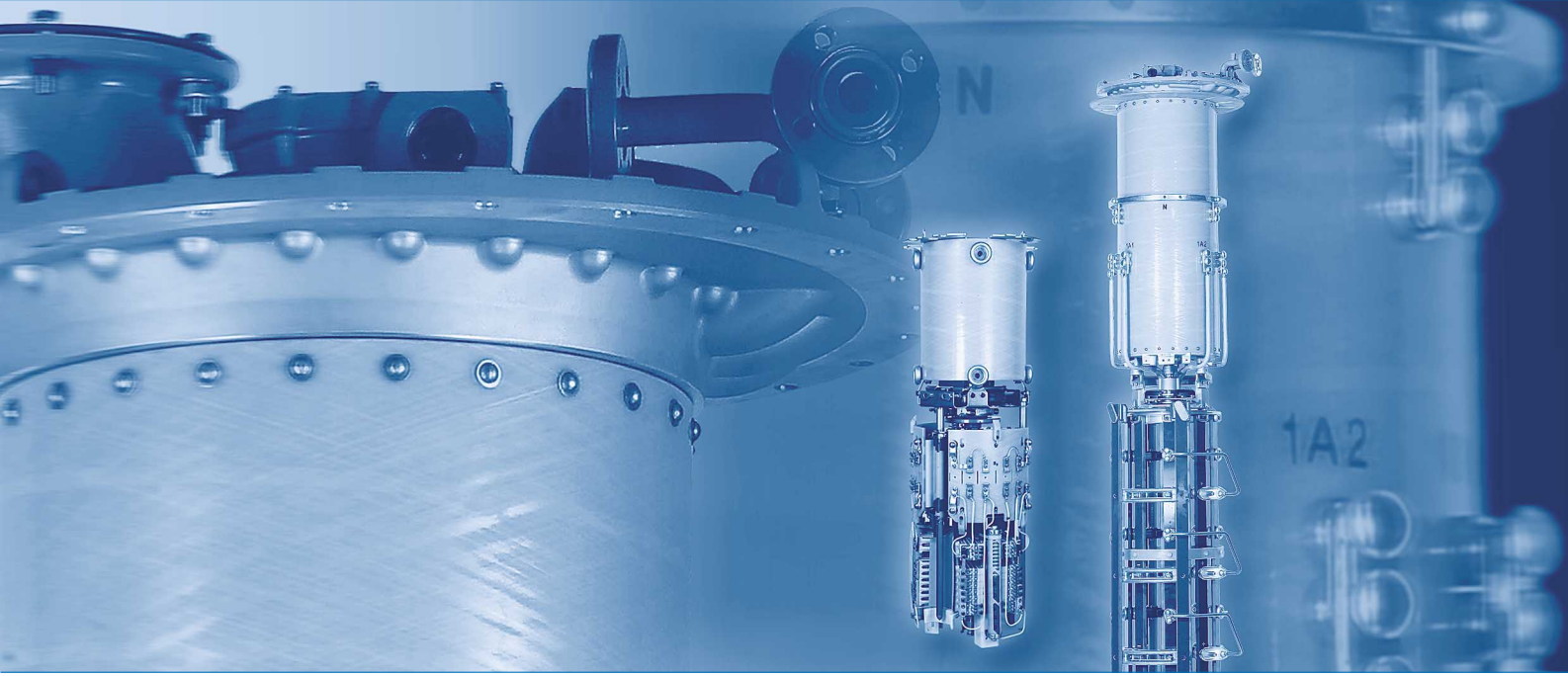


# OILTAP® R and RM

On-Load Tap-Changer  
for Regulating Transformers





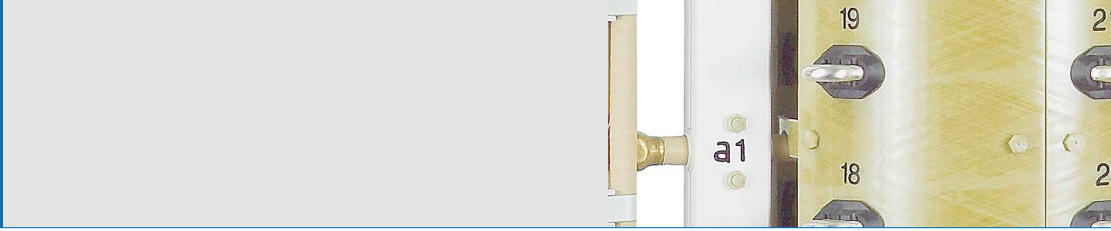
On-load tap-changers OILTAP® R and RM are used to vary the ratio of oil-immersed transformers under load. In general, they are designed to suit network transformer as well as industrial transformer applications.

The OILTAP® R and RM designs offer the best possible correlation of rated through-current, insulation to ground, tap selector size and number of steps. These characteristics are also important factors for the space requirement of the on-load tap-changer within the transformer tank.

