Portable emergency pump
For operating mechanisms with hydraulic energy transfer
Portable Emergency Pump
Overview

- The world of operating mechanisms
- Product description
- Components of portable emergency pump
- Safety aspects
- Scope of delivery
- Product improvements
The world of operating mechanisms

Applications

Gas Insulated Switchgear (GIS)
52 – 1100 kV

Dead Tank Breaker (DTB)
52 – 800 kV

Generator Circuit Breaker (GCB)
Up to 250 kA

Air Insulated Switchgear (AIS)
52 – 550 kV
The portable emergency pump allows a temporary use for manual charging of hydraulic operating mechanisms.

The pump is especially suitable when:
- the power supply has failed temporarily
- the pump gear has any problems
- the motor of the pump is defect
- the oil pump of the operating mechanism has a malfunction

ABB order number: 1HDS112207R0200
Product description

Advantages

- Simple handling
- Easy installation is possible via mounting plate
- Fast recharging of the operating mechanism
- Charging via electric screwdriver is possible instead of a hand crank
- Up to 3 operating mechanisms can be recharged simultaneously (for single-phased enclosed types)
- Can be used for all hydraulic operating mechanisms
### Product description

#### Application of portable emergency pump

- All hydromechanical operating mechanisms

<table>
<thead>
<tr>
<th>AHMA</th>
<th>HMB</th>
<th>HMC</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHMA-1</td>
<td>HMB-1 (s)</td>
<td>HMC-4</td>
</tr>
<tr>
<td>AHMA-4</td>
<td>HMB-2 (s)</td>
<td></td>
</tr>
<tr>
<td>AHMA-8</td>
<td>HMB-4</td>
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<tr>
<td></td>
<td>HMB-8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HMB-16</td>
<td></td>
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</tbody>
</table>

Hydraulic mechanism with nitrogen storage type HA / HKA is also possible.

Operating mechanism

Type HMB-16

Type HMC-4

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Components of portable emergency pump
Installation position

Flange installation at ELK-04 (520)

1. Operating mechanism type HMB-1
2. Hydraulic connection
3. Portable emergency pump
4. ELK-04 flange
Components of portable emergency pump
Pump module

- Detailed drawing of charging unit
- Charging unit of the portable emergency pump

- Eccentric shaft
- Pump element
- Burst protection
- Charging unit
- High pressure connection
- Low pressure connection
Components of portable emergency pump
Mounting plate

- GIS-frame mounting
- Charging unit mounting
- GIS-frame mounting
- ELK-04 (520) flange connection
- ELK-04 (735) flange connection
- GIS-frame mounting
- AHMA-4/-8 & HMB-4/-8 mounting
- GIS-frame mounting
Components of portable emergency pump
Charging times

- Charging via rotational movement
- Around 500 rotations per charging
- Hand crank is included in delivery
- Charging via electric screwdriver is possible
### Components of portable emergency pump

#### Charging times

<table>
<thead>
<tr>
<th>Operating mechanism type</th>
<th>Charging time* manual operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMB-1</td>
<td>( \leq 5 \text{ min} )</td>
</tr>
<tr>
<td>HMB-4</td>
<td>( \leq 10 \text{ min} )</td>
</tr>
<tr>
<td>HMB-8</td>
<td>( \leq 20 \text{ min} )</td>
</tr>
<tr>
<td>AHMA-1</td>
<td>( \leq 6 \text{ min} )</td>
</tr>
<tr>
<td>AHMA-4</td>
<td>( \leq 15 \text{ min} )</td>
</tr>
<tr>
<td>AHMA-8</td>
<td>( \leq 25 \text{ min} )</td>
</tr>
</tbody>
</table>

* Charging time, until a safe OPEN operation is possible (completely discharged operating mechanism)
Safety aspects
Portable emergency pump

- Loading unit with integrated burst protection (800 bar)
  - triggers in case of maloperation
  - protects operating personnel
- According to current valid EU-guidelines the portable emergency pump was tested and satisfies the requirements for CE-marking
Safety aspects
Operating mechanism

- Operating mechanisms are protected from overloads by a mechanical controlled relief valve
  
  ➔ A mechanical connection to the energy storages opens a pressure relief valve as soon as the maximum storage piston stroke is reached. Due to this the high pressure system will be connected with the low pressure system internally, which leads to a temporary hydraulic short circuit.

- Possibility to get a signal when operating mechanism is successfully charged
  
  ➔ By monitoring of a contact of the spring travel switch with a multimeter.
Scope of delivery
Delivered parts

1. Loading unit
2. High pressure hose
3. Low pressure hose
4. Coupling pieces for connection of all mechanism types
5. Extension of hand crank
6. Mounting plate for installation
7. Hand crank
8. Mounting parts
9. Bits for cordless screwdriver
10. + Optional: 1l / 5l hydraulic oil
Scope of delivery
Package

- All material is packaged in a heavy-duty toolbox
- All necessary connections for a manual charging are directly available
- Easy to transport between sites
- Safe and clean storage for the portable emergency spring pump
Scope of delivery
Package

Package - Layer 1

Package - Layer 2
Product improvements

- Compared to the former swing arm pump the following improvements have been realized:
  - **Easier handling** through weight reduction
  - Different installation positions **for all** application types are possible
  - Up to 3 operating mechanisms can be recharged **simultaneously**
    - For single-phase enclosed circuit breakers
  - An electric screwdriver can be used optionally
    - Faster and easier than hand crank
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