MEDIUM VOLTAGE PRODUCTS

OWIII – Indoor disconnector
Installation and operation manual
## Contents

1 Safety 4
2 Introduction 5
3 Technical description of OWIII (OWI) disconnectors 5
   3.1 Functions 5
   3.2 Construction and principle of operation 5
   3.3 Designation of switch 8
   3.4 Technical data 8
   3.5 Mounting dimensions of OWIII disconnector 10
4 Installing 10
   4.1 Inspection before installing 10
   4.2 Supporting structure 10
   4.3 Installation of insulating barrier 10
   4.4 Adjusting the mechanical interlock between disconnector and earthing 11
   4.5 Mounting disconnector on support structure 11
   4.6 Mounting and regulation of manual drive NRWO4/…-3 11
   4.7 Coupling with HE manual drive 12
   4.8 Coupling with motor drive UEMC 41 13
   4.9 Mounting and regulation of auxiliary switch 14
   4.10 Connecting in switchgear and earthing connection 14
   4.11 Final works 14
5 Commissioning of disconnector 15
6 Operating procedure 15
   6.1 Disconnector equipped with NRWO4-3 manual drive 15
   6.2 Disconnector equipped with HE manual drive 15
   6.3 Disconnector equipped with motor drive UEMC 41 16
7 Maintenance 16
   7.1 Visual inspection 16
   7.2 Periodical inspection 16
   7.3 Maintenance work 16
   7.4 Repairs 16
8 Packing, transport, storage 16
9 Withdraw from use 17
10 Spare parts 17
Safety

HAZARDOUS VOLTAGE CAN SHOCK, BURN, OR CAUSE DEATH. Do not attempt to handle, install, use or service this product before reading this installation guide.

Always follow the instructions given in the manual and good engineering practice. Dangerous voltage can cause electric shock and burns.

– Do not perform any activity described in this document with the switch energized.
– ALWAYS follow your company’s or country’s Safety procedures before performing any work on this equipment.
– OW disconnector should be installed only within the design limitation.
– All the activities listed on this document it must be performed with the switch completely de-energized, isolated, grounded and out of service.
– Must be observed appropriate guidance given in the manuals for all operations performed on the apparatus.
– This product is intended to be installed, operated and maintained by qualified personnel, thoroughly trained and knowledgeable with the regards of the hazards involved. This publication is written only for such qualified persons and is not intended to be a substitute for adequate training and experience in the safety procedures for this device.

Warning

Detailed descriptions of standard repair procedures, safety principles, and service operations are not included. It is important to note that this document contains some warnings and cautions against some specific service methods that could cause personal injury to service personnel, or could damage equipment or render it unsafe. These warnings do not cover every conceivable method in which service (whether or not recommended by ABB) may be performed. Secondly, ABB cannot predict or investigate all potential hazards resulting from all conceivable service methods.

Anyone using service procedures or tools, whether or not recommended by ABB, must satisfy himself thoroughly that neither personal safety nor equipment safety will be jeopardized by the service method or tools selected.

All information contained in this manual is based on the latest product information available at the time of printing.
2 Introduction
The subject of this document is the installation and operation of three-pole indoor disconnectors type OWIII (and one pole OWI). It contains information about technical data, design and function, as well as advices for operation, maintenance, repair, etc. The Manual is intended to be a help in the process of installation, maintenance and usage of these devices. Strict adherence to the requirements contained in this manual ensures proper operation of switches and is a warranty condition, therefore, familiarize with its contents is required prior to installation and operation of switches. The manufacturer do not bear responsibility for any direct or indirect loses or damages caused by improper usage of these apparatuses. The contents of this manual can be changed without notice.

3 Technical description of OWIII (OWI) disconnectors

3.1 Functions
Disconnectors
Three-pole indoor disconnectors are used for opening and closing electrical circuits in which current does not flow (they are off-load devices). In the open position they create a visible and safe isolation gap, ensuring that an electrical circuit and sections of medium voltage networks are completely de-energized for service or maintenance. They are used in indoor AC high-voltage switching systems. They are suitable for working in confined spaces in moderate climate conditions at an ambient temperature of -5°C to +40 °C. Installing device in other environmental conditions must be agreed with the manufacturer.

