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1 Introduction

This technical file contains detailed information about the technical properties of the product. Basic information is given in the "Technical Data (TD 61) - General Section".

1.1 On-load tap-changer designations

Each type of on-load tap-changer is available in a number of models, offering a different number of phases, maximum rated through-current, highest voltage for equipment $U_m$, selector size and basic connection diagram. The designation of a particular on-load tap-changer model therefore depends on these features, hence ensuring an unmistakable and non-interchangeable on-load tap-changer designation.

1.1.1 Example of on-load tap-changer type designation

On-load tap-changer VACUTAP® VRM III 500 Y–72,5 / D–10 19 1 WR.

<table>
<thead>
<tr>
<th>Type designation</th>
<th>VACUTAP® VRM III 500 Y-72,5 / D-10 19 1 WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>VACUTAP® VRM</td>
<td>On-load tap-changer type</td>
</tr>
<tr>
<td>III</td>
<td>Number of phases</td>
</tr>
<tr>
<td>500</td>
<td>Last digit:</td>
</tr>
<tr>
<td></td>
<td>maximum rated through-current $I_{rm}$ in A and number of equipped sectors for single-phase on-load tap-changers. When using the on-load tap-changer with a neutral point, a 0 as the last digit corresponds to 3 equipped sectors.</td>
</tr>
<tr>
<td></td>
<td>Penultimate digit:</td>
</tr>
<tr>
<td></td>
<td>0 = without current splitting</td>
</tr>
<tr>
<td></td>
<td>2 = forced current splitting by two parallel winding branches required.</td>
</tr>
<tr>
<td>Y</td>
<td>Use with neutral point</td>
</tr>
<tr>
<td>72.5</td>
<td>Highest voltage for equipment $U_m$ (in kV)</td>
</tr>
<tr>
<td>D</td>
<td>Selector size</td>
</tr>
<tr>
<td>10 19 1 WR</td>
<td>Basic connection</td>
</tr>
</tbody>
</table>

Table 1: Example of designation of on-load tap-changer
1.1.2 Number of positions and basic connection

The selector can be adapted to a large extent to the required number of positions and tapped winding connection. The basic connections differ in terms of selector division, number of operating positions, number of mid-positions, change-over selector model and type of potential connection.

Example: 10 19 1 WR

<table>
<thead>
<tr>
<th>Designation of basic connection</th>
<th>10 19 1 WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Contact circle pitch of selector</td>
</tr>
<tr>
<td>19</td>
<td>Maximum number of operating positions</td>
</tr>
<tr>
<td>1</td>
<td>Number of mid-positions</td>
</tr>
<tr>
<td>W</td>
<td>Change-over selector model (W=reversing change-over selector, G=coarse tap connection)</td>
</tr>
<tr>
<td>R</td>
<td>Type of potential connection (R=attached tie-in resistors, P=tie-in switches with attached tie-in resistors)</td>
</tr>
</tbody>
</table>

Table 2: Example of designation of basic connection

1.2 On-load tap-changer models

You will find an overview of the on-load tap-changer models in the Type overview section.
1.3 Basic connections

Below you will find some examples of the on-load tap-changer’s basic connections with designation of selector connection contacts in accordance with MR standard. You will find the connections that can actually be made in the section "Permitted voltage stresses" [► Section 2.4, Page 12].

Figure 1: Basic connections without change-over selector
Figure 2: Basic connections for reversing change-over tap selector connection
Figure 3: Basic connections for coarse tap selector connection
2 Technical data

2.1 On-load tap-changer properties

Electrical data for VACUTAP® VRM I/II/III

<table>
<thead>
<tr>
<th>On-load tap-changer</th>
<th>VRM I 501</th>
<th>VRM I 802</th>
<th>VRM I 1203¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum rated through-current $I_{rm}$ [A]</td>
<td>500</td>
<td>800</td>
<td>1 200</td>
</tr>
<tr>
<td>Rated short-time current [kA]</td>
<td>5</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Rated duration of short-circuits [s]</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Rated peak withstand current [kA]</td>
<td>12.5</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Maximum rated step voltage $U_{rm}$ [V]</td>
<td>3 000</td>
<td>3 000</td>
<td>3 000</td>
</tr>
<tr>
<td>Step capacity $P_{stm}$ [kVA]</td>
<td>1 500</td>
<td>2 400</td>
<td>3 000</td>
</tr>
<tr>
<td>Rated frequency [Hz]</td>
<td>50…60</td>
<td>50…60</td>
<td>50…60</td>
</tr>
</tbody>
</table>

¹) For on-load tap-changer VACUTAP® VRM I 1203 with a rated through-current $I_r > 1,000$ A, contact Maschinenfabrik Reinhausen GmbH regarding the permissible overload and number of tap-change operations.

Mechanical data for VACUTAP® VRM I/III

<table>
<thead>
<tr>
<th>Number of operating positions</th>
<th>Without change-over selector: maximum 18</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With change-over selector: maximum 35</td>
</tr>
<tr>
<td>Number of equipped sectors</td>
<td>1…3</td>
</tr>
<tr>
<td>Selector sizes</td>
<td>D</td>
</tr>
<tr>
<td>Dimensions</td>
<td>See dimensional drawings [▶ Section 3.1, Page 19]</td>
</tr>
<tr>
<td>Weight</td>
<td></td>
</tr>
<tr>
<td>Displacement and oil volume</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Electrical data for VACUTAP® VRM I/II/III

Table 4: Mechanical data for VACUTAP® VRM I/III
### 2.2 Permissible ambient conditions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air temperature during operation</td>
<td>-25…+50°C</td>
</tr>
</tbody>
</table>
| Temperature of the insulating fluid in the transformer in operation | Normal temperature range  
-15…+105°C: continuous  
Increased temperature range  
105…130°C: max. 8 hours/day, max. 720 hours/year  
130…150°C: max. 8 hours/day, max. 240 hours/year |
| Temperature of the insulating fluid in the oil compartment in operation | -15…+120°C                                                          |
| Transport temperature, storage temperature      | -40…+50°C                                                            |
| Drying temperatures                             | See installation and commissioning instructions, chapter "Assembly"   |
| Compressive strength                            | See technical data TD 61 – general section                           |
| Insulating fluids                               | Synthetic ester fluid (IEC 61099): Mide 7131  
Other insulating fluids on request               |
| Installation height of the oil conservator      | See technical data TD 61 – general section                           |
| Installation height above sea level             | See technical data TD 61 – general section                           |

Table 5: Permissible ambient conditions
2.3 Step capacity diagram for network application

Figure 4: Step capacities (rated voltage $U_r$, rated through current $I_r$)
2.4 Permitted voltage stresses

This section describes the permitted voltage stresses of single-phase and multiphase on-load tap-changers.

