

# Vmax - Medium voltage vacuum circuit breakers

IEC: ... 17.5kV; ... 1250A; ... 31.5kA

ANSI: ... 15kV; ... 1200A; ... 31.5kA

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ABB S.p.A.  
Power Products Division  
Unita Operativa Sace-MV  
Via Friuli, 4  
I-24044 Dalmine  
Tel.: +39 035 6952 111  
Fa : +39 035 6952 874

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**ABB**



MULTIPLE TRADING

# Description

- Highly reliable operating mechanisms thanks to a low number of components
- Extremely limited and simple maintenance
- The accessories are common to the whole range
- The electrical accessories can be easily and rapidly installed or replaced thanks to the wiring already prepared with its own plug-socket connectors
- Mechanical anti-pumping device is standard
- Built-in closing spring charging lever
- Key lock with circuit-breaker open
- Protective cover over the opening and closing pushbuttons for operation using a special tool
- Padlock on the operating pushbuttons

Circuit-breaker operating mechanism (pushbutton and mechanical indicators according to IEC STDs)



- A Open/closed auxiliary contacts
- B Geared motor for closing spring charging
- C Built-in closing spring charging lever
- D Mechanical signaling device for circuit-breaker open/closed
- E Mechanical operation counter
- F Plug-socket connectors of electrical accessories
- G Signaling device for closing springs charged/discharged

- H Service releases (shunt opening release, shunt closing release, undervoltage release)
- I Closing pushbutton
- L Opening pushbutton
- M Additional shunt opening release
- N Locking magnet on the operating mechanism
- O Contact for signaling closing spring charged/discharged

## Technical documentation

To go into technical and application aspects of the Vmax circuit-breakers in depth, please ask for the following publications:

- UniGear ZS1 type switchgear code 1VCP000138
- REF542plus unit code 1VTA100001
- PowerCube code 1VCP000091

## Quality Assurance System

This complies with the ISO 9001 Standards, certified by an independent external organization.

## Test laboratory

This complies with the UNI CEI EN ISO/IEC 17025 Standards, accredited by an independent external organization.

## Environmental Management System

This complies with the ISO 14001 Standards, certified by an independent external organization.

## Health and Safety Management System

This complies with the OHSAS 18001 Standards, certified by an independent external organization.



# Accessories

Optional accessories

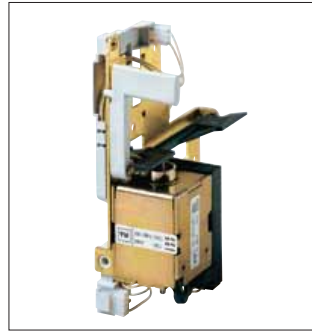
1. Shunt opening release (-MO1)



2. Additional shunt opening release (-MO2)



3. Undervoltage release (-MU)



4. Shunt closing release (-MC)



5. Electronic time-delay device (-KT)



6. Undervoltage release mechanical override



7. Circuit-breaker auxiliary contacts (-BB1; -BB2; -BB3)



8. Transmitted contacts in the truck (-BT1; -BT2)



9. Position contact (-BT3)



10. Motor operator (-MS)



11. Contact for signaling closing spring charged/discharged (-BS2)



12. Opening and closing pushbutton protection



13. Opening and closing pushbutton padlock



14. Key lock in open position



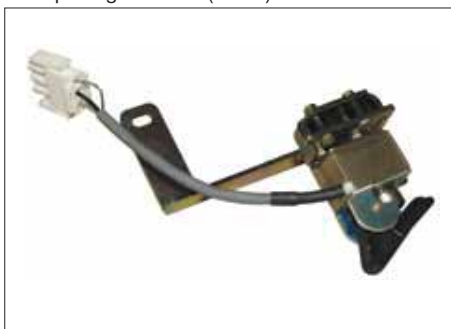
15. Locking magnet on the truck (-RL2)



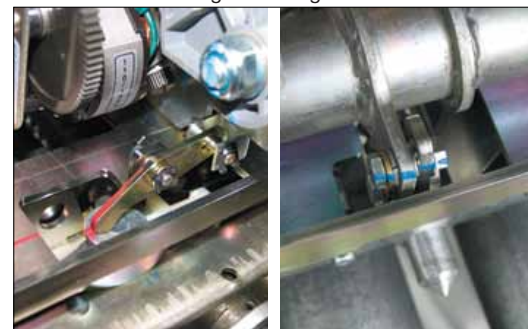
16. Locking magnet on the operating mechanism (-RL1)



17. Opening solenoid (-MO3)



18. Mechanical racking-in/racking-out interlock



# Selection and ordering

## Fixed Version

### General characteristics of fixed circuit-breakers for:

- free-standing installation
- ABB UniGear 500R switchgear



### Standard fittings for fixed circuit-breaker series (1)

The basic versions of the fixed circuit-breakers are three-pole and fitted with:

- EL type manual operating mechanism
- mechanical signaling device for closing springs charged/ discharged
- mechanical signaling device for circuit-breaker open/closed
- closing pushbutton
- opening pushbutton
- operation counter
- set of ten circuit-breaker open/closed auxiliary contacts (2)
- lever for manually charging the closing springs
- auxiliary circuit support terminal board.