Disconnectors type OWIII (OWI) fulfil the requirements of following standards:
– PN-EN 62271-1:2009 High-voltage switchgear and controlgear – Part 1: Common specifications

Earthing switches
Earthing switch is used for short-circuiting and earthing parts of a circuit previously disconnected from the power supply. Each disconnector OWII can be equipped with earthing switch with interlocking mechanism ensuring correct sequence of switching operations.

3.2 Construction and principle of operation
Disconnectors type OWIII are vertical break switches. The basis is a steel frame [pos. 1, Fig. 1], which together with the shaft [pos. 2, Fig. 1] and limiters of rotation angle [pos. 3, Fig. 1] creates a disassembled unit. Insulators [pos. 4, Fig. 1] are mounted on frame, and they support current path. Each current path consist of two fixed contacts [pos. 5, Fig. 1], which are also terminals and one movable contact [pos. 6, Fig. 1]. The fixed contacts and the ends of the movable contacts are silvered. The right pressure of contacts is provided by springs [pos. 7, Fig. 1] held by cups [pos. 8, Fig. 1] and stops [pos. 9, Fig.1] at the ends of the movable contacts. In some types of switches there are additional steel plates mounted on movable contacts.

Insulation between poles is an air gap. In some types where the pole distance is decreased there are additional isolating plates [pos. 10, Fig. 1].

Movable contacts are connected to the shaft by insulation rods [pos. 11, Fig. 1]. They transfer the rotation of the shaft to the disconnector moving contacts.

On both ends the disconnector shaft [pos. 2, Fig. 1] is knurled, which enables coupling the disconnector to the drive by the lever [pos. 12, Fig. 1]. There is an additional arm mounted on the lever and is used when the disconnector is operated by isolating hook stick. The rotation angle of disconnector shaft is determined by stops that breaks on sides notches (while opening) and a bumpers (when closing).
Disconnectors can be opened and closed by manual drives type NRWO4/...- 3, HE, insulating stick or electric drive type UEMC 41. Disconnectors equipped with manual and electric drive can work in vertical or horizontal positions. In case of operation by insulating stick only vertical position of disconnector is possible.

Manual or electric drive by connecting rod makes the shaft of disconnector rotate together with movable contacts, causing switching disconnector from one fixed position to another. If operating by insulating stick, the stick need to be hooked on outer side of the lever and then energetically pulled or pushed, depend on the disconnector state.

If the drive is equipped with an electromagnetic lock it has to be unlocked before switching. When the drive is equipped with a mechanical bolt lock it must be unlocked by pulling the bolt before switching the disconnector.

Construction of disconnector enables mounting-up the earthing switches without making any changes even when the disconnector is already installed at site. Earthing switches can be located from the fixed non-disconnectable contact side (lower earthing switches) or from disconnectable fixed contact side (upper earthing switches).

Bearings [pos. 14, Fig. 1] of earthing switch are mounted on frame. In bearings there is inserted drive shaft of earthing switch [pos. 15, Fig. 1] with its movable contacts [pos. 16, Fig. 1] ended with silvered contact covers [pos.17, Fig. 1]. Together with fixed contacts [pos. 18, Fig. 1] they create reliable electrical connections. The proper contacts pressure is ensured by springs [pos. 19, Fig. 1] held by caps [pos. 20, Fig. 1] and stops [pos. 21, Fig. 1] mounted at the ends of movable contacts. Electrical connection from movable contacts to frame is provided by flexible earthing conductor [pos. 22, Fig. 1]. On disconnector frame there is an earthing terminal [pos. 23, Fig. 1] with screw M12x40.