When selecting the on-load tap-changer, you must check that the highest stresses do not exceed the related rated withstand voltages at the insulation distances.

2.4.1 Insulation distances

<table>
<thead>
<tr>
<th>without change-over selector</th>
<th>with reversing change-over selector</th>
</tr>
</thead>
<tbody>
<tr>
<td>with coarse change-over selector in position +</td>
<td>with coarse change-over selector in position -</td>
</tr>
</tbody>
</table>

Note maximum stress with rated lightning impulse withstand voltage at a0 in mid-position!

Figure 5: Insulation distances for selector size D without multiple coarse change-over selector

- a0 Between selected and preselected tap on the diverter switch
- a1 Between tap selector contacts of the winding of one tap position (connected or not connected)
2 Technical data

a Between beginning and end of a tapped winding and, for a coarse winding model, also between beginning and end of a coarse winding.

Note for coarse tap selector connection in position (-) of the change-over selector:

Especially when stressed with impulse voltage, it is important that the permissible withstand voltage "a" between the end of a coarse winding connected with the K tap selector contact and the tap selector contact at the end of the tapped winding of the same phase is adhered to.

b between the tap selector contacts of different phases and between change-over selector contacts of different phases, which are connected with the beginning/end of a tapped winding or with a tap selector contact

f between diverter switch output terminal and ground

Additionally for coarse tap selector connection in position (+) of the change-over selector:

c1 from one change-over selector contact (-) to take-off lead of the same phase

c2 between change-over selector contacts (-) of different phases

Abbreviations for the rated insulation level

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LI</td>
<td>Full wave lightning impulse (kV, 1.2/50 μs)</td>
</tr>
<tr>
<td>LIC</td>
<td>Chopped wave lightning impulse (kV, 1.2/50/3 μs)</td>
</tr>
<tr>
<td>SI</td>
<td>Switching impulse (kV, 250/2500 μs)</td>
</tr>
<tr>
<td>AC</td>
<td>Applied voltage (kV, 50 Hz, 1 min)</td>
</tr>
</tbody>
</table>

Rated insulation level on diverter switch

<table>
<thead>
<tr>
<th>U_m</th>
<th>LI</th>
<th>LIC</th>
<th>SI</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>72.5</td>
<td>350</td>
<td>385</td>
<td>280</td>
<td>140</td>
</tr>
<tr>
<td>170</td>
<td>750</td>
<td>825</td>
<td>620</td>
<td>325</td>
</tr>
</tbody>
</table>

Table 6: Rated insulation level on diverter switch

1) In accordance with IEC 60214-1: highest effective value for phase-to-phase voltage in a three-phase system for which an on-load tap-changer is designed with respect to its insulation.

Rated insulation level of inner insulation on the M selector (without multiple coarse change-over selector)

The admissible maximum operating voltage on the individual selector distances corresponds to half the value of the values listed below for applied voltage (AC).

<table>
<thead>
<tr>
<th>Insulation distance</th>
<th>Selector size D</th>
</tr>
</thead>
<tbody>
<tr>
<td>a0</td>
<td>105^1)</td>
</tr>
<tr>
<td>LI</td>
<td>115^1)</td>
</tr>
<tr>
<td>LIC</td>
<td>65^1)</td>
</tr>
<tr>
<td>SI</td>
<td>20</td>
</tr>
<tr>
<td>Insulation distance</td>
<td>Selector size D</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>a1</td>
<td>LI 105</td>
</tr>
<tr>
<td></td>
<td>LIC 115</td>
</tr>
<tr>
<td></td>
<td>SI 65</td>
</tr>
<tr>
<td></td>
<td>AC 24</td>
</tr>
<tr>
<td>a</td>
<td>LI 345</td>
</tr>
<tr>
<td></td>
<td>LIC 380</td>
</tr>
<tr>
<td></td>
<td>SI 225</td>
</tr>
<tr>
<td></td>
<td>AC 87</td>
</tr>
<tr>
<td>b1</td>
<td>LI 345</td>
</tr>
<tr>
<td></td>
<td>LIC 380</td>
</tr>
<tr>
<td></td>
<td>SI 225</td>
</tr>
<tr>
<td></td>
<td>AC 120</td>
</tr>
<tr>
<td>c1</td>
<td>LI 415</td>
</tr>
<tr>
<td></td>
<td>LIC 455</td>
</tr>
<tr>
<td></td>
<td>SI 270</td>
</tr>
<tr>
<td></td>
<td>AC 172</td>
</tr>
<tr>
<td>c21</td>
<td>LI 415</td>
</tr>
<tr>
<td></td>
<td>LIC 455</td>
</tr>
<tr>
<td></td>
<td>SI 270</td>
</tr>
<tr>
<td></td>
<td>AC 185</td>
</tr>
</tbody>
</table>

Table 7: Rated insulation level of inner insulation on the M selector

1) not applicable to single-phase on-load tap-changer

2) varistor response voltage at 1.2/50 µs lightning impulse: starting at 45 kV ($U_{100\%(t)_{\text{standardized}}} \neq U_{75\%(t)_{\text{standardized}}}$), residual voltage at 3 kA peak withstand current: 56 kV
### 2.5 Realizable connections

The connections listed below can also be realized for change-over selectors with reversing change-over selectors and 3 mid-positions (3W) and for change-over selectors with coarse tap connection and 3 mid-positions (3G).

