



# Vacuum circuit-breaker – VM1

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Mechanical  
operating cycles

- a) Operating mechanism  
...100,000
- b) Vacuum interrupter  
...30,000

Operating cycles  
at rated short-circuit  
breaking current  
...30,000



VM1

Vacuum circuit-breaker with  
magnetic actuator mechanism

- 12 kV, ...3150 / 4000<sup>1)</sup> A, ...50 kA
- 17.5 kV, ...3150 / 4000<sup>1)</sup> A, ...40 kA
- 24 kV, ...2500 A, ...25 kA

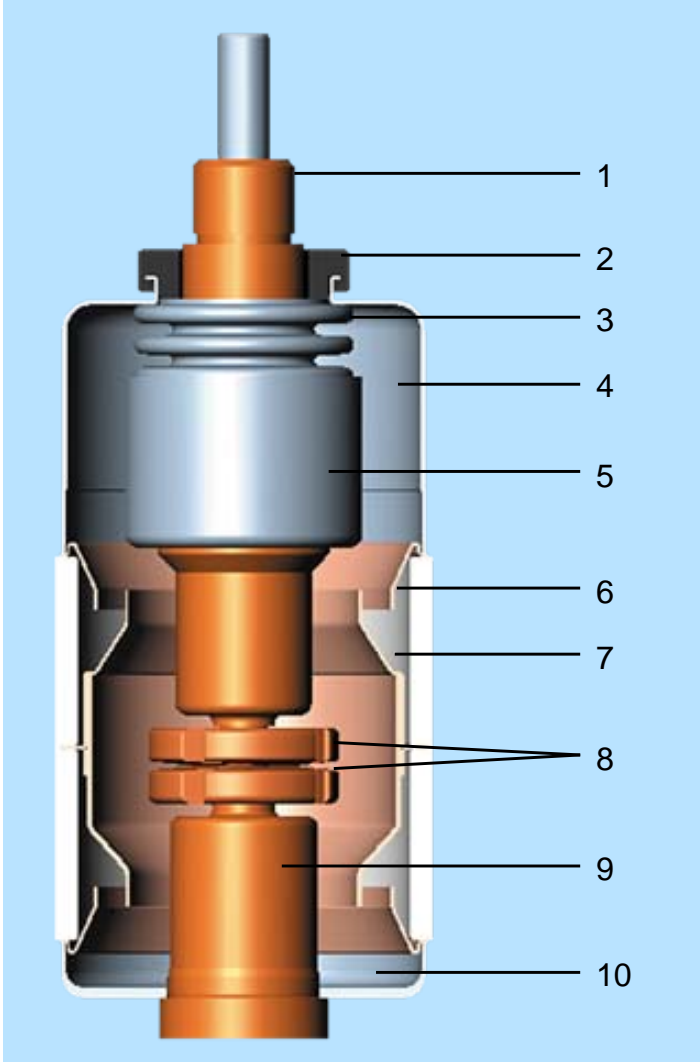
1) Breakers for 4000 A with fan cooling

# Vacuum circuit-breaker – VM1



Withdrawable vacuum  
circuit-breaker module  
for air insulated switchgear

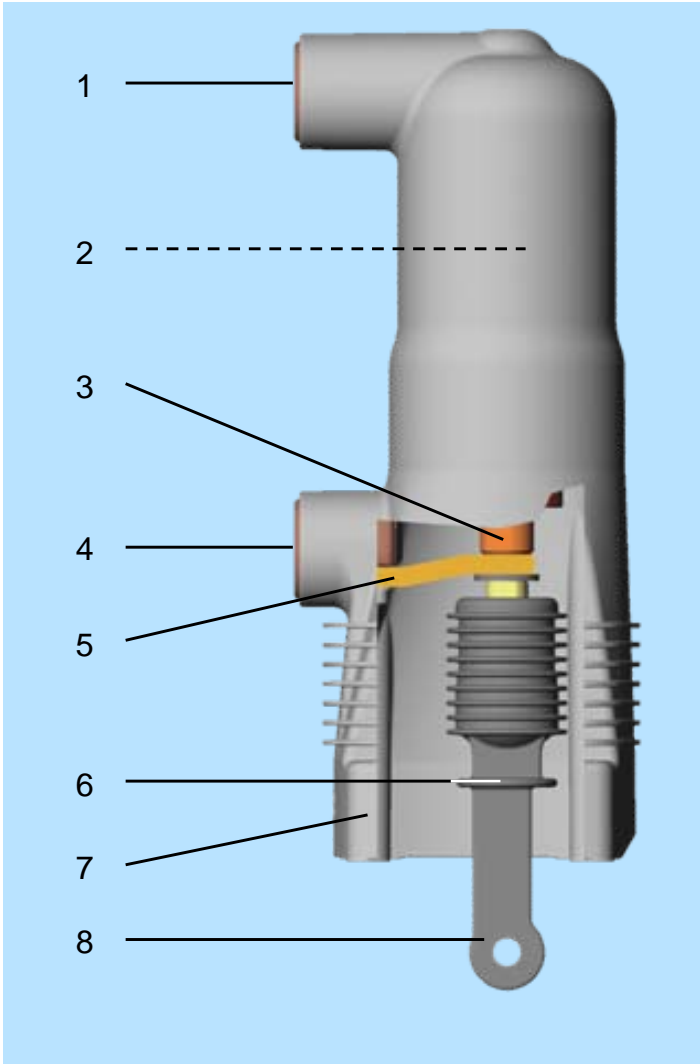
# Vacuum circuit-breaker – VM1



Vacuum interrupter  
(principle structure)

- 1 Stem / terminal
- 2 Twist protection
- 3 Metal bellows
- 4 Interrupter lid
- 5 Shield
- 6 Ceramic insulator
- 7 Shield
- 8 Contacts
- 9 Stem / terminal
- 10 Interrupter lid

# Vacuum circuit-breaker – VM1



Embedded pole  
(principle diagram)

- 1 Upper terminal
- 2 Vacuum interrupter
- 3 Stem
- 4 Lower terminal
- 5 Flexible connection