Between disconnector shaft and earthing switch shafts there is a mechanical interlocking consist of locking rings [pos. 24 and 25, Fig. 1] and pivot [pos. 26, Fig. 1] ensuring proper sequence of switches. Disconnector switch and earthing switch can be interlocked with one another in the following manner:
– disconnector switch can be closed only when earthing switch is opened
– earthing switch can be closed only when disconnector switch is opened
Fig. 1.
Construction of disconnector OWIII

1) Frame
2) Drive shaft
3) Limiters
4) Insulator
5) Fixed contact 
6) Movable contact
7) Spring
8) Cup
9) Stop
10) Insulation plate
11) Insulation rod
12) Lever
13) Arm of lever
14) Bearing of earthing switch
15) Drive shaft of earthing switch
16) Movable contact of earthing switch
17) Contact cover
18) Earthing contact
19) Spring
20) Cap
21) Stop
22) Earthing conductor
23) Earthing terminal
24) Locking ring
25) Locking ring
26) Pivot
3.3 Designation of switch
Example: OWIII 20/6UD-1 – three pole disconnector OWIII, rated voltage 24 kV, rated current 630 A, with lower earthing switch, with ceramic insulators

<table>
<thead>
<tr>
<th>Type of disconnector</th>
<th>Rated voltage [kV]</th>
<th>Rated current [A]</th>
<th>Type of earthing switch</th>
<th>Type of insulators</th>
<th>Phase distance [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>OWIII 20/6UD-1</td>
<td>20 – 24 kV</td>
<td>630</td>
<td>UD – lower earthing switch</td>
<td>1 – ceramic</td>
<td>Specified only for pole distances other than typical: 200 mm for 12 kV, 275 mm for 24 kV, 360 mm for 36 kV</td>
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3.4 Technical data

Disconnectors for voltage 7,2 and 12 kV

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<th>OWIII10/6UD-1</th>
<th>OWIII10/6UG-1</th>
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<th>OWIII10/6UG-2</th>
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<th>OWIII10/8-2</th>
<th>OWIII10/8UD-2</th>
<th>OWIII10/8UG-2</th>
<th>OWIII10/10-1</th>
<th>OWIII10/10UD-1</th>
<th>OWIII10/10UG-1</th>
<th>OWIII10/10-2</th>
<th>OWIII10/10UD-2</th>
<th>OWIII10/10UG-2</th>
<th>OWIII10/12-1</th>
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<td>to earth and between phases</td>
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<td>Maximum distance of first bracket at rated peak current [mm]</td>
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## Disconnectors for voltage 17,5 and 24 kV

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<tr>
<td>Rated power frequency withstand voltage [kV] to earth and between phases</td>
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<td>45</td>
<td>95</td>
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<td>Lighting impulse withstand voltage (1,2/50 μs) [kV] to earth and between phases</td>
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## Disconnectors for voltage 36 kV

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<tr>
<td>Rated power frequency withstand voltage [kV] to earth and between phases</td>
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<tr>
<td>Rated power frequency withstand voltage [kV] between contacts</td>
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<td>Lighting impulse withstand voltage (1,2/50 μs) [kV] to earth and between phases</td>
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<td>Lighting impulse withstand voltage (1,2/50 μs) [kV] between contacts</td>
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<td>Rated current [A]</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated short time withstand current [kA]</td>
<td>1 s</td>
<td>20</td>
<td>31,5</td>
<td>31,5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disconnector mass / Disconnector with earthing switch mass [kg]</td>
<td>78/90</td>
<td>90/104</td>
<td>90/104</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum distance of first bracket at rated peak current [mm]</td>
<td>700</td>
<td>1000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
### 3.5 Mounting dimensions of OWIII disconnector

![Fig. 2.](image)