The insulation properties of the tap-changer meet the highest operating voltages required in transformer construction. In combination with the diverter switch for high step voltage and high switching capacity OILTAP® R and RM offer an attractive application range especially for large transformers.

On-load tap-changer OILTAP® RM covers the lower application range of the R and RM series. By using the tap selector for 600 A of the OILTAP® M design, a particularly compact tap-changer with high switching capacity is available.

*On-load tap-changer OILTAP® RM  
model RM III 600 Y,  
 $U_m = 72.5 \text{ kV}$ ,  
600 A,  
 $\pm 9$  steps*



The tap-changers OILTAP® R and RM offer both the transformer manufacturer and the user a great number of essential advantages:

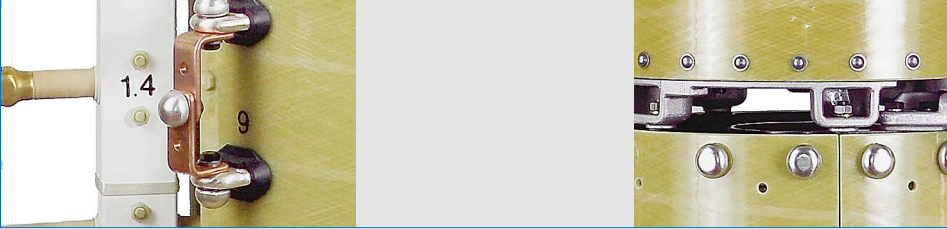
#### Versatility

- star-point design for 600 A and 1 200 A ratings for use in 3-phase star-connected windings.
- single-pole design at 600 A, 1 200 A, 1 500 A, 2 000 A, 2 400 A and 3 000 A for use with single-phase transformers, 3 units for three-phase windings in delta or auto-connection.
- insulation to ground and tap selector size can be determined independently of each other.
- arranged with  $\pm 9$ ,  $\pm 11$ ,  $\pm 13$ ,  $\pm 15$ , or  $\pm 17$  steps.
- convenient also for installation into a bell-type tank.
- additional devices for potential tie-in of the tap winding during switching operation of the change-over selector (tie-in contact).

#### Compactness

- high-speed resistor-type diverter switch with arc extinction at first current zero, pennant-flag switching cycle for high step voltage and high switching capacity.
- energy accumulator spring directly mounted to the diverter switch for high-speed initiation of diverter switch action.
- pressure-tight diverter switch oil compartment.
- tap selector current paths for OILTAP® R and RM are dimensioned to withstand safely the maximum tap-changer through-currents of 1 200 A and 600 A.
- smallest possible tap selector dimensions by the optional use of three different tap selector sizes depending on the required impulse voltage withstandability (up to 670 kV, 1.2150 over the regulating range).
- reduced tap selector dimensions attained by special shaping and arrangement of the parts on high potential.
- distances between tap selector terminals on the contact circle determined by the actual voltage stress.

*On-load tap-changer OILTAP® R  
model R III 1200 Y,  
Um = 72.5 kV,  
1200 A,  
 $\pm 9$  steps*



### Robustness – long life

- rapid tap-change operation of the diverter switch, low thermic stress on the transition resistor
- long service life of the diverter switch arcing contacts
- simple tap selector design, effective cooling of the continuous-current paths, high short-circuit withstandability

### Cost saving – easy to install

- the whole tap-changer is immersed in the transformer main tank by suspended installation from the transformer cover
- equally suitable for vacuum or vapor-phase drying
- connecting up is easy and costsaving
- drive shaft and pipe connections on the tap-changer head can be freely swivelled
- straight forward coupling to the motor drive

### Reduced maintenance

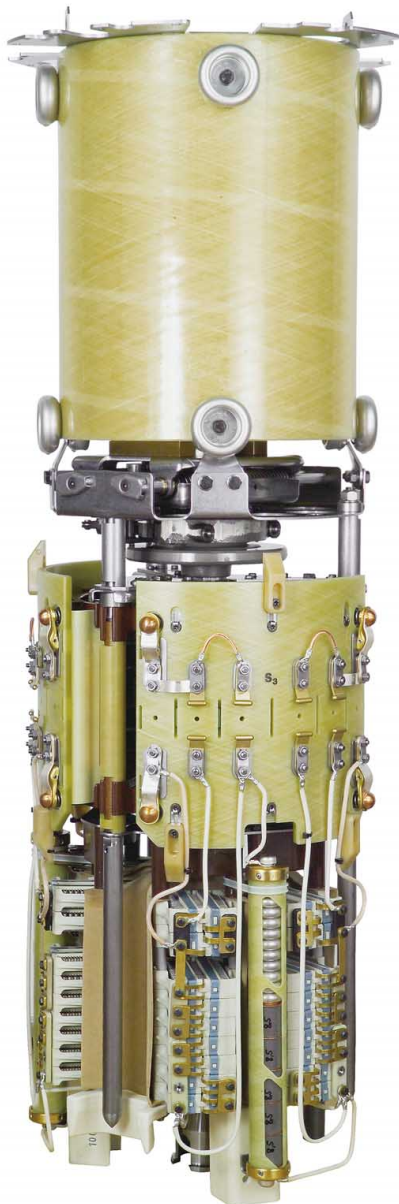
- little maintenance required due to the long contact life
- diverter switch quick and easy to disassemble
- diverter switch contacts easy to replace
- simple to adjust and control
- oil suction pipe built-in



