

MEDIUM VOLTAGE SERVICE

VD4/LR VD4/P/LR

Addendum to VD4 installation and service instructions for service application



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For your safety!

- Make sure that the installation room (space and environment) is suitable for the electrical apparatus.
- Check that all the installation, putting into service and maintenance operations are carried out by qualified personnel with suitable knowledge of the apparatus.
- Make sure that the standard and legal prescriptions are complied with during installation, putting into service and maintenance, so that installations are performed according to the rules of good working practice and safety in the workplace.
- Strictly follow the information in this instruction manual.
- Check that the rated performance of the apparatus is not exceeded during service.
- Check that the personnel operating the apparatus have this instruction manual at hand as well as the necessary information for correct use.
- Pay special attention to the danger notes indicated in the manual by the following safety notifications:

	CAUTION
Responsible behaviour safeguards your own and others' safety! For any requests, please contact the ABB Medium Voltage Service.	

Safety notations alert personnel to possible death, injury or property damage situations. The safety notations appear before the step in which the condition applies.

The one safety notice and three hazard levels notations are:

	WARNING
Indicates a hazardous situation that has some probability of severe injury and substantial property damage.	

	DANGER
Indicates a hazardous situation that has a high probability of death, severe injury, and substantial property damage.	

	CAUTION
Indicates a hazardous situation that may result in minor or moderate injury and/or property damage.	

NOTICE	
Indicates a statement of company policy as it relates to the safety of personnel or protection of property.	

2. Applicability and characteristics VD4/LR VD4/P/LR

Instructions for VD4/LR VD4/P/LR:

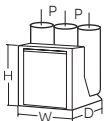
VD4/LR and VD4/P/LR circuit breakers are based on the version of VD4. So much so, most of the information in the VD4 instruction manual is also applicable to this circuit breaker.

Please refer to the instruction manual of the VD4 circuit breaker (code 647654) for specific information. Additional information concerning the VD4/LR and VD4/P/LR circuit breaker is given in this supplement.

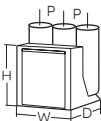
NOTICE

Ask to ABB in the case of a circuit breaker with motorized isolation in OneFit retrofill for a remote control solutions.

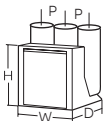
3. General characteristics of withdrawable circuit breakers

Circuit-breaker		VD4/LR	VD4/LR	VD4/LR	VD4/LR	VD4/LR
OneFit		W600	W600	W600	W800	W800
Standards	IEC 62271-100	•	•	•	•	•
Rated voltage	Ur [kV]	12-17.5	12-17.5	12-17.5	12-17.5	12-17.5
Rated insulation voltage	Us [kV]	12-17.5	12-17.5	12-17.5	12-17.5	12-17.5
Withstand voltage at 50 Hz	Ud (1 min) [kV]	28-38	28-38	28-38	28-38	28-38
Impulse withstand voltage	Up [kV]	75-95	60-95	75-95	75-95	60-95
Rated frequency	fr [Hz]	50-60	50-60	50-60	50-60	50-60
Rated normal current (40 °C)	Ir [A]	1250	1600	2000	2500	3150 ⁽¹⁾
Rated breaking capacity (rated short-circuit breaking current symmetrical)	Isc [kA]	40	40	40	50	50
Rated-short time withstand current (3 s)	Ik [kA]	40	40	40	50	50
Making capacity	Ip [kA]	100	100	100	125	125
Operation sequence	[O-0.3s-CO-15s-CO]	•	•	•	•	•
Opening time	[ms]	33 ... 60	33 ... 60	33 ... 60	33 ... 60	33 ... 60
Arc duration	[ms]	10 ... 15	10 ... 15	10 ... 15	10 ... 15	10 ... 15
Total interruption time	[ms]	43 ... 75	43 ... 75	43 ... 75	43 ... 75	43 ... 75
Closing time	[ms]	30 ... 60	30 ... 60	30 ... 60	30 ... 60	30 ... 60
Maximum overall dimensions		H [mm]	692	692	692	692
		W [mm]	503	503	503	653
		D [mm]	661	661	661	643
		Pole centre distance P [mm]	150	150	150	210
Weight	[kg]	92	92	98	225	225
Standardized table of dimensions		1VCS007514	1VCS007514	1VCS007515	2RDA040088	2RDA040088
Operating temperature	[°C]	-5 ... + 40	-5 ... + 40	-5 ... + 40	-5 ... + 40	-5 ... + 40
Tropicalization	IEC: 60068-2-3, 60721-2-1	•	•	•	•	•
Electromagnetic compatibility	IEC 62271	•	•	•	•	•