<table>
<thead>
<tr>
<th>Connection</th>
<th>Selector size</th>
<th>Connection</th>
<th>Selector size</th>
<th>Connection</th>
<th>Selector size</th>
</tr>
</thead>
<tbody>
<tr>
<td>10050</td>
<td>D</td>
<td>10071W</td>
<td>D</td>
<td>10071G</td>
<td>D</td>
</tr>
<tr>
<td>10060</td>
<td>D</td>
<td>10081W</td>
<td>D</td>
<td>10081G</td>
<td>D</td>
</tr>
<tr>
<td>10070</td>
<td>D</td>
<td>10091W</td>
<td>D</td>
<td>10091G</td>
<td>D</td>
</tr>
<tr>
<td>10080</td>
<td>D</td>
<td>12101W</td>
<td>D</td>
<td>12101G</td>
<td>D</td>
</tr>
<tr>
<td>10090</td>
<td>D</td>
<td>14111W</td>
<td>D</td>
<td>14111G</td>
<td>D</td>
</tr>
<tr>
<td>10100</td>
<td>D</td>
<td>16121W</td>
<td>D</td>
<td>16121G</td>
<td>D</td>
</tr>
<tr>
<td>12110</td>
<td>D</td>
<td>16131W</td>
<td>D</td>
<td>16131G</td>
<td>D</td>
</tr>
<tr>
<td>12120</td>
<td>D</td>
<td>16141W</td>
<td>D</td>
<td>16141G</td>
<td>D</td>
</tr>
<tr>
<td>14130</td>
<td>D</td>
<td>18151W</td>
<td>D</td>
<td>18151G</td>
<td>D</td>
</tr>
<tr>
<td>14140</td>
<td>D</td>
<td>10191W</td>
<td>D</td>
<td>10191G</td>
<td>D</td>
</tr>
<tr>
<td>16150</td>
<td>D</td>
<td>12231W</td>
<td>D</td>
<td>12231G</td>
<td>D</td>
</tr>
<tr>
<td>16160</td>
<td>D</td>
<td>14271W</td>
<td>D</td>
<td>14271G</td>
<td>D</td>
</tr>
<tr>
<td>18170</td>
<td>D</td>
<td>16311W</td>
<td>D</td>
<td>16311G</td>
<td>D</td>
</tr>
<tr>
<td>18180</td>
<td>D</td>
<td>18351W</td>
<td>D</td>
<td>18351G</td>
<td>D</td>
</tr>
</tbody>
</table>

Table 8: Realizable connections for VACUTAP® VRM I/III
2.6 Tapped winding potential connection

During its switching operation the tapped winding is briefly electrically isolated from the main winding by the reversing change-over selector or coarse change-over selector. It then adopts a potential resulting from the voltages of the adjacent windings and coupling capacities for these windings or earthed parts.

This potential shift of the tapped winding produces corresponding voltages between the deactivating change-over selector contacts because one contact is always connected to the tapped winding and the other contact is always connected to the main winding. This voltage is known as the recovery voltage \( U_W \).

When separating the change-over selector contacts, a capacitive current has to be interrupted. This current depends on the aforementioned coupling capacities of the tapped winding. This current is known as the breaking current \( I_S \).

The recovery voltage \( U_W \) and breaking current \( I_S \) may result in impermissible signs of discharge on the change-over selector. The permissible range of recovery voltage \( U_W \) and breaking current \( I_S \) can be seen in the following diagrams:

2.6.1 Recovery voltage and breaking current

For more information about recovery voltage and breaking current, see Technical Data TD 61 - General Part.
Figure 6: Guide values for $U_r$ and $I_b$ without tie-in resistor $R_p$ for selector size D
Recovery voltage $U_r$ and breaking current $I_b$ with tie-in resistor

Figure 7: Guide values for $U_r$ and $I_b$ with tie-in resistor $R_p$ for selector size D
3 Drawings

3.1 Dimensional drawings
FOR THE TYPE OF OLTC-HEAD REFER TO THE ORDER-SPECIFIC DRAWING OF THE OLTC-HEAD AND DRIVE SHAFTS

- DRIVE SIDE OF SELECTOR
- ON-LOAD TAP-CHANGER CURRENT TAKE-OFF TERMINAL
- IS CONNECTED TO POTENTIAL OF
- SHIELING RINGS FOR 170 kV
- SUPPORTING FLANGE FOR THE BELL-TYPE TANK INSTALLATION IS OPTIONAL

- THE DETAILED CONNECTION DIAGRAM IS BINDING FOR THE DESIGNATION OF THE CONNECTION CONTACTS AND PHASES
- E-E REFER TO 898013
- D-D AND E-E: TYPE WITH CONNECTING LEAD 3W/3G REFER TO 723590

ON-LOAD TAP-CHANGER VACUTAP® VR
VRM I 501 - 725/170kV - D HT DESIGN
DIMENSION DRAWING

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### VACUTAP® VRM

| SELECTOR SIZE
| Um [kV] |
|---------|--------|
| 72.5    | 170    |

<table>
<thead>
<tr>
<th>DIMENSIONS [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>h 208</td>
</tr>
<tr>
<td>i 020</td>
</tr>
<tr>
<td>b 576</td>
</tr>
<tr>
<td>s -</td>
</tr>
<tr>
<td>z -</td>
</tr>
<tr>
<td>x -</td>
</tr>
<tr>
<td>y -</td>
</tr>
<tr>
<td>k 788</td>
</tr>
<tr>
<td>n 323</td>
</tr>
<tr>
<td>t 195</td>
</tr>
</tbody>
</table>

| OIL CONTENT [dm³] | 180 | 230 |
| DISPLACEMENT [dm³] | 280 | 340 |
| MAX. WEIGHT [kg]  | 362 | 361 |

---

**On-Load Tap-Changer VACUTAP® VRM**

**VRM I 501 - 725/170kV - D HT DESIGN**

**DIMENSION DRAWING**

---

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The detailed connection diagram is binding for the designation of the connection contacts and phases.

- A: On-load tap-changer current take-off terminal
- D: Shielding rings for 170 kV
- E: Supporting flange for the bell-type tank installation is optional

For the type of OLTC-head refer to the order-specific drawing of the OLTC-head and drive shafts.