**Table: Dimensions of OWIII disconnectors**

<table>
<thead>
<tr>
<th>Type</th>
<th>Dimensions</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>OWIII 7.2/6–1</td>
<td></td>
<td>260</td>
<td>258</td>
<td>480</td>
<td>150</td>
</tr>
<tr>
<td>OWIII 7.2/6–2</td>
<td></td>
<td>260</td>
<td>263</td>
<td>480</td>
<td>135</td>
</tr>
<tr>
<td>OWIII 10/6, 8, 10–1</td>
<td></td>
<td>260</td>
<td>258</td>
<td>560</td>
<td>150</td>
</tr>
<tr>
<td>OWIII 10/6, 8, 10–2</td>
<td></td>
<td>260</td>
<td>263</td>
<td>560</td>
<td>135</td>
</tr>
<tr>
<td>OWIII 10/6–2/125</td>
<td></td>
<td>260</td>
<td>263</td>
<td>410</td>
<td>135</td>
</tr>
<tr>
<td>OWIII 10/12–1</td>
<td></td>
<td>295</td>
<td>260</td>
<td>560</td>
<td>150</td>
</tr>
<tr>
<td>OWIII 17.5/6–1</td>
<td></td>
<td>360</td>
<td>353</td>
<td>580</td>
<td>220</td>
</tr>
<tr>
<td>OWIII 17.5/12–1</td>
<td></td>
<td>395</td>
<td>355</td>
<td>640</td>
<td>220</td>
</tr>
<tr>
<td>OWIII 20/6, 8, 10–1</td>
<td></td>
<td>360</td>
<td>353</td>
<td>710</td>
<td>250</td>
</tr>
<tr>
<td>OWIII 20/6, 8, 10–2</td>
<td></td>
<td>360</td>
<td>360</td>
<td>710</td>
<td>245</td>
</tr>
<tr>
<td>OWIII 20/6–2/160</td>
<td></td>
<td>360</td>
<td>360</td>
<td>480</td>
<td>245</td>
</tr>
<tr>
<td>OWIII 20/12–1</td>
<td></td>
<td>395</td>
<td>355</td>
<td>710</td>
<td>250</td>
</tr>
<tr>
<td>OWIII 30/6–2</td>
<td></td>
<td>510</td>
<td>456</td>
<td>920</td>
<td>360</td>
</tr>
<tr>
<td>OWIII 30/12–2</td>
<td></td>
<td>525</td>
<td>460</td>
<td>990</td>
<td>360</td>
</tr>
<tr>
<td>OWIII 30/16–2</td>
<td></td>
<td>525</td>
<td>460</td>
<td>990</td>
<td>360</td>
</tr>
</tbody>
</table>

### 4 Installing

#### 4.1 Inspection before installing

Before installing the disconnector in switchgear below points should be checked:

- a) rating plate content and its correspondence with the contents of the contract
- b) insulators condition
- c) protective coverings condition
- d) condition of the grease on the contacts and the bearing isolator

#### 4.2 Supporting structure

The supporting structure for disconnector should be rigid, and the supports points must lie in one plane. Disconnector should be mounted with M12 screws on 4 holes. Mounting holes pattern is shown in drawing in previous section [Fig. 2].

#### 4.3 Installation of insulating barrier

Disconnectors type OWIII 10/6-2/125 and OWIII 20/6-2/160 are equipped with insulating barriers that must be mounted to the base of disconnector before mounting the device on support structure. After mounting barriers using holes in base, they must be connected with delivered spacer rods. During the insulating barrier assembly special attention should be drawn to:

- a) insulating barriers surface – lack of defects and cracks
- b) positioning – the longer edge of insulating barrier closer to earthing switch shaft
4.4 Adjusting the mechanical interlock between disconnector and earthing

For transportation disconnectors equipped with earthing switch have closed contacts of both disconnector and earthing switch. Therefore, before installing the device to the support structure, the mechanical interlock of the disconnecting shaft and earthing shaft must be adjusted by opening the earthing contact and then setting the locking ring [pos. 25, Fig. 3] on the earthing shaft according to Fig. 3. The ring must be fixed in this position with screw.

4.5 Mounting disconnector on support structure

When installing the disconnector, make sure that the base is not twisted. The apparatus must be pre-screwed in three points, and then, if necessary, some pads should be placed under the base to align the support structure at the fourth screw. The disconnector base cannot be bent to the support structure by tightening the screws. Otherwise, twisted disconnector base will cause:

- a) excessive torque increase on the disconnect shaft required for switching
- b) deterioration of the simultaneity of closing and opening the disconnector poles. With correctly installed disconnector, the simultaneity of unit should not exceed 3 mm
- c) deterioration of contact when disconnector is closed. The correct installation of the disconnector has linear contact and the 0,1 mm width feeler cannot be placed between fixed and the movable contact
- d) offset of working planes between disconnector contacts and earthing switch contacts which cause the earthing contacts do not reach proper position and do not match to the fixed contacts while closing

4.6 Mounting and regulation of manual drive NRWO4-3

Mounting of drive

The structure on which the drive is mounted should be rigid and the drive cannot move relative to the disconnector cooperating with it. The location of mounting holes to be made in the switchgear wall for the fastening of drives is shown in Fig. 4. The drive should be fixed to the wall from the inside of the switchboard with four M10 screws. After fastening the drive, the blockade should be mounted. The lock can be mounted on the right or left side of the drive.