(1) with air forced ventilation in OneFit frame

Circuit-breaker		VD4/LR	VD4/LR	VD4/LR
OneFit		W700	W700	W700
Standards	IEC 62271-100	•	•	•
Rated voltage	Ur [kV]	24	24	24
Rated insulation voltage	Us [kV]	24	24	24
Withstand voltage at 50 Hz	Ud (1 min) [kV]	50	50	50
Impulse withstand voltage	Up [kV]	125	125	125
Rated frequency	fr [Hz]	50-60	50-60	50-60
Rated normal current (40 °C)	Ir [A]	1600	2000	2500
Rated breaking capacity (rated short-circuit breaking current symmetrical)	Isc [kA]	31.5	31.5	31.5
Rated-short time withstand current (3 s)	Ik [kA]	31.5	31.5	31.5
Making capacity	Ip [kA]	80	80	80
Operation sequence	[O-0.3s-CO-15s-CO]	•	•	•
Opening time	[ms]	33 ... 60	33 ... 60	33 ... 60
Arc duration	[ms]	10 ... 15	10 ... 15	10 ... 15
Total interruption time	[ms]	43 ... 75	43 ... 75	43 ... 75
Closing time	[ms]	30 ... 60	30 ... 60	30 ... 60
Maximum overall dimensions		H [mm]	790	790
		W [mm]	653	653
		D [mm]	785	785
		Pole centre distance P [mm]	210	210
Weight	[kg]	210	210	210
Standardized table of dimensions		1VCS008827	1VCS008827	1VCS008827
Operating temperature	[°C]	-5 ... + 40	-5 ... + 40	-5 ... + 40
Tropicalization	IEC: 60068-2-3, 60721-2-1	•	•	•
Electromagnetic compatibility	IEC 62271	•	•	•