*On-load tap-changer OILTAP® R  
model R I 2002,  
Um = 123 kV,  
2000 A,  
± 9 steps  
with tie-in contact and tie-in  
resistor*

## Diverter Switch Unit

The diverter switch unit combines the energy accumulator spring, the diverter switch and the transition resistors in one unit. For inspection it can be lifted out of the diverter switch oil compartment through the aperture of the tap-changer head.



## Tap Selector for On-Load Tap-Changer OILTAP® R

The tap selector is designed according to an advanced construction principle with GFRP cylinders. It consists of the gearing, the rotatable centre column, contact bridges, current rings, connecting leads and the outside GFRP shells with tap selector terminals. A change-over selector is mounted laterally to the tap selector which allows to double the number of steps. The tap selector bottom with the fixation for the shells and the bearing of the tap selector column are entirely metal-free.



## Technical data

The technical data of on-load tap-changers OILTAP® R and RM have been verified in type tests according to IEC International Standard 60214-1. Moreover, they comply with all relevant national standards. Detailed information and comprehensive data for the selection of OILTAP® R for particular applications can be inferred from our manual TD 115 and for OILTAP® RM from our manual TD 130.

On-load tap-changer model	R III 1200 Y	R I 1201	R I 2002	R I 2402	R I 3000	RM III 600 Y	RM I 601	RM I 1201	RM I 1502	
Number of poles and application	3 (neutral)	1				3 (neutral)	1			
Max. rated through-current $I_{um}$ (in A)	1200	1200	2000	2400	3000	600	600	1200	1500	
Rated short-time withstand current (in kA)	15	15	24	24	30	8	8	15	24	
Rated short-circuit duration (in s)	3	3	3	3	3	3	3	3	3	
Rated peak withstand current (in kA)	37.5	37.5	60	60	75	20	20	37.5	60	
Max. rated step voltage $U_{im}$ (V)	4000	4000	4000	4000	4000	4000	4000	4000	4000	
Step capacity (kVA)	3000	3000	4400	6000	6000	2400	2400	3000	4280	
Rated frequency (in Hz)	50 ... 60									
Operating positions	without change-over selector: max. 18 with change-over selector: max. 35					without change-over selector: max. 18 with change-over selector: max. 35				
Rated insulation level										
Highest voltage for equipment $U_m$ (in kV)	72.5	123	170	245	300	362				
Highest operating voltage $U_b$ (phase-phase)	55	79	145	170	260	300				
Rated lightning impulse withstand voltage (in kV, 1.2/50)	350	550	750	950	1050	1175				
Rated switching impulse withstand voltage (in kV)						850	950			
AC withstand voltage (in kV, 50 Hz, 1 min.)	140	230	325	395	460	510				
Tap selector	<b>OILTAP® R:</b> 3 optional selector sizes (C, D, E) available according to voltage stress requirements of tap winding					<b>OILTAP® RM:</b> 3 optional tap selector sizes (C, D, DE) available according to voltage stress requirements of tap winding				
Diverter switch oil compartment	pressure-proof up to 0.3 bar (test pressure 0.6 bar), head and cover of the on-load tap-changer are vacuum proof									
Oil suction pipe	standard equipment									
Oil displacement volume	<b>OILTAP® R:</b> approx. 270 ... 415 (350 ... 500) <sup>1</sup> litres					<b>OILTAP® RM:</b> approx. 250 ... 400 litres				
Oil filling quantity	approx. 170 ... 255 litres					approx. 160 ... 250 litres				
Weight	approx. 400 ... 620 (500 ... 810) <sup>1</sup> kg					approx. 365 ... 465 kg				
Drying	vacuum drying up to max. 110 °C vapor-phase drying up to max. 125 °C									
Drive	Motor drive unit ED, protective housing in outdoor design, motor for 3 AC 230/400 V, 50 Hz, 0.75 or 1.5 kW, step-by-step operation with local and remote control, mechanical and electrical end position limitation, facility for remote position indication (pointer instrument, lamp panel, digital display), hand crank for emergency and adjustment purposes.									

<sup>1</sup> In the case of tap selector size E