Caution: For safety reasons, each drive should have a lock.
Coupling the drive with disconnector
NRWO4-3 manual drive coupling is done with rod [pos. 14, Fig. 4] of adjustable length, which is connected by pins with a lever [pos. 15, Fig. 4] that is mounted on the disconnect shaft and that can be adjusted every 10° of full angle range. The length of the rod must be such that it guarantees the correct position of the movable contacts in both of their end positions. This will be reached when the disconnector shaft coupled to the drive will rotate 90° (change of rotation angle from 115° on drive shaft to 90° on the apparatus shaft). The approximate position of the coupling rod and lever on the disconnector shaft is shown in Fig.4. For horizontally installed disconnectors, there is need to exceed the dead center in drive in open state of the disconnector, so the self-acting closing of switch is impossible. In the closed state of the disconnector (hand lever in the up position), the movable contacts should reach the position corresponding to the switched on state. In the open position of the disconnector (hand lever at the bottom), the movable contacts of the apparatus should reach the correct position defined by bumpers located on the shaft of the apparatus and in the frame.

The length of the rod is adjusted by setting the disconnector and the drive in the closed position. After adjustment the rod must be tightened by clamps. These rules also apply when coupling the drive with the shaft of the earthing switch.

4.7 Coupling with HE manual drive
The complete manual drive HE consists of a front part of the drive (body) with a cardan joint [pos. 3, Fig. 5] and a hand lever [pos. 4, Fig. 5]. For coupling with the disconnector there are additionally needed: coupling rod and bevel gear on the disconnect shaft. The drive HE has to be mounted on front panel of switchgear with two M10 screws, in such position that the axis of drive’s shaft [pos. 1, Fig. 5] is as close as possible to the axis of the smaller wheel of bevel gear. The coupling rod require to be cut to the proper length and then hole ø10 for fastening into the cardan joint need to be drilled.

Drive regulation:
1) Remove the Seeger Ring securing the lock ring [pos. 2, Fig. 5] (using the Seeger rings pliers).
2) Insert the hand lever into the shaft end [pos. 1, Fig. 5] of the drive and turn counterclockwise to open the disconnector. Observe that the lock ring has reached the correct position in the open state. If not, remove the ring from the shaft [pos. 1, Fig. 5] and rotate 1-2 teeth on the shaft and mount it again.
3) Turning the hand lever clockwise close the disconnector. If necessary, change the position of the ring [pos. 2, Fig. 5] on the shaft again.
4) The regulation procedure should be completed by several closing and opening operations, and then the Seeger ring should be mounted on its place.
4.8 Coupling with motor drive UEMC 41
Description of drive, coupling and adjustment can be found in a separate manual enclosed to the UEMC 41 drive.

Additional information:
Depend on application and version of drive one of the following exemplary coupling need to be done.

General requirements for assembly:
– the disconnector must be correctly installed on the supporting structure on the wall
– the NRK2/1 bevel gear must be mounted on the shaft of the disconnector (or shaft extension) and fixed by tightening screws on its housing
– connection rods need to be cut to the appropriate length and a hole ø10 must be drilled for fixing in the cardan joint, rod connectors or bevel gears
– all connections should be secured with ø10 bolts and cotters or by tightening the screws.

Examples of installations:

Drive on the front door, connection at 90° angle
The support [pos. 7, Fig. 7] together with fixed inside bevel gear [pos. 6, Fig. 7] should be mounted in a way that the axis of the smaller wheel coincides with the axis of the smaller gear on the disconnector shaft. The axis of the output shaft of the drive should lie in the axis of the larger wheel of the bevel gear.

Motor drive mounted directly on the disconnector shaft
The drive should be mounted on the right side of the disconnector so that closing the disconnector is clockwise. Coupling the drive shaft with the disconnector is done with two intermediate elements.
Drive mounted on the wall
The drive support [pos. 2, Fig. 9] together with fixed bevel gear must be mounted in a way that the axis of the smaller wheel from drive side coincides with the axis of the smaller wheel on disconnector shaft.