- 6 Insulated push-rod with contact force springs
- 7 Fixing point
- 8 Connection to drive



# Vacuum circuit-breaker – VM1

## Vacuum interrupters

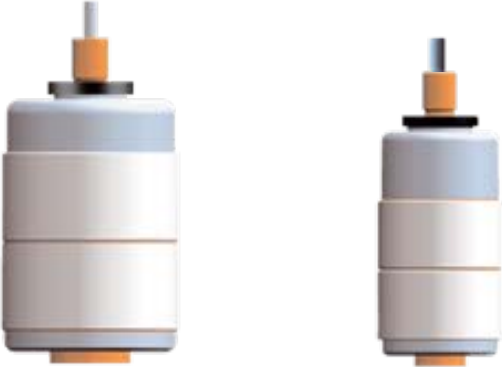


1) Only with additional external insulation

VG5	VGE4	VG4	VG4-S
12 kV	12 kV	12 kV	12 kV
...1250 A	...1250 A	...2500 A	...2500 A
...20 kA	...25 kA	...25 kA	...31.5 kA
17.5 kV	17.5 kV	17.5 kV	17.5 kV
...1250 A	...1250 A	...2500 A	...2500 A
...16 kA	...25 kA	...25 kA	...31.5 kA
24 kV		24 kV	24 kV
...1250 A		...2500 A	...2500 A
...16 kA		...20 kA	...25 kA

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## Vacuum interrupters



1) Only with additional external insulation

VG7	VG6
12 kV	12/17.5 kV
...3150 A	...3150 A
...50 kA	...40 kA
	24/36 kV
	...3150 A
	...31.5 kA
	36/40,5 kV
	...3150 A
	...31.5 kA

# Vacuum circuit-breaker – VM1

## Embedded poles

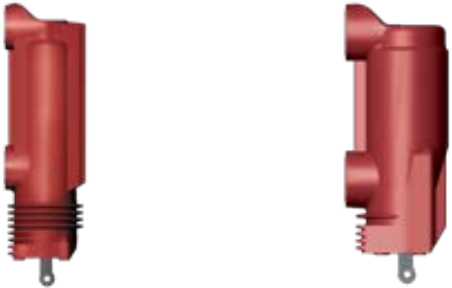


<sup>1)</sup> 2500 A and 3150 A  
with heat sink

	PT1	P2	P3	P4
	12 / 17.5 kV	12 / 17.5 kV	12 / 17.5 kV	24 kV
	...1250 A	...3150 <sup>1)</sup> A	...1600 A	...1250 A
	...31.5 kA	...40 kA	...40 kA	...25 kA

