm / 8.07 in</td>
<td>205 mm / 8.07 in</td>
<td>205 mm / 8.07 in</td>
<td>205 mm / 8.07 in</td>
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<tr>
<td>switching energy open</td>
<td>10.1 kJ</td>
<td>9.3 kJ</td>
<td>10.6 kJ</td>
<td>11.8 kJ</td>
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<tr>
<td>switching energy close</td>
<td>3.7 kJ</td>
<td>4.8 kJ</td>
<td>3.0 kJ</td>
<td>4.0 kJ</td>
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<tr>
<td>stored switching sequence</td>
<td>O-CO</td>
<td>O-CO</td>
<td>O-CO</td>
<td>O-CO</td>
</tr>
<tr>
<td>charging times</td>
<td>O-CO – 60 s / O-CO / CO – 15 s / CO</td>
<td></td>
<td></td>
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<tr>
<td>mechanical endurance</td>
<td>M2 acc. to IEC 62271-100</td>
<td></td>
<td></td>
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<tr>
<td>expansion stages</td>
<td>extended power pack (EP), complete mechanism (CM)</td>
<td></td>
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<tr>
<td>dimensions Ø x h (CM)</td>
<td>621 mm x 1045 mm / 24.4 in x 41.1 in</td>
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<td></td>
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<tr>
<td>weight (CM)</td>
<td>approx. 510 kg / 1125 lb</td>
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</table>

Basic technical data for the variants of HMB. Other data, defining secondary technology, are customer specific and part of the customization process of the operating mechanism.

Modular design of the HMB-8 operating mechanism

Design with modules around the central working cylinder means compactness and efficiency

1 Working Module
Central working cylinder with piston rod operating the circuit-breaker, linear motion allows direct coupling to the circuit-breaker, adjustable speed, integrated damping

2 Storage Module
Disc springs with three storage blocks, springs are storing the energy for O-CO operation, temperature independently

3 Charging module
Pump module for charging the disc springs

4 Control module
High precision valve module to control the operation, slip-on coils

5 Monitoring module
Spring travel switch to monitor the status of the stored energy, pressure relief valve

6 Adapter with auxiliary switches
For adaptation to the circuit-breaker

1 GIS for 420 kV with HMB-8 operating mechanism | 2 HMB-8 complete mechanism (with housing and position indicator)
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