4.9 Mounting and regulation of auxiliary switch
When the disconnector is delivered with an auxiliary switch, after coupling the disconnector with the drive in the switchgear, coupling the disconnector shaft with auxiliary switch must be done using rod [pos. 1, Fig. 10] and lever [pos. 2, Fig. 10]. The lever has to be fixed on shaft on opposite site to the drive. Thanks to the knurled end of the disconnector shaft and the corresponding hole in the lever [pos. 2, Fig. 10] it can be freely positioned on the shaft with. When connecting rod [pos. 1, Fig. 10] with lever [pos. 2, Fig. 10] the pin [pos. 4, Fig. 10] need to be screwed into hole marked “45”.

4.10 Connecting in switchgear and earthing connection
Before connecting the bars or cables to the disconnector terminals, terminals have to be thoroughly cleaned from the oxidation (without surface damage) and covered with the layer of grease. The bars should be adapted to the disconnector connection terminals. The cross-section of the conductive bars should be matched to the rated current of the disconnector. The connection screws should be screwed on using two wrenches, so that the fixed contacts [pos. 4, Fig. 1] remain not bent. After installation, check that the connections do not cause stresses in the disconnector structure, causing twisting of the contacts. The apparatus and drive frames should be earthed. Before connecting the protective earthing connection to the earthing terminal, the earthing terminal should be cleaned and greased with acid-free grease.

4.11 Final works
After installing disconnector in switchgear and coupling with drive the following regulations might be necessary, in order to avoid eventual failures of disconnector and drive:

a) regulation of kinematics of coupling drive with disconnector
b) regulation of kinematics of coupling auxiliary switch with drive
c) checking and correction of contacts in current path

Regulation of kinematics of coupling drive with disconnector
After coupling the disconnector with the drive, the following undesirable effects may occur:

a) in open position the open gap between open contacts is smaller than required (dimension D, Fig. 2) and in closed position the shaft is bent.
b) in open position the shaft is bent and in close state movable contacts do not close completely.
The defects should be eliminated by changing the length of the connecting rod and correcting the positioning of other elements included in the drive coupling system with the disconnector. The defect may also be caused by improper position of levers on the disconnector shaft [pos. 12, Fig. 1] and drive shaft. The defect is eliminated by correcting the mutual positioning of these elements.

Regulation of kinematics of coupling auxiliary switch with drive
This regulation is necessary if the signaling of disconnector/drive position is not correct. The position of lever [pos. 2, Fig. 10] should be regulated to reach proper and compliant with standards indication of disconnector state.

Checking and correction of contacts in current path
The movable contacts must cover the entire width the fixed contacts. The 0,1 mm width feeler cannot be placed between fixed and movable contact. If above are not fulfilled that might indicate disconnector frame is bent (by screws fixing to support structure). In order to eliminate defect the appropriate pads should be placed between frame and support structure, that brings contacts correction.
5. Commissioning of disconnector
After completing all assembly operations related to the installation of the disconnector in the switchgear, 20 switches should be performed for checking the cooperation of the mechanisms, and then inspected to check if any faults did not appear and the assembly requirements specified in p.4 are fulfilled. Particular attention should be drawn to the correct achievement of the fixed (closed and open) positions and the signaling of these positions by auxiliary switch. The condition of protective covers need to be checked as well as condition of insulators and correct tightening of screw connections – especially terminals. In case of noticing any irregularities that can not be removed, the repair should be ordered to the manufacturer.

Before switching on the supply voltage, it is necessary to perform measurements and electrical tests in the range prescribed in the instructions for commissioning power equipment.

6. Operating procedure
Warning: During carrying out all kind of works nearby live high voltage apparatuses one must strictly follow all relevant safety regulations. Not following these regulations may lead to serious injuries or death.