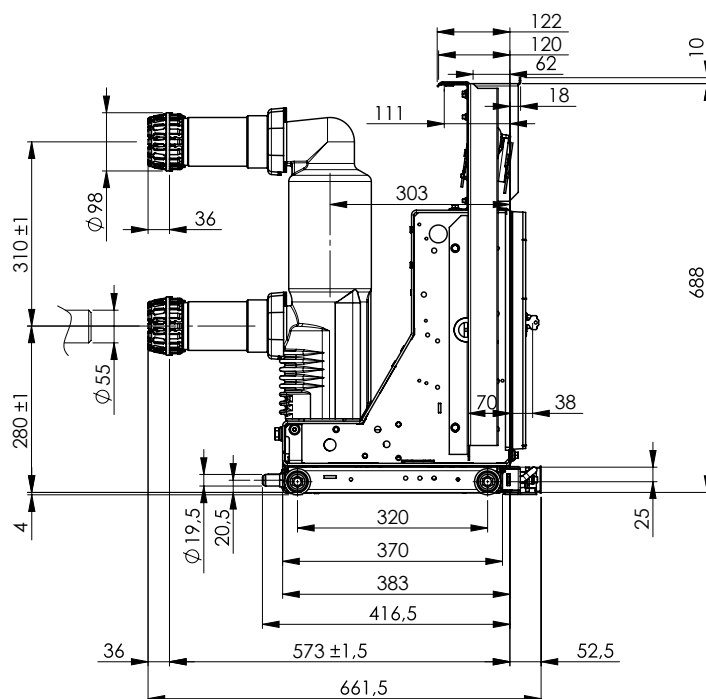
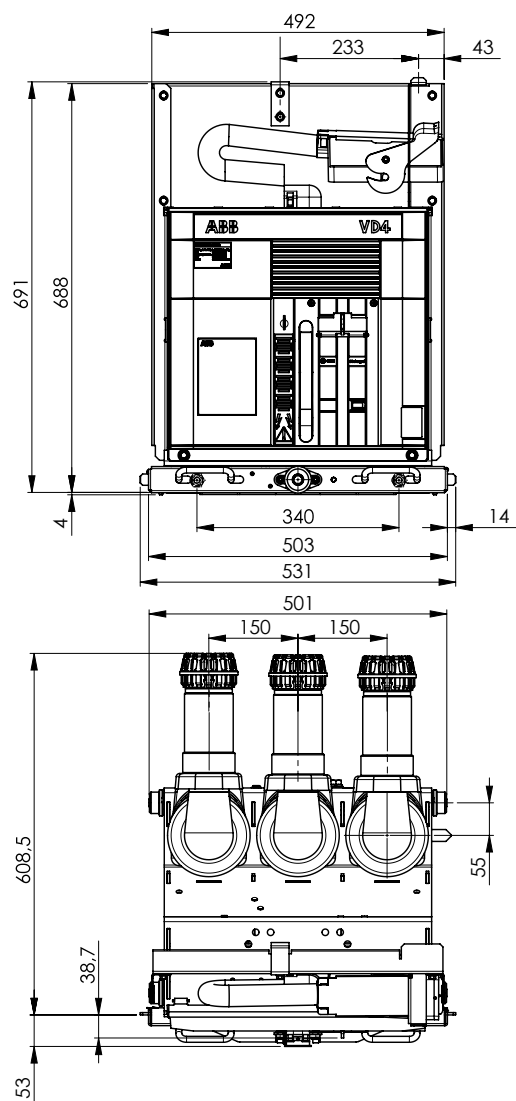
3. General characteristics of withdrawable circuit breakers

Circuit-breaker		VD4/P/LR	VD4/P/LR	VD4/P/LR	VD4/P/LR	VD4/P/LR
OneFit		W700-W800	W700-W800	W700-W800	W700-W800	W700-W800
Standards	IEC 62271-100	•	•	•	•	•
Rated voltage	Ur [kV]	12-17.5	12-17.5	12-17.5	12-17.5	12-17.5
Rated insulation voltage	Us [kV]	12-17.5	12-17.5	12-17.5	12-17.5	12-17.5
Withstand voltage at 50 Hz	Ud (1 min) [kV]	28-38	28-38	28-38	28-38	28-38
Impulse withstand voltage	Up [kV]	75-95	75-95	75-95	75-95	75-95
Rated frequency	fr [Hz]	50-60	50-60	50-60	50-60	50-60
Rated normal current (40 °C)	Ir [A]	1600	2000	1250	1600	2000
Rated breaking capacity (rated short-circuit breaking current symmetrical)	Isc [kA]	31.5	31.5	40	40	40
Rated-short time withstand current (3 s)	Ik [kA]	31.5	31.5	40	40	40
Making capacity	Ip [kA]	80	80	100	100	100
Operation sequence	[O-0.3s-CO-15s-CO]	•	•	•	•	•
Opening time	[ms]	33 ... 60	33 ... 60	33 ... 60	33 ... 60	33 ... 60
Arc duration	[ms]	10 ... 15	10 ... 15	10 ... 15	10 ... 15	10 ... 15
Total interruption time	[ms]	43 ... 75	43 ... 75	43 ... 75	43 ... 75	43 ... 75
Closing time	[ms]	30 ... 60	30 ... 60	30 ... 60	30 ... 60	30 ... 60
Maximum overall dimensions		H [mm]	692	692	692	692
		W [mm]	653	653	653	653
		D [mm]	639	639	639	639
		Pole centre distance P [mm]	210	210	210	210
Weight	[kg]	93	93	92	92	98
Standardized table of dimensions		1VCS007288	1VCS007289	1VCS007288	1VCS007288	1VCS007289
Operating temperature	[°C]	-5 ... + 40	-5 ... + 40	-5 ... + 40	-5 ... + 40	-5 ... + 40
Tropicalization	IEC: 60068-2-3, 60721-2-1	•	•	•	•	•
Electromagnetic compatibility	IEC 62271	•	•	•	•	•