Circuit-breaker		Vmax 12		Vmax 17		Vmax/F 12 (*)			Vmax/F 17 (*)			Vmax 15
Fixed version		•		•		-			-			•
Fixed version for ABB UniGear 500R panel		-		-		•			•			-
Standards	IEC 62271-100	•		•		•			•			-
	CEI EN62271-100 (file 7642)	•		•		•			•			-
	C37.54 - C37.09 - C37.04 - C37.55	-		-		-			-			•
	UL Recognized Component Mark	-		-		-			-			•
Rated voltage	Ur [kV]	12		17.5		12			17.5			15
Rated insulation voltage	Us [kV]	12		17.5		12			17.5			15
Withstand voltage at 50 Hz	Ud (1 min) [kV]	28		38		28			38			36 (at 60 Hz)
Impulse withstand voltage	Up [kV]	75		95		75			95			95
Rated frequency	fr [Hz]	50-60		50-60		50-60			50-60			60
Rated normal current (40 °C)	Ir [A]	630	1250	630	1250	630	1250	2000	630	1250	2000	1200
		16	16	16	16	-	-	-	-	-	-	-
Rated breaking capacity (rated symmetrical short-circuit current)	Isc [kA]	20	20	20	20	-	-	-	-	-	-	-
		25	25	25	25	25	25	25	25	25	25	25 (3 cycles)
		31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5 (3 cycles)
		16	16	16	16	-	-	-	-	-	-	-
Rated-short time withstand current (3s)	Ik [kA]	20	20	20	20	-	-	-	-	-	-	-
		25	25	25	25	25	25	25	25	25	25	25 (2s)
		31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5 (2s)
		40	40	40	40	-	-	-	-	-	-	-
Making capacity	Ip [kA]	50	50	50	50	-	-	-	-	-	-	-
		63	63	63	63	63	63	63	63	63	63	65
		80	80	80	80	80	80	80	80	80	80	82
Operation sequence	[O - 0.3" - CO - 15" - CO]	•		•		•			•			-
	[O - 0.3" - CO - 3' - CO]	-		-		-			-			•
Opening time	[ms]	33.5 ... 60		33.5 ... 60		33.5 ... 60			33.5 ... 60			27 ... 32.5
Arc duration	[ms]	10 ... 15		10 ... 15		10 ... 15			10 ... 15			10 ... 17.5
Total breaking time	[ms]	43.5 ... 75		43.5 ... 75		43.5 ... 75			43.5 ... 75			<50
Closing time	[ms]	45 ... 80		45 ... 80		45 ... 80			45 ... 80			45 ... 80
Maximum overall dimensions	H [mm/in]	496		534		543			543			543
	W [mm/in]	416		416		416			516			416
	D [mm/in]	421		456		461			562			461
	Pole centre I [mm/in]	133		133		133			133			133
Weight	[kg/lb]	77		77		77			80			77
Standardized table of dimensions	1VCD	003279		003279		003516			003558			003516
Operating temperature	[°C]	-5 ... +40		-5 ... +40		-5 ... +40			-5 ... +40			-30 ... +40
Tropicalization	IEC: 60068-2-30, 60721-2-1	•		•		•			•			-
Electromagnetic compatibility	IEC 62271-1	•		•		•			•			-

(\*) this version cannot be sold loose; this version can only be supplied together ABB UniGear 500R switchgear

(1) Refer to the UniGear 500R catalogue for the standard equipment of the Vmax/F circuit-breaker.  
 (2) Application of the shunt opening release and/or the supplementary shunt opening release foresees the use of one and/or two auxiliary make contacts (normally open), thereby reducing the number of available auxiliary contacts.