6.1 Disconnector equipped with NRWO4-3 manual drive
In close state of disconnector the drive lever should be directed upwards. If the drive is equipped with an electromagnetic or manual interlock, it must be unlocked before operating. After unlocking, the drive lever should be turned down about 170° to the stop, causing opening of the disconnector. When closing the procedure is similar, with the movement of the lever in the opposite direction. After each operation of switching, it is necessary to lock the drive, and only then the next steps related with operating the switchgear can be started. Pay attention to ensure that the switching is done with firm movement. If the hand lever can not be moved from the end position, this indicates the drive is locked by electromagnetic interlock.

6.2 Disconnector equipped with HE manual drive
Insert the maneuver lever onto the end of the drive shaft and pull back the locking ring. Turn counterclockwise to open the disconnector. By turning the lever clockwise, close the disconnector.
6.3 Disconnector equipped with motor drive UEMC 41

Electric drives enable electrical operation of disconnectors remotely and locally as well as manually by hand lever. Detailed rules for handling drives are described in the separate assembly and operating instructions delivered with drives.

7. Maintenance

Warning: During carrying out all kinds of works nearby live high voltage apparatuses one must strictly follow all relevant safety regulations. Not following these regulations may lead to serious injuries or death.

Maintenance activities consist of:

a) visual inspection,
b) periodical inspection,
c) disconnector maintenance
d) renovation

Warning: In order to proceed to the following activities operating personnel must:
– Follow relevant safety regulations when working nearby live high voltage equipment and carry out the required preparatory actions
– Switch off the electrical supply, disconnect the control voltage and take steps to safeguard the site of work against accidental switching on the supply voltage

7.1 Visual inspection

The visual inspection must be carried out within the scope and dates specified in the Energy Equipment Exploitation Regulations and the internal regulations of the user. In addition, inspection should be carried out after each failure of the disconnector or short circuit in the network where the apparatus is installed.

During inspection special attention should be drawn to:

a) condition of insulators, insulation rods and insulating barriers (if assembled)
b) condition of the current leading parts,
c) correct contact in closed position of the disconnector,
d) surface quality of the contact parts, correctness of reaching end positions.

7.2 Periodical inspection

Periodic maintenance checks have to be carried out once every five years. During the review there should be checked:

a) insulator conditions and insulating barriers (if mounted) with particular attention to the quality of surface of insulators, rods and barriers
b) the condition of terminals and the earthing terminal, with checking whether the screws are not loosed and they have no signs of corrosion,
c) the condition of contacts with attention to their cooperating surfaces, and checking whether they do not show traces of melting, silver coating defects and whether the contact is correct between fixed and movable knife.
d) condition of pressure springs and their protective covers
e) cooperation of disconnector with drive and auxiliary switch,
f) simultaneous of occurrence and disappearance of contact within current path
g) condition of protective coatings
h) of the mechanical or electromagnetic lock of the drive,
i) the status of the contacts of apparatus by the auxiliary switch

In case of significant defects, such as damaging the disconnector or the drive, or endangering the safety of operating personnel, immediately turn off the drive and apparatus from use and remove the defects or contact the manufacturer of the device.

7.3 Maintenance work

The purpose of maintenance work is to remove possible defects detected during periodic inspection. In addition, during maintenance the following activities should be conducted:

a) cleaning surfaces of insulators, insulation rods and insulating barriers,
b) cleaning cooperating surfaces of fixed contacts and movable contacts and covering them with acid-free grease (recommended grease: Isoflex Topas NB52)
c) renovation of damaged covers
d) removal of other defects detected during the periodic inspection

7.4 Repairs

Repair of disconnectors can be done by ABB service or by technicians trained by the manufacturer.

8 Packing, transport, storage

Disconnectors are delivered to the consumer in a package that protects the apparatus from dust and light impacts. To place of storage or installation disconnectors should be transported by covered means of transport. The units should be stored in closed and dry places in the package. Transport and storage and handling should be in accordance with the operating marks on the packaging.
9 Withdraw from use
OW indoor disconnectors are environment friendly devices. If the described in this instruction device is withdrawn from further use, all materials used in its production process can be re-used. This means that all components of the disconnector can be scrapped in an environmentally friendly manner, based on valid legal regulations.

10 Spare parts
Disconnector, for its lifetime 1000 switching operation do not require spare parts. On request spare parts can be delivered to the customer. Ordered parts can be mounted only with knowledge and acceptance of ABB.