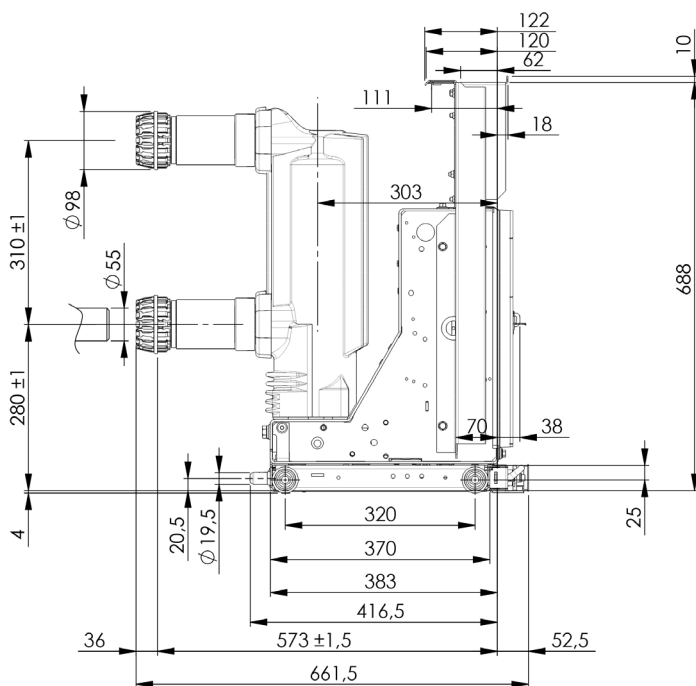
4. Overall dimensions

VD4/LR – 1VCS007514

12-17.5kV – 1250A-1600A – 40kA

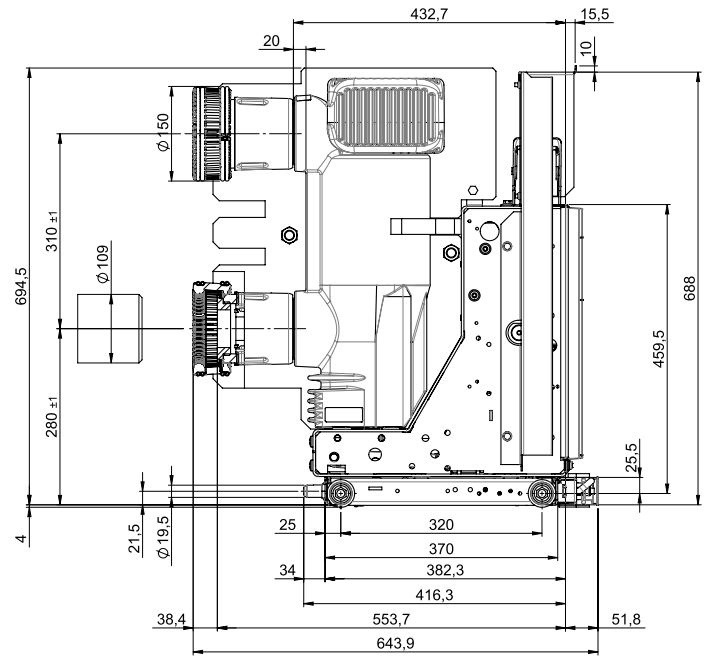
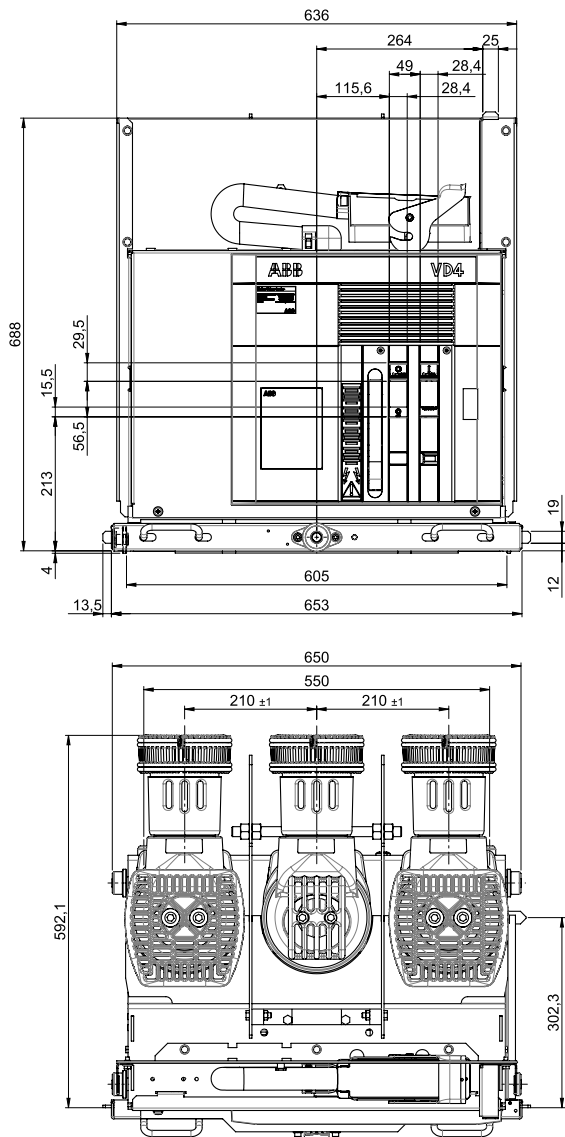