- 1.17
- 1.17
- 2.18
- 2.18
- 1.17
- 1.17
- 2.18
- 2.18

- 0, +, -
- 0, +, -
- 0, +, -
- 0, +, -

- A-A: Drive side of selector
- B: Without change-over selector
- C: With reversing change-over selector
- D-D: With coarse change-over selector
- E-E: 3W/3G refer to 723590
<table>
<thead>
<tr>
<th>DIMENSIONS [mm]</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>h</td>
<td>2478</td>
<td>2738</td>
</tr>
<tr>
<td>i</td>
<td>1020</td>
<td>1580</td>
</tr>
<tr>
<td>b</td>
<td>576</td>
<td>302</td>
</tr>
<tr>
<td>z</td>
<td>191</td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>620</td>
<td>56</td>
</tr>
<tr>
<td>y</td>
<td>1158</td>
<td>323</td>
</tr>
<tr>
<td>k</td>
<td>185</td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>185</td>
<td></td>
</tr>
<tr>
<td>l</td>
<td>319</td>
<td></td>
</tr>
<tr>
<td>p</td>
<td>370</td>
<td></td>
</tr>
<tr>
<td>r</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| OIL CONTENT [dm³] | 175 | 225 |
| DISPLACEMENT [dm³] | 284 | 344 |
| MAX. WEIGHT [kg]  | 411 | 429 |
FOR THE TYPE OF OLTC-HEAD REFER TO THE ORDER-SPECIFIC DRAWING OF THE OLTC-HEAD AND DRIVE SHAFTS

- THE DETAILED CONNECTION DIAGRAM IS BINDING FOR THE DESIGNATION OF THE CONNECTION CONTACTS AND PHASES

- C-C: REFER TO 898013

- D-D AND E-E: TYPE WITH CONNECTING LEAD 3W/3G REFER TO 723590

- DRIVE SIDE OF SELECTOR
- ON-LOAD TAP-CHANGER CURRENT TAKE-OFF TERMINAL
- IS CONNECTED TO POTENTIAL OF
- SHIELDING RINGS FOR 170 kV
- SUPPORTING FLANGE FOR THE BELL-TYPE TANK INSTALLATION IS OPTIONAL

ON-LOAD TAP-CHANGER VACUTAP® VR
VRM I 1203 - 725/170kV - 0 HT DESIGN
DIMENSION DRAWING
<table>
<thead>
<tr>
<th>SELECTOR SIZE</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Um (kV)</td>
<td>72.5</td>
</tr>
<tr>
<td>h</td>
<td>2648</td>
</tr>
<tr>
<td>i</td>
<td>120</td>
</tr>
<tr>
<td>b</td>
<td>576</td>
</tr>
<tr>
<td>s</td>
<td>-</td>
</tr>
<tr>
<td>z</td>
<td>-</td>
</tr>
<tr>
<td>x</td>
<td>-</td>
</tr>
<tr>
<td>y</td>
<td>-</td>
</tr>
<tr>
<td>k</td>
<td>528</td>
</tr>
<tr>
<td>n</td>
<td>323</td>
</tr>
<tr>
<td>t</td>
<td>185</td>
</tr>
<tr>
<td>p</td>
<td>185</td>
</tr>
<tr>
<td>r</td>
<td>185</td>
</tr>
<tr>
<td>OIL CONTENT [dm³]</td>
<td>170</td>
</tr>
<tr>
<td>DISPLACEMENT [dm³]</td>
<td>292</td>
</tr>
<tr>
<td>MAX. WEIGHT [kg]</td>
<td>484</td>
</tr>
</tbody>
</table>

ON-LOAD TAP-CHANGER VACUTAP® VR
VRM 1 1203 - 72.5/170kV - D HT DESIGN
DIMENSION DRAWING
ON-LOAD TAP-CHANGER VACUTAP® VR
VRM III 500 - 72.5/170kV - D HT DESIGN
DIMENSION DRAWING

FOR THE TYPE OF OLTC-HEAD REFER TO THE ORDER-SPECIFIC DRAWING OF THE OLTC-HEAD AND DRIVE SHAFTS

- DRIVE SIDE OF SELECTOR
- ON-LOAD TAP-CHANGER CURRENT TAKE-OFF TERMINAL
- IS CONNECTED TO POTENTIAL OF
- SHIELDING RINGS FOR 170 kV
- SUPPORTING FLANGE FOR THE BELL-TYPE TANK INSTALLATION IS OPTIONAL

- THE DETAILED CONNECTION DIAGRAM IS BINDING FOR THE DESIGNATION OF THE CONNECTION CONTACTS AND PHASES
- C-C REFER TO 898013
- D-D AND E-E: TYPE WITH CONNECTING LEAD 3W/3G REFER TO 723590

- WITHOUT CHANGE-OVER SELECTOR
- WITH REVERSING CHANGE-OVER SELECTOR
- WITH COARSE CHANGE-OVER SELECTOR

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## VACUTAP® VRM

### SELECTOR SIZE

<table>
<thead>
<tr>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>72.5</td>
</tr>
</tbody>
</table>

### Um (kV)

<table>
<thead>
<tr>
<th>h</th>
<th>2848</th>
<th>3088</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>120</td>
<td>1600</td>
</tr>
</tbody>
</table>

### Dimensions (mm)

| b    | 576  |
| s    | 302  |
| z    | 191  |
| x    | Ø 620|
| y    | Ø 56 |
| k    | 1528 |
| n    | 523  |
| l    | 185  |
| p    | 185  |
| r    | 370  |
| q    | 508  |

### Oil Content (dm³)

| 170 | 220 |

### Displacement (dm³)

| 212 | 352 |

### Max. Weight (kg)

| 484 | 503 |
TECHNICAL DATA

HOUSING: OUTDOOR DESIGN, POWDER COATED RAL 9006 WHITE ALUMINIUM (C5)

HOUSING MATERIAL: SEAWATER RESISTANT ALUMINIUM

PROTECTION TYPE: IP66 ACCORDING TO IEC 60529 (CLOSED DEVICE)

AMBIENT TEMPERATURE: -40°C TO +150°C (-40°F TO +302°F)

OIL TEMPERATURE: -40°C TO +150°C (-40°F TO +302°F)

OPERATING MEDIUM: TRANSFORMER OIL OR AIR

CONNECTION: CABLE GLAND WITH M20x1.5 (CLAMPING AREA 10.8MM TO 12.8MM)

TERMINAL STRIP: SCREW TERMINAL

0.08MM² TO 2.5MM² (SINGLE AND STRANDED WIRE)

0.25MM² TO 1.5MM² (STRANDED WIRE WITH FERRULE)

AWG: 28 TO 12

1ST PT100: 2-WIRE SYSTEM 1x RED(1), 1x WHITE(2)

2ND PT100: 2-WIRE SYSTEM 1x YELLOW(3), 1x BLACK(4)

SENSOR: 2x PT100 ACCORDING TO DIN EN 60751 CLASS B (2-WIRE CIRCUIT)