# Selection and ordering

## Withdrawable Version

### General characteristics of withdrawable circuit-breakers for:

- UniGear switchgear (550 mm width)
- PowerCube PB1 modules (600 mm width)



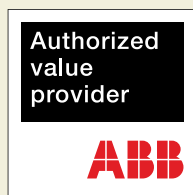
#### Standard fittings for withdrawable circuit-breaker series

The basic versions of the withdrawable circuit-breakers are three-pole and fitted with:

- EL type manual operating mechanism
- mechanical signaling device for closing springs charged/discharged
- mechanical signaling device for circuit-breaker open/closed
- closing pushbutton
- opening pushbutton
- operation counter
- set of ten circuit-breaker open/closed auxiliary contacts <sup>(1)</sup>
- lever for manually charging the closing springs
- isolating contacts
- cord with connector (plug only) for auxiliary circuits, with striker pin which does not allow the plug to be inserted into the socket if the rated current of the circuit-breaker is different from the rated current of the panel
- racking-in/out lever (the quantity must be defined according to the number of pieces of apparatus ordered)
- locking electromagnet in the truck (-RL2). This prevents the circuit-breaker being racked into the panel with the auxiliary circuits disconnected (plug not inserted in the socket).

Circuit-breaker		Vmax/L 12		Vmax/L 17		Vmax/W 12		Vmax/W 17		Vmax/W 15	
Use in switchgear/enclosure		UniGear 550		UniGear 550		PowerCube		PowerCube		PowerCube	
Standards	IEC 62271-100	•		•		•		•		-	
	CEI EN62271-100 (file 7642)	•		•		•		•		-	
	C37.54 - C37.09 - C37.04 - C37.55	-		-		-		-		•	
	UL Listed	-		-		-		-		(on request)	
Rated voltage	Ur [kV]	12		17.5		12		17.5		15	
Rated insulation voltage	Us [kV]	12		17.5		12		17.5		15	
Withstand voltage at 50 Hz	Ud (1 min) [kV]	28		38		28		38		36 (at 60 Hz)	
Impulse withstand voltage	Up [kV]	75		95		75		95		95	
Rated frequency	fr [Hz]	50-60		50-60		50-60		50-60		60	
Rated normal current (40 °C)	Ir [A]	630	1250	630	1250	630	1250	630	1250	1200	
		16	16	16	16	16	16	16	16	-	
Rated breaking capacity (rated symmetrical short-circuit current)	Isc [kA]	20	20	20	20	20	20	20	20	-	
		25	25	25	25	25	25	25	25	25 (3 cycles)	
		31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5 (3 cycles)	
Rated short-time withstand current (3s)	Ik [kA]	16	16	16	16	16	16	16	16	-	
		20	20	20	20	20	20	20	20	-	
		25	25	25	25	25	25	25	25	25 (2s)	
Making capacity	Ip [kA]	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5 (2s)	
		40	40	40	40	40	40	40	40	-	
		50	50	50	50	50	50	50	50	-	
Operation sequence	[O - 0.3" - CO - 15" - CO]	63	63	63	63	63	63	63	63	65	
		80	80	80	80	80	80	80	80	82	
		•	•	•	•	•	•	•	•	-	
Opening time	[ms]	[O - 0.3" - CO - 3" - CO]		-		-		-		•	
		33.5 ... 60	33.5 ... 60	33.5 ... 60	33.5 ... 60	33.5 ... 60	33.5 ... 60	33.5 ... 60	27 ... 32.5		
Arc duration	[ms]	10 ... 15		10 ... 15		10 ... 15		10 ... 15		10 ... 17.5	
Total breaking time	[ms]	43.5 ... 75		43.5 ... 75		10 ... 17.5		43.5 ... 75		<50	
Closing time	[ms]	45 ... 80		45 ... 80		45 ... 80		45 ... 80		45 ... 80	
Maximum overall dimensions		H [mm/in]	665	665	665	665	665	665	665	665	665/26.18
		W [mm/in]	461	461	461	461	503	503	503	503	503/19.80
		D [mm/in]	665	665	665	665	662	662	662	662	662/26.06
		Pole centre I [mm/in]	150	150	150	150	150	150	150	150	150/5.91
Weight	[kg/lb]	98	98	98	98	98	98	98	98	98/215.60	
Standardized table of dimensions	1VCD	003334		003334		003280		003280		003280	
Operating temperature	[°C]	-5 ... +40		-5 ... +40		-5 ... +40		-5 ... +40		-30 ... +40	
Tropicalization	IEC: 60068-2-30, 60721-2-1	•		•		•		•		-	
Electromagnetic compatibility	IEC 62271-1	•		•		•		•		-	

(1) Application of the shunt opening release and/or the supplementary shunt opening release foresees the use of one and/or two auxiliary make contacts (normally open), thereby reducing the number of available auxiliary contacts.



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