VD4/LR – 1VCS007515
12-17.5kV – 2000A – 40kA



VD4/LR – 2RDA040088

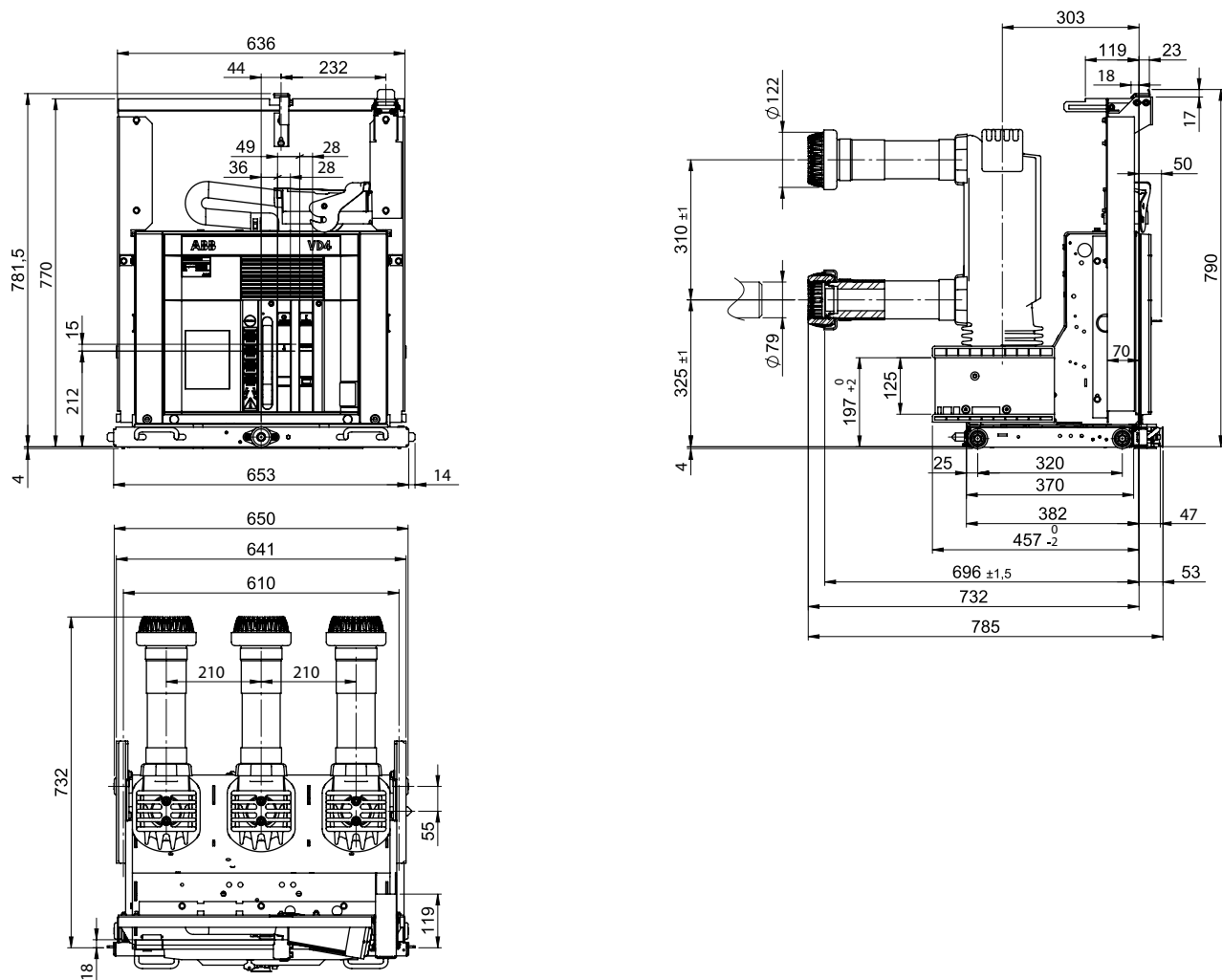