HIGH VOLTAGE RESISTANCE: 2.0kV / 50HZ / 1MIN. (SENSOR TO SENSOR)

2.0kV / 50HZ / 1MIN. (SENSOR TO GROUND)

CONNECTION ACCORDING TO THE ASSOCIATED CIRCUIT DIAGRAM

ASSEMBLY INTERFACE

MEMBRANE VENT

SCALE 1:1 (1:2)

FREELY ROTATABLE

M6 / WRENCH 10
MA = 7.5 Nm

> 75,5

O 101
13.9

M20 x 15
3.2 Installation drawings
ON-LOAD TAP-CHANGER VACUTAP® VR
INSTALLATION DRAWING VR S/M - B/C/D/DE
DIMENSION DRAWING

MAINTAIN SUFFICIENT DISTANCE

TRANSFORMER TANK BOTTOM

MAX. PULL-OUT HEIGHT [mm]

<table>
<thead>
<tr>
<th>Um</th>
<th>VRS</th>
<th>VMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>725</td>
<td>1200</td>
<td>1590</td>
</tr>
<tr>
<td>123</td>
<td>1380</td>
<td>1480</td>
</tr>
<tr>
<td>170</td>
<td>1660</td>
<td>1690</td>
</tr>
<tr>
<td>245</td>
<td>1560</td>
<td>1790</td>
</tr>
<tr>
<td>300</td>
<td>1712</td>
<td>1862</td>
</tr>
<tr>
<td>362</td>
<td>1615</td>
<td>1965</td>
</tr>
<tr>
<td>420</td>
<td>1934</td>
<td>2084</td>
</tr>
</tbody>
</table>

11 MOUNTING FLANGE ON TRANSFORMER COVER
12 M12 FIXING SCREW
13 ON-LOAD TAP-CHANGER HEAD DASHBOARD
14 POSITION INDICATOR, REMOVE BEFORE REMOVING THE DIVERTER SWITCH INSERT
15 INJECTION WINDOW
16 Ø15 HOLES
17 SUCTION PIPE
21 ON-LOAD TAP-CHANGER HEAD
22 COVER SCREW
23 COVER DASHBOARD
24 ON-LOAD TAP-CHANGER HEAD DASHBOARD
25 CENTRAL GEAR UNIT WITH 25A DRIVE SHAFT
26 PIPE CONNECTION K FOR PROTECTIVE RELAY
27 PIPE CONNECTION L WITH VENT SCREW (OPTIONAL)
28 PIPE CONNECTION Q (OPTIONAL)
29a AIR-VENT VALVE OF THE ON-LOAD TAP-CHANGER HEAD DASHBOARD
29b VENTING OPTION FOR THE TRANSFORMER OIL CHAMBER
31 DIVERTER SWITCH OIL COMPARTMENT
32 OIL COMPARTMENT BASE
33 SHELLING RINGS FOR UM OF 170 kV OR GREATER
34 OIL COMPARTMENT CONNECTION TERMINAL
35 CONNECTION CONTACT FOR ON-LOAD TAP-CHANGER TAKE-OFF LEAD
36 TAKE-OFF RING FOR ON-LOAD TAP-CHANGER TAKE-OFF LEAD
41 SELECTOR SUSPENSION
42 SELECTOR GEAR
43 FINE TAP SELECTOR
44 CHANGE-OVER SELECTOR
45 SELECTOR CONNECTION CONTACTS (SEE ASSOCIATED DIMENSIONAL DRAWING)
46 CHANGE-OVER SELECTOR CONNECTION CONTACTS (SEE ASSOCIATED DIMENSIONAL DRAWING)
47 SELECTOR CONNECTING LEAD
51 DIVERTER SWITCH INSERT
52 TRANSITION RESISTANCES
53 EYEBOLT

C VARIANT DISPLAYED

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3.3 On-load tap-changer head
A considerable number of variants of the on-load tap-changer head are available for adapting the horizontal part of the drive shaft to the transformer tank.

The mounting position of the selector A and diverter switch oil compartment B is determined by the drive side of selector M.

The on-load tap-changer head C together with its pipe connections D may be turned through 120 degrees clockwise or anti-clockwise. This results in the variants 1, 2 and 3.

The upper gear unit F can be turned continuously on its own axis. Table 1015173 lists the limitation of the swivel range for the particular head variant. The angle specifications refer to the center of rotation of the gear unit. Pay particular attention to the offset of the drive shaft.
ON-LOAD TAP-CHANGER
VACUTAP® VR
ON-LOAD TAP-CHANGER HEAD, CENTRIC DRIVE HT DESIGN
## SWIVEL RANGE OF THE GEAR UNIT HT DESIGN

### HEAD VERSION 1

<table>
<thead>
<tr>
<th>Component</th>
<th>Limitation of the Swivel Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Shaft Left</td>
<td></td>
</tr>
<tr>
<td>Head Version 1</td>
<td></td>
</tr>
<tr>
<td>Pipe Connection R</td>
<td>-180° to 45°</td>
</tr>
<tr>
<td>Pipe Connection S</td>
<td>-180° to 45°</td>
</tr>
<tr>
<td>Pipe Connection A</td>
<td>-180° to 45°</td>
</tr>
<tr>
<td>Pipe Connection E2</td>
<td>-180° to 45°</td>
</tr>
<tr>
<td>Pipe Connection Q</td>
<td></td>
</tr>
<tr>
<td>Temperature Sensor</td>
<td>-90° to 90°</td>
</tr>
<tr>
<td>Inspection Window</td>
<td>-75° to 30°</td>
</tr>
</tbody>
</table>

### HEAD VERSION 2

<table>
<thead>
<tr>
<th>Component</th>
<th>Limitation of the Swivel Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Shaft Left</td>
<td></td>
</tr>
<tr>
<td>Head Version 2</td>
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</tr>
<tr>
<td>Pipe Connection R</td>
<td>-180° to 45°</td>
</tr>
<tr>
<td>Pipe Connection S</td>
<td>-180° to 45°</td>
</tr>
<tr>
<td>Pipe Connection A</td>
<td>-180° to 45°</td>
</tr>
<tr>
<td>Pipe Connection E2</td>
<td>-180° to 45°</td>
</tr>
<tr>
<td>Pipe Connection Q</td>
<td></td>
</tr>
<tr>
<td>Temperature Sensor</td>
<td>-90° to 90°</td>
</tr>
<tr>
<td>Inspection Window</td>
<td>-75° to 30°</td>
</tr>
</tbody>
</table>