# Vacuum circuit-breaker – VM1

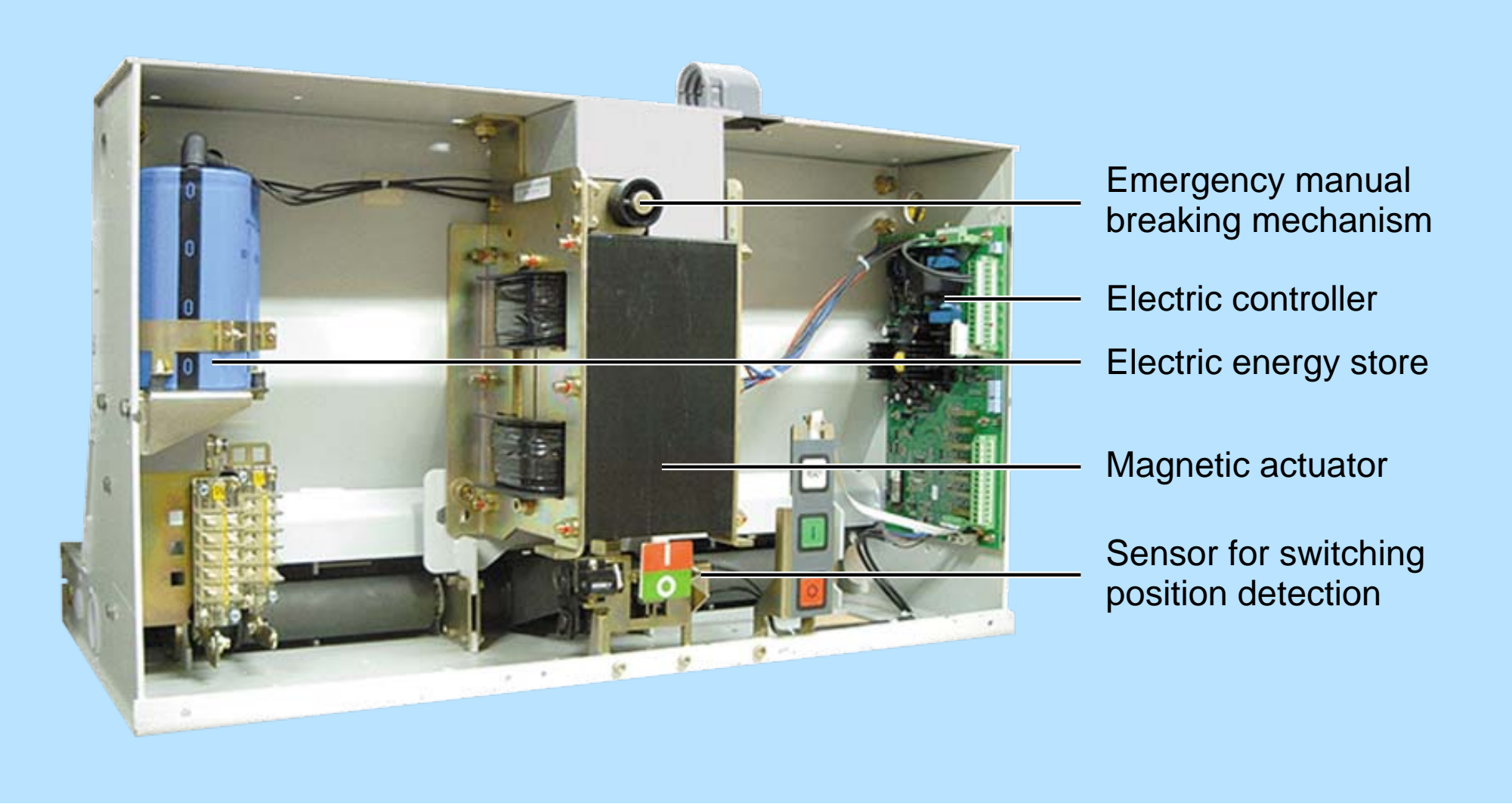
## Embedded poles



<sup>1)</sup> 2500 A and 3150 A  
with heat sink

P5	P7
24 kV	12 / 17,5 kV
...2500 <sup>1)</sup> A	...3150 <sup>1)</sup> A
...25 kA	...50 kA

# Vacuum circuit-breaker – VM1



Emergency manual breaking mechanism

Electric controller

Electric energy store

Magnetic actuator

Sensor for switching position detection

# Vacuum circuit-breaker – VM1



## Fast VM1-circuit-breaker – type VM1-T

- 12 kV, ...2500 A, ...25 kA
- 17.5 kV, ...2500 A, ...25 kA
- 24 kV, ...1250 A, ...25 kA
- 12 kV, less than 16 and 10 ms for closing and opening of the breaker
- Mechanical endurance 2,000 operations (CO)

# Vacuum circuit-breaker – VM1



All benefits at a glance

- High reliability  
(according to DIN EN 61511-1 SIL3)
- Few individual parts
- Simple mechanical sequences
- High quality standard
- Environment friendly material
- Continuously product improvement
- Wide range of accessories
- Long life

Power and productivity  
for a better world™