12-17.5kV – 2500A AN-3150A AF – 50kA



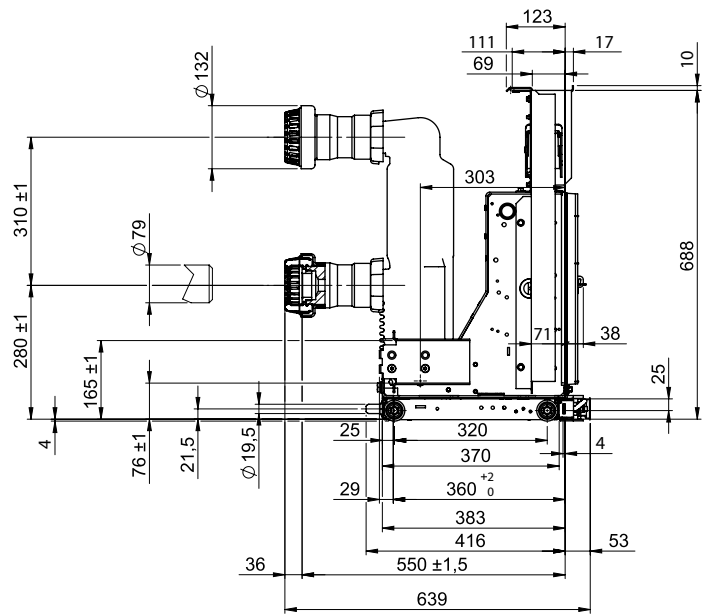
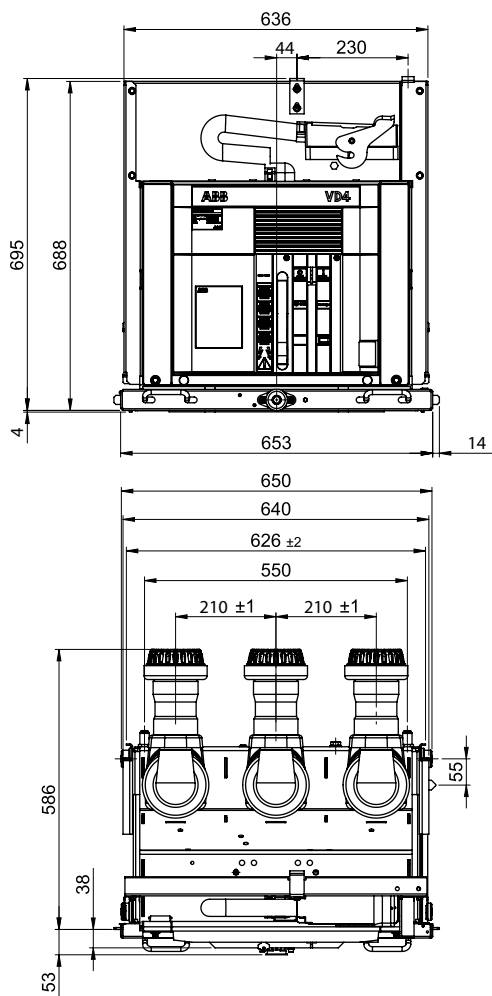
4. Overall dimensions