### HEAD VERSION 3

<table>
<thead>
<tr>
<th>Component</th>
<th>Limitation of the Swivel Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Shaft Left</td>
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</tr>
<tr>
<td>Head Version 3</td>
<td></td>
</tr>
<tr>
<td>Pipe Connection R</td>
<td>-180° to 45°</td>
</tr>
<tr>
<td>Pipe Connection S</td>
<td>-180° to 45°</td>
</tr>
<tr>
<td>Pipe Connection A</td>
<td>-180° to 45°</td>
</tr>
<tr>
<td>Pipe Connection E2</td>
<td>-180° to 45°</td>
</tr>
<tr>
<td>Pipe Connection Q</td>
<td></td>
</tr>
<tr>
<td>Temperature Sensor</td>
<td>-90° to 90°</td>
</tr>
<tr>
<td>Inspection Window</td>
<td>-75° to 30°</td>
</tr>
</tbody>
</table>

LIMITATION OF THE SWIVEL RANGE THROUGH PIPE CONNECTIONS R, S, D AND TEMPERATURE SENSOR T.

LIMITATION OF THE SWIVEL RANGE THROUGH OPTIONAL EXISTING PIPE CONNECTIONS Q AND E2.

SWIVEL RANGE POSSIBLE, BUT THE INSPECTION WINDOW SL / SR ARE NOT VISIBLE.
ARRANGEMENT

<table>
<thead>
<tr>
<th></th>
<th>G4</th>
<th>G9, G10</th>
<th>G11, G12</th>
<th>G13, G14</th>
</tr>
</thead>
<tbody>
<tr>
<td>STANDARD DESIGN</td>
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<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>SPECIAL DESIGN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MINIMUM DIMENSIONS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1</td>
<td>535</td>
<td>545</td>
<td>-</td>
<td>545</td>
</tr>
<tr>
<td>H2</td>
<td>-</td>
<td>323</td>
<td>515</td>
<td>323</td>
</tr>
<tr>
<td>H3</td>
<td>-</td>
<td>-</td>
<td>840</td>
<td>840</td>
</tr>
<tr>
<td>H4</td>
<td>-</td>
<td>-</td>
<td>840</td>
<td>840</td>
</tr>
</tbody>
</table>

NOTE:
1) FOR OLTS WITH THE CHANGE-OVER SELECTOR ATTACHED LATERALLY, THE DIMENSIONS OF THE CHANGE-OVER SELECTOR AFTER INSTALLED IN POSITION HAVE TO BE TAKEN INTO ACCOUNT (SEE THE CORRESPONDING OLTC-DIMENSION DRAWING)
2) IN GENERAL DETERMINED BY THE INSULATION SPACING BETWEEN POLES A, B, C.

INTERMEDIATE BEARING FOR

<table>
<thead>
<tr>
<th></th>
<th>H1 &gt;</th>
<th>H2 &gt;</th>
<th>H3 &gt;</th>
<th>H4 &gt;</th>
</tr>
</thead>
<tbody>
<tr>
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<td>2259</td>
<td>2254</td>
<td>2249</td>
</tr>
<tr>
<td></td>
<td>2309</td>
<td>2259</td>
<td>2259</td>
<td>2259</td>
</tr>
</tbody>
</table>
PIECE CONNECTION WITH TAP-CHANGE SUPERVISORY CONTROL BUSHING WITHOUT OIL FILTER UNIT

NOTICE!
The vent screw (2) of the mounted housing (1) has to be on the top.

ON-LOAD TAP-CHANGER HEAD

A 11

REPRESENTED WITHOUT COVER

M20x15
Clamping range for connection cable:
External diameter: 7 - 13 mm

CONNECTION TERMINALS FOR TAP-CHANGE SUPERVISORY CONTROL

WIRING SEE CONNECTION DIAGRAM OF THE MOTOR-DRIVE UNIT

FUNCTION DIAGRAM FOR TAP-CHANGE SUPERVISORY CONTROL SEE MOTOR-DRIVE CONNECTION DIAGRAM

RATED CONTINUOUS CURRENT: 2A
RATED VOLTAGE DC/AC 150Hz: 24V ... 250V
DIELECTRIC STRENGTH: 1150V / 50Hz / 1 MIN.

DIELECTRIC TEST OF ALL VOLTAGE CARRYING TERMINALS TO GROUND:
2000V AC , 50Hz , TEST-DURATION 1 MIN.

ON-LOAD TAP-CHANGER VACUTAP® VM, VR
PIECE CONNECTION WITH TAP-CHANGE SUPERVISORY CONTROL
3.4 Selector
SELECTOR WITHOUT CHANGE-OVER SELECTOR

SELECTOR WITH REVERSING CHANGE-OVER SELECTOR
representation applies to 3-phases y design and 2-phases
in 1-phase selectors the upper and lower selector plane
are interchanged

SELECTOR WITH COARSE CHANGE-OVER SELECTOR:

DESIGNATION OF SELECTOR CONNECTION CONTACTS

such as: 3  upper contact plane

(4) lower contact plane

M - Drive side of selector

THE DETAILED CONNECTION DIAGRAM IS BINDING FOR THE DESIGNATION OF THE
SELECTOR CONNECTION CONTACTS

EXCEPT AS NOTED

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REVERSING CHANGE-OVER SELECTOR
E - F (TYPE M / VM) AND D - D (TYPE VRC / VRE / VRC I HD / VRE I HD / VRS / VRM)
REPRESENTATION APPLIES TO 12-PITCH SELECTOR

COARSE CHANGE-OVER SELECTOR
G - H (TYPE M / VM) AND E - E (TYPE VRC / VRE / VRC I HD / VRE I HD / VRS / VRM)
REPRESENTATION APPLIES TO 12-PITCH SELECTOR

THE DETAILED CONNECTION DIAGRAM IS BINDING FOR THE DESIGNATION OF THE CONNECTION CONTACTS

ON-LOAD TAP-CHANGER OILTAP® M AND VACUTAP® VM/VRC/VRE/VRS/VRM
CONNECTING LEAD 3W AND 1G / 3G
SELECTOR SIZE B / C / D / DE
3.5 Potential connection unit
TIE-IN RESISTORS WITH/WITHOUT TIE-IN SWITCH

