

DISTRIBUTION SOLUTIONS

VD4-36kV vacuum CB cradle solutions for retrofitting SF6 gas CB HPA36

Addendum to VD4 installation, operation and maintenance manual 36kV Up to 2000A...31.5kA



The VD4-36kV cradle retrofit solution makes the use of fixed VD4 type of circuit breaker. For this reason, most of the information contained in the VD4 instruction manual is also effective for this retrofit solution.

Table of contents

04	For your safety
04	Introduction
04	Environmental protection program
05	Applicability of VD4 instructions manual to VD4-36kV cradle retrofit solution
06	Specific VD4-36kV cradle retrofit instructions
06	Packing & transport
06	Handling
07	Handling with slings
08	Handling with trolley
09-10	Description
11-12	Instruction for VD4 CB operations
13-15	Installation
16	Putting into service
17-18	Periodic checking
19	Maintenance
19	Electrical diagram
20	Spare parts
21-22	Overall dimensions and ratings

For your safety

- Make sure that the installation room (spaces, divisions and ambient) 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 according to the rules of good working practice and safety in the workplace are constructed
- Strictly follow the information given 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 to hand as well as the necessary information for correct intervention
- Pay special attention to the danger notes indicated in the manual by the following symbol:



Responsible behavior safeguards your own and others' safety!
For any requests, please contact the ABB Assistance Service.

I. Introduction

This publication contains the information needed to install medium voltage VD4-36kV cradle retrofit solution and put them into service.

The installation of cradle retrofit solutions require modification in existing VHA 36 switchgear panel.

However, this apparatus allows further technical - construction modifications (at the customer's request) to adapt to special installations.

Consequently, the information given below may sometimes not contain instructions concerning special configurations. Apart from this manual, it is therefore always necessary to consult the latest technical documentation (electric circuit and wiring diagrams, assembly and installation drawings, any protection co-ordination studies, etc.), especially regarding any variants requested in relation to the standardized configurations.

Only use original spare parts for maintenance operations. For further information, please also see the technical catalogue of the circuit-breaker and the spare parts



All the installation, putting into service, running and maintenance operations must be carried out by skilled personnel with in-depth knowledge of the apparatus.

II. Environmental protection program

The VD4-36kV cradle retrofit solutions are manufactured in accordance with the ISO 14000 standards (Guidelines for environmental management).

The production processes are carried out in compliance with the standards for environmental protection in terms of reduction in energy consumption as well as in raw materials and production of waste materials.

All this is thanks to the environmental management system of the medium voltage apparatus manufacturing facility.

Applicability of VD4 instructions manual to VD4-36kV cradle retrofit solution

The VD4-36kV cradle retrofit solution makes use of fixed version of VD4 type circuit breaker.

For this reason, most of the information contained in the VD4 instruction manual (1VYN400990-051 Rev 00) are effective also for this retrofit solution.

Following versions of fixed VD4 circuit breakers are used with the VD4-36kV cradle retrofit solution.

CB Type	Ur (kV)	Ir (A)	Isc (kA)
VD4 36.12.32	36	1250	31.5
VD4 36.20.32	36	2000	31.5

In details, with reference to the VD4 installation manual, the following sections are in common for specifically VD4 circuit breakers .

Please refer to the VD4 instruction manual:

- Section 3 - Storage
- Section 5 - Description:
 - Section 5.1 - General
 - Section 5.2 - Reference standard
 - Section 5.3 - EL operating mechanism
 - Section 5.4 - Fixed circuit breaker
 - Section 5.4.1 - General characteristics of fixed circuit-breakers(36Kv)
 - Section 5.4.2 - Type of circuit breakers available in fixed version
 - Section 5.6 - Characteristics of the electrical accessories (excluding locking magnet on truck-RL2)
- Section 6 - Instructions for operating the circuit breaker

- Section 7 - Installation:
 - 7.1 - General
 - 7.2 - Installation and operating conditions
 - 7.3 - Preliminary operations
- Section 9 - Maintenance
- Section 10 - Application of the X-ray emission standards
- Section 11 - Spare parts & accessories
- Section 13 - Overall dimensions -Fixed circuit breaker
- Section 14 -Product quality and environmental protection

The specific information regarding the VD4-36kV cradle retrofit solution is explained in this addendum.

Specific VD4-36kV cradle retrofit instructions

Packing and transport

The medium voltage VD4-36kV cradle retrofit solution CBs are delivered firmly screwed to the floor of their containers or crates and must always be transported or stored in an upright position.

The circuit breaker is shipped in open condition and with closing spring discharged. Each piece of apparatus is protected by plastic cover to prevent any infiltration of water during the loading and unloading stages and to keep the dust off during storages.



Checking on receipt

Before carrying out any operation, always make sure that the operating mechanism spring is discharged, and that the apparatus is in the open position.

On receipt, check the status of apparatus, integrity of the packing and correspondence with name plate data (see figure 6.1) with what is specified in the order confirmation and in the accompanying shipping note.