VD4/LR – 1VCS008827

24kV – 1600A-2000A-2500A – 31.5kA



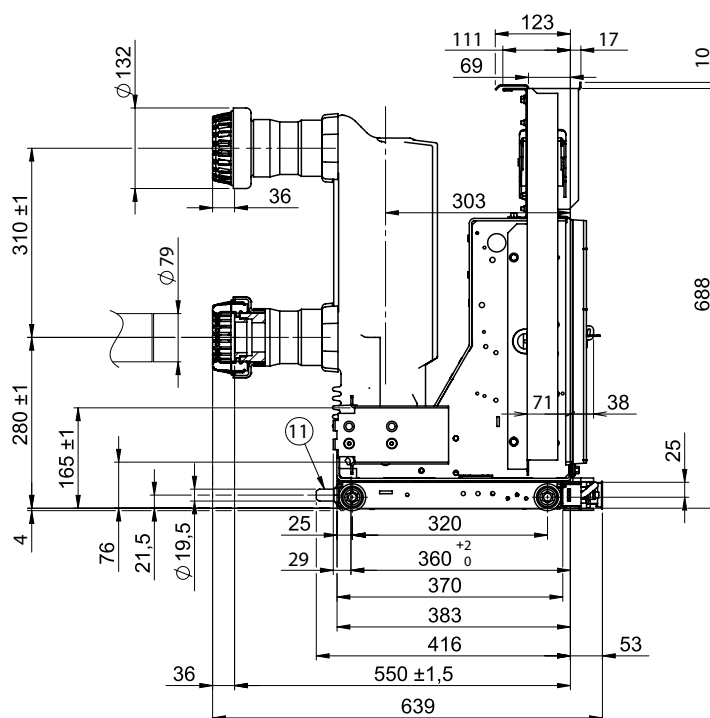
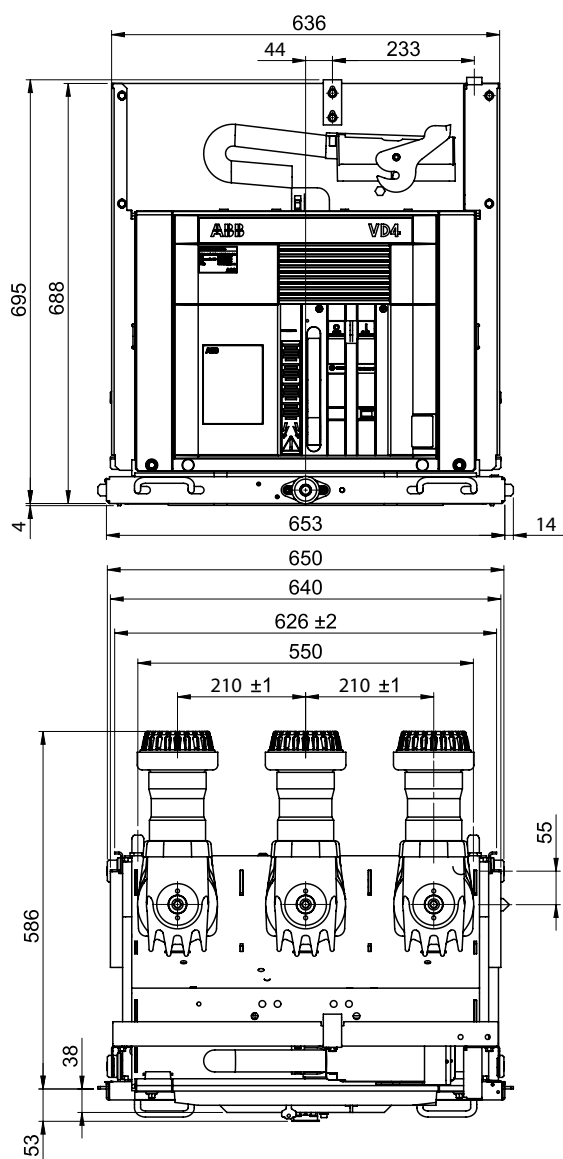
VD4/P/LR – 1VCS007288
12-17.5kV – 1250A-1600A – 31.5-40kA