**DESIGN I**

POTENTIAL CONNECTION UNIT  $U_m \leq 123$ kV

Without Tie-In Switch

For Max. 8 Resistor Elements

(As Shown)

**DESIGN II**

POTENTIAL CONNECTION UNIT  $U_m > 123$ kV

With Tie-In Switch

For Max. 6 Resistor Elements

(As Shown)

**ARRANGEMENT OF LEADS**

TIE-IN RESISTOR - SELECTOR

FOR CONTACT LOCATION REFER TO RELEVANT DIMENSION DRAWING

**ON-LOAD TAP-CHANGER**

**OILTAP® M, RM / VACUTAP® VM, VR**

M/RM/VM/VRC/VER/VRM I - REVERS. CHANGE-OVER SEL. - SIZE B/C/D/E

TIE-IN RESISTORS WITH/WITHOUT TIE-IN SWITCH

---

THE DETAILED CONNECTION DIAGRAM IS BINDING FOR THE DESIGNATION OF THE CONNECTION CONTACTS AND PHASES.

CONNECTIONS FROM THE TIE-IN RESISTOR TO THE SELECTOR AND TO THE ON-LOAD TAP-CHANGER CURRENT TAKE-OFF TERMINAL ARE CARRIED OUT BY MR.

NOT APPLICABLE TO VM I 301

---

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ON-LOAD TAP-CHANGER OILTAP®M, RM / VACUTAP® VM, VR
M/R/M/R/MM/R/MM/R/MM/R/MM/R/MM/II- REVERS. CHANGE-OVER SEL.- SIZE B/C/D/DE
TIE-IN RESISTORS WITH/WITHOUT TIE-IN SWITCH

THE DETAILED CONNECTION DIAGRAM IS BINDING FOR THE DESIGNATION OF THE CONNECTION CONTACTS AND PHASES
CONNECTIONS FROM THE TIE-IN RESISTOR TO THE SELECTOR AND TO THE ON-LOAD TAP-CHANGER CURRENT TAKE-OFF TERMINAL ARE CARRIED OUT BY MR

NOT APPLICABLE TO VM II 302
TIE-IN RESISTORS WITH / WITHOUT TIE-IN SWITCH

**Design I**
- Potential connection unit $U_m \leq 123$ kV
- Without tie-in switch
- For max. 8 resistor elements per phase (as shown)

**Design II**
- Potential connection unit $U_m > 123$ kV
- With tie-in switch
- For max. 6 resistor elements per phase (as shown)

The detailed connection diagram is binding for the designation of the connection contacts and phases. Connections from the tie-in resistor to the selector and to the on-load tap-changer current take-off terminal are carried out by MR.

M: Drive side of selector

NOT APPLICABLE TO VM III 300 Y
**TIE-IN RESISTORS WITH/WITHOUT TIE-IN SWITCH**

**DESIGN I**

*POTENTIAL CONNECTION UNIT* $U_m \leq 123$ kV

- **COARSE CHANGE-OVER SELECTOR**
- **TAP SELECTOR**

*Potentials of the on-load tap-changer current take-off terminal*

Without tie-in switch for max. 8 resistor elements (as shown)

With tie-in switch for max. 6 resistor elements (as shown)

**DESIGN II**

*POTENTIAL CONNECTION UNIT* $U_m > 123$ kV

- **COARSE CHANGE-OVER SELECTOR**
- **TAP SELECTOR**

*Potentials of the middle of the tap winding*

**ARRANGEMENT OF LEADS**

**TIE-IN RESISTOR - SELECTOR**

For contact location refer to relevant dimension drawing

**DRIVE SIDE OF SELECTOR**

The detailed connection diagram is binding for the designation of the connection contacts and phases.

Connections from the tie-in resistor to the selector and to the on-load tap-changer current take-off terminal are carried out by MR.

Not applicable to VM 1301
3.6 Connection diagrams (examples)

The connection diagrams contained herein are just examples.

The order-specific connection diagram is enclosed with the delivery.
VACUTAP® VRS III 1300Y-123/RD-18 35 1G

STELLUNG DES GROBWÄHLERS
POSITION OF COARSE TAP SELECTOR

BETRIEBSSTELLUNG
SERVICE POSITION

VERSCHIEDENE SPANNUNGEN
DIFFERENT VOLTAGES

JUSTIERSTELLUNG
ADJUSTMENT POSITION

BEZEICHNUNG DER WAHLERKONTAKTE
DESIGNATION OF TAP SELECTOR CONTACTS

BEZEICHNUNG DER STELLUNGEN
DESIGNATION OF POSITIONS

REGELBEREICH (kV)
REGULATION RANGE (kV)

LASTSTUFENSCHALTER
ON-LOAD TAP-CHANGER

SCHALTBILD
CONNECTION DIAGRAM

MOTORANTRIEB
MOTOR DRIVE UNIT

LU
LASTUMSCHALTER
DIVERTER SWITCH
Y
STERNPUNKT
STAR POINT

TS_1_U
WÄHLEREBENE_U
TAP SELECTOR PLANE_U

TS_2_U
WÄHLEREBENE_U
TAP SELECTOR PLANE_U

TS_3_V
WÄHLEREBENE_V
TAP SELECTOR PLANE_V

PS_2_U
GROBWÄHLER_U
COARSE TAP SELECTOR_U

PS_4_V
GROBWÄHLER_V
COARSE TAP SELECTOR_V

PS_6_W
GROBWÄHLER_W
COARSE TAP SELECTOR_W

TW_0_W
TRAFOWICKLUNG_W
TRANSFORMER WINDING_W

TW_1_W
STUFENWICKLUNG_W
TAP WINDING_W

STUFEN / STEPS
18

STUFEN / STEPS
17

STUFEN / STEPS
16

STUFEN / STEPS
15

STUFEN / STEPS
14

STUFEN / STEPS
13

STUFEN / STEPS
12

STUFEN / STEPS
11

STUFEN / STEPS
10

STUFEN / STEPS
9

STUFEN / STEPS
8

STUFEN / STEPS
7

STUFEN / STEPS
6

STUFEN / STEPS
5

STUFEN / STEPS
4

STUFEN / STEPS
3

STUFEN / STEPS
2

STUFEN / STEPS
1

M ANTRIEBSSEITE
DRIVE SIDE

DE
EN

0   +
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
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27
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29
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32
33
34
35

1
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29
30
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32
33
34
35

5  6  7  8  9  10  11
4  5  6  7  8  9  10
3  4  5  6  7  8  9
2  3  4  5  6  7  8
1  2  3  4  5  6  7

DO NOT MODIFY MANUALLY
Fuer diese technische Unterlage behalten wir gemaess DIN 34 Abschnitt 2.1 und 2.2 alle Rechte vor.
U, V, W

TW_0_W

TW_1_W

TW_2_W

TW_3_W

TW_4_W

TW_5_W

TW_6_W

PS_2_U

PS_4_V

PS_6_W

LU

18 STUFEN/STEPS

TS_1_U

TS_2_U

TS_3_V

TS_4_V

TS_5_W

TS_6_W

STELLUNG DES WENDERS
POSITION OF REVERSING CHANGE-OVER SELECTOR

BETRIEBSSTELLUNGEN
SERVICE POSITIONS

VERSCHIEDENE SPANNUNGEN
DIFFERENT VOLTAGES

JUSTIERSTELLUNG
ADJUSTMENT POSITION

BETRIEBSSTELLUNGEN
SERVICE POSITIONS

BEZEICHNUNG DER WAHLERKONTAKTE
DESIGNATION OF TAP SELECTOR CONTACTS

BEZEICHNUNG DER STELLUNGEN
DESIGNATION OF POSITIONS

REGELBEREICH (kV)
REGULATION RANGE (kV)

STELLUNG DES WENDERS
POSITION OF REVERSING CHANGE-OVER SELECTOR

BETRIEBSSTELLUNG
SERVICE POSITION

BEZEICHNUNG DER WAHLERKONTAKTE
DESIGNATION OF TAP SELECTOR CONTACTS

BEZEICHNUNG DER STELLUNGEN
DESIGNATION OF POSITIONS

REGELBEREICH (kV)
REGULATION RANGE (kV)

MOTORANTRIEB
MOTOR DRIVE UNIT

LU

LASTSTUFENSCHALTER
ON-LOAD TAP-CHANGER

VACUTAP® VRS III 1300Y-123/RE-18 35 1W

LANGUAGE:
DE
EN

PROJECT:

SCHALTBILD
CONNECTION DIAGRAM

NO. MODIFICATION
DATE
NAME
SHEET
DRAWING BY CAD

DO NOT MODIFY MANUALLY

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STANDARD
VERIFIED
EXEC.
DATE
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ORIGIN.
REPL.BY
REPL.
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EN
01.08.2017
KONFIG
CSO
VRS III 1300Y-123/RE-18 35 1W
CUSTOMER CONNECTIONS
MR VERBINDUNGEN
MR CONNECTIONS
KUNDEN VERBINDUNGEN
MR CONNECTIONS

LANGUAGEN

EN
DE

01.08.2017
STELLENG DES GROBWÄHLERS
POSITION OF COARSE TAP SELECTOR

BETRIEBSSTELLUNGEN
SERVICE POSITIONS 35

VERSCHEIDENE SPANNUNGEN
DIFFERENT VOLTAGES 35

JUSTIERSTELLUNG
ADJUSTMENT POSITION 18

BEZEICHNUNG DER WÄHLERKONTAKTE
DESIGNATION OF TAP SELECTOR CONTACTS

BEZEICHNUNG DER STELUNGEN
DESIGNATION OF POSITIONS

REGELBEREICH (kV)
REGULATION RANGE (kV)
STELLUNG DES WENDERS
POSITION OF REVERSING CHANGE-OVER SELECTOR
BETRIEBSSTELLUNG
SERVICE POSITION
VERSCHIEDENE SPANNUNGEN
DIFFERENT VOLTAGES
JUSTIERSTELLUNG
ADJUSTMENT POSITION

BETRIEBSSTELLUNGEN
SERVICE POSITIONS
VERSCHIEDENE SPANNUNGEN
DIFFERENT VOLTAGES
JUSTIERSTELLUNG
ADJUSTMENT POSITION

MOTORANTRIEB
MOTOR DRIVE UNIT

LASTSTUFSCHALTER
ON-LOAD TAP-CHANGER

VACUTAP® VRS I 1301-123/RE-18 35 1W

35 17 35 34 16 34 33 15 33 32 14 32 31 13 31 30 12 30 29 11 29 28 10 28 27 9 27 26 8 26 25 7 25 24 6 24 23 5 23 22 4 22 21 3 21 20 2 20 19 1 18 18 K 18 17 17 17 16 16 16 15 15 15 14 14 14 13 13 13 12 12 12 11 11 11 10 10 10 9 9 9 8 8 8 7 7 7 6 6 6 5 5 5 4 4 4 3 3 3 2 2 2 1 1 1
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STANDARD
VERIFIED
EXEC.

MOTORANTRIEB

MOTOR DRIVE UNIT

ANTREIBSEITE
DRIVE SIDE

STELLUNG DES GROBWÄHLERS
POSITION OF COARSE TAP SELECTOR

BEZEICHNUNG DER WÄHLERKONTAKTE
DESIGNATION OF TAP SELECTOR CONTACTS

BEZEICHNUNG DER STELLUNGEN
DESIGNATION OF POSITIONS

REGELBEREICH (kV)
REGULATION RANGE (kV)

LASTSTUFENSCHALTER
ON-LOAD TAP-CHANGER

VACUTAP®
VRS III 700Y-123/C-18 35 1G

SCHAUTBILD
CONNECTION DIAGRAM

STUFEN / STEPS
STAGES

TW_0_W
TRANSFORMER WINDING_W

TW_1_W
STUFENWICKLUNG_W
TAP WINDING_W

LU
LASTUMSCHALTER
DIVERTER SWITCH

KUNDEN VERBINDUNGEN
CUSTOMER CONNECTIONS

MR VERBINDUNGEN
MR CONNECTIONS

ORIGIN.
REPL.BY
REPL.

EN
DE

KONFIG
5140631_01

LANGUAGE:
PROJECT:

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KONFIG
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LANGUAGE:
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KONFIG
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KONFIG
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KONFIG
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KONFIG
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LANGUAGE:
PROJECT:

02.08.2017
02.08.2017

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KONFIG
5140631_01

LANGUAGE:
PROJECT:
THE POWER BEHIND POWER.

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