Also make sure that all the materials described in the shipping notes are including in the supply. Should any damage or irregularity be noted in the supply on packing, notify ABB (directly or through the agent or supplier) as soon as possible and in any case within five days of receipt.

The cradle retrofit solution is only supplied with the accessories specified at time of ordering and validated in the order confirmation sent by ABB.

The accompanying documents inserted in the shipping packing are:

- Instruction manual (this document)
- Test certification for CB
- Identification label
- Copy of the shipping documents
- Electric wiring diagram

Other documents which are sent prior to shipment of the apparatus are:

- Order confirmation
- Original shipping advice note
- Any drawing or documents referring to specific configurations / conditions

Note: Always take photographs to document any major damage.

Handling

Before carrying out any operation, always check that the operating mechanism springs are discharged and that the apparatus is in the open position.

Always take great care during handling not to stress the insulating parts like epoxy pole housing of the breaker and the terminals of circuit breaker.

ABB	
Serial No. *	
Production Year: *	IEC 62271-100
VD4-HPA 36.**.32	Circuit Breaker
Rated Voltage	36 kV
Rated current	**A
Frequency	50Hz
Insulation level	70kV/170kVpk
Short circuit breaking current	31.5kA rms
Short circuit current duration	3 sec
Short circuit making current	79 kA _{pk}
Operating sequence	O-0.3S-CO-3Min-CO
Closing coil supply voltage	** VDC
Opening coil supply voltage	** VDC
Motor supply voltage	** VDC
Operating Mechanism	EL3
Mass(Approx)	** kg
Instruction manual	1VYN401890-122
MADE by ABB	

Fig 6.1

Handling with slings:

- To lift and handle the circuit-breaker, use the hooks (figure 7.1 & 7.2).
- Put the hooks in the holes prepared in the lifting bracket fixed on circuit-breaker frame and lift with appropriate capacity overhead crane.

Always take great care during handling not to stress the insulating parts and the circuit-breaker terminals.



Fig 7.1



Fig 7.2

While using forklift :



The apparatus must not be handled by inserting forks of the truck directly under the apparatus itself. Should it be necessary to use this method, place the circuit-breaker on a sturdy supporting surface (Wooden pallet) (see figure 7.3).

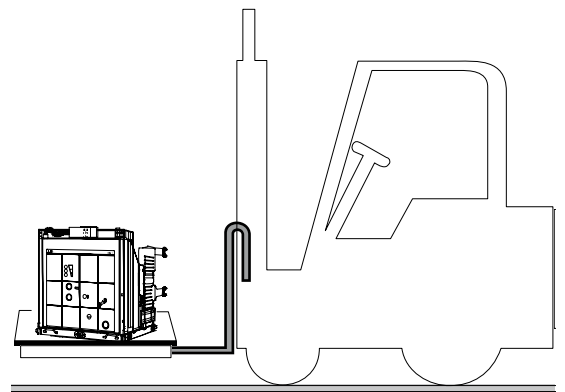


Fig 7.3

In any case, it is always advisable to carry out lifting using the supports (figure 7.4, & 8.1) in position C.



Fig 7.4

Specific VD4-36kV cradle retrofit instructions

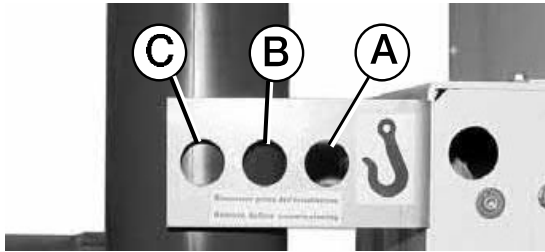


Fig 8.1

VD4-36kV cradle	Position of hole for hook
1250A	C
2000A	C

Handling with trolley:

- To lift and handle the circuit-breaker, circuit breaker lifting trolley can also be used as shown in figure 8.2.

In order to lift the circuit breaker by trolley, circuit breaker needs to be placed on firm platform of wooden / plastic pallet of height @ 100mm.

The trolley is then positioned near the pallet & the resting platform of trolley is brought to the level @ 5mm lower to the pallet surface on which CB is placed. Lock the front wheels by pressing locking bracket provided on swivel roller wheel.

Circuit breaker is pulled on the resting platform of the trolley. With the help of rotating handle of trolley, the resting platform can be moved up & down depending on the direction of rotation of the handle.

In order to insert circuit breaker into the VHA 36 panel, position the trolley in front of the panel & lift the CB resting surface of trolley up to the level of surface of the guiderails in the panel. Move the trolley closer to panel with both side wheel of the CB common truck approximately equally spaced from both guide rails. Lock the front wheels of trolley by pressing locking bracket provided on swivel roller wheel. Push the CB inside the panel by taking care that front wheels of common trucks enters in the guiderails.

Once the CB is entirely inserted in panel, unlock the swivel roller wheel of the trolley & move the trolley back away from panel & lower the CB resting face & move away trolley from panel. In order to place CB precisely in TEST position inside panel, lock the left & right latches of the common truck in vertical slots of left & right guide rail so that CB can be locked in TEST position.



Fig 8.2

Description

General

The VD4-36kV cradle retrofit solution circuit breakers are pieces of apparatus with vacuum technology for indoor installation. For the electrical performances, please refer to the corresponding technical catalogue code 1VCP000307.

For special installation requirements, please contact ABB.

The following versions are available:

- Withdrawable CB for VHA 36 switchgear.

Ratings:

36kV 1250A 31.5kA

36kV 2000A 31.5kA

Reference standards

The VD4-36kV cradle retrofit solutions confirms to the IEC 62271-100 standards.

EL operating mechanism

The VD4-36kV cradle retrofit solution circuit breakers are equipped with modular EL3 type spring operating mechanisms for short-circuit current upto 31.5kA.

Withdrawable version

The VD4-36kV cradle retrofit solution circuit breakers are equipped with common truck assembly which makes it possible to make the circuit breakers withdrawable version.

The VD4-36kV cradle retrofit solution is specifically used for retrofitting SF6 gas circuit breakers HPA36 in ABB make VHA36 panels.

The circuit breaker is having three pole assemblies which are firmly mounted on steel sheet frame. The contact arms along with the tulip contacts are mounted on fixed pole terminals. The steel frame assembly is fixed on the common truck which is used to move the circuit breaker from TEST to SERVICE position & vice versa on guide rails provided on panel side. The CB is delivered with control cable with 58 core cables and plug in 64 pin contacts for the control circuit.

Earthed contact which is fitted on the left side of truck frame automatically connects to fixed earth slide provided on metal guide rails when CB is inserted in guide rails.

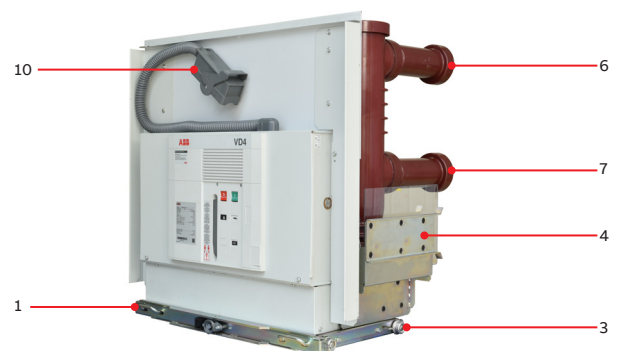


Fig 9.1

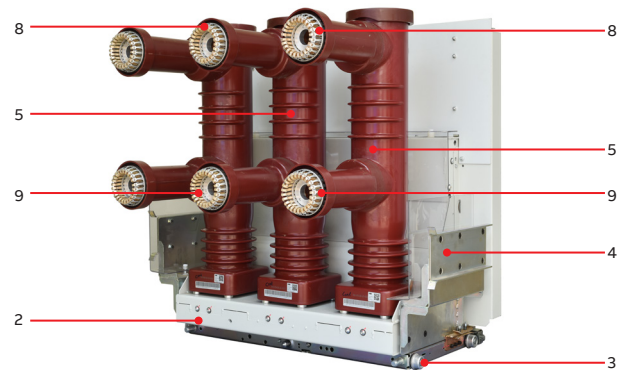


Fig 9.2

1. Common truck
2. CB frame
3. Front wheel of common truck
4. LHS & RHS shutter lifting bracket
5. CB pole assembly
6. Top contact arm assembly
7. Bottom contact arm assembly
8. Top tulip assembly
9. Bottom tulip assembly
10. Cable stem

Description

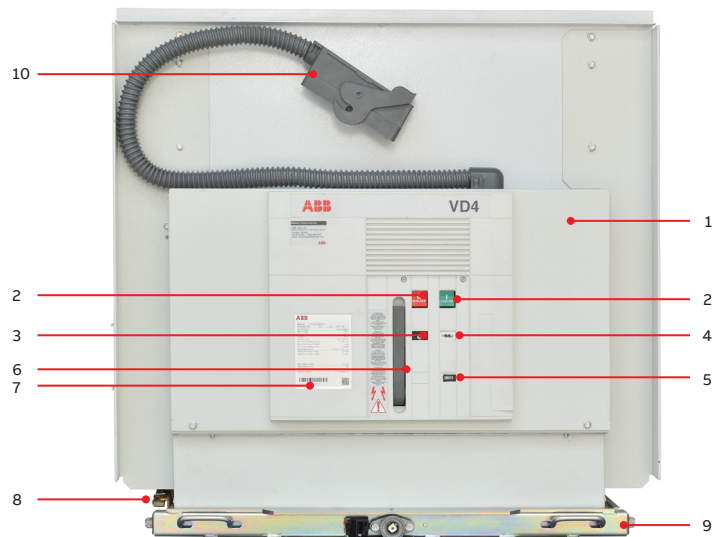


Fig 10.1