4. Overall dimensions

VD4/P/LR – 1VCS007289

12-17.5kV – 2000A – 31.5-40kA



5. Maintenance



DANGER

Maintenance must be carried out either by ABB Service personnel or by qualified skilled personnel.

For the circuit breaker installation operations, maintenance, periodic checks and spare parts also refer to the technical documentation of the circuit breaker.

The racking-in/out operations must always be carried out with the circuit breaker open.



DANGER

There are hazards of electrical shocks and/or burns whenever working in or around electrical equipment. Turn off power ahead of the switchgear before performing any inspection or maintenance operations. Check incoming line terminals to verify that the equipment is de-energized and grounded. Check out-going terminals to ensure that no back-feed condition exists.



DANGER

Always work with the circuit breaker open and locked so that it cannot be closed again, with the work area insulated and made safe. All power supply sources must be disconnected and made safe against any reclosing during removal and installation work.

Should the customer's personnel be in charge of maintenance, the customer is responsible for any operation performed on the apparatus.

When performing routine checks and maintenance operations, de-energize all the components.

Always work with the circuit breaker open and locked so that it cannot be closed again, with the work area insulated and made safe. All power supply sources must be disconnected and made safe against any reclosing during removal and installation work.

The spare parts shown in the "List of spare parts/accessories of the relevant apparatus manual" table can only be replaced **by ABB Service personnel**. For the apparatus, consult the relevant manual.

Use original spare parts only.

5. Maintenance

5.1. Maintenance program

Levels:

- **Act:** activities to be carried out by trained personnel
- **Perform:** activities to be carried out by ABB certified technicians

Maintenance level	Suggested time interval
Act	1 year or 5000 operations (whichever comes first)
Perform	5 years or 5000 operations (whichever comes first)

Please check the SWAPs maintenance program for a more detailed and fine-tuned time schedule based on your specific environmental and operational conditions.

Level Act

Activity

General inspection on:

- Operating mechanism
- Medium voltage parts
- Earthing connections
- Auxiliary supply voltage

Check auxiliary switches

Test interlock conditions

General servicing of switching device

- Clean surfaces in general
- Clean insulating material surfaces and conductive components
- Clean and lubricate pawls, support shafts and bearing surfaces

Suspect Joint maintenance (if needed)

- Open joint and inspect connection surfaces
- Clean surfaces
- Replace parts if necessary
- Replace contact fingers springs if necessary
- Tighten bolted connections

Functional Testing

- Perform several switching operations under no load
- Switch off charging motor (if fitted) and discharge the mechanism
- Examine the condition of lubrication
- Check the proper mechanical/electrical sequence

Perform

Servicing of the operating mechanism

- Switch off charging motor (if fitted) and discharge spring mechanism
- Replace climatic and mechanical sensitive parts
- Check operating mechanism springs
- Check the fit and tightness of fasteners
- Replace removed spring lock washers, split pins and other fasteners
- Check the general condition of the operating mechanism
- Perform comprehensive mechanical and electrical functional tests
- Check tightness of bolted joints

Measure closing and opening time main contacts simultaneous operation.

Measure primary circuits contact resistance.

Measure the insulation resistance (if needed)

For further details please contact:



More product information:
abb.com/mediumvoltage
Your contact center:
abb.com/contactcenters
More service information:
abb.com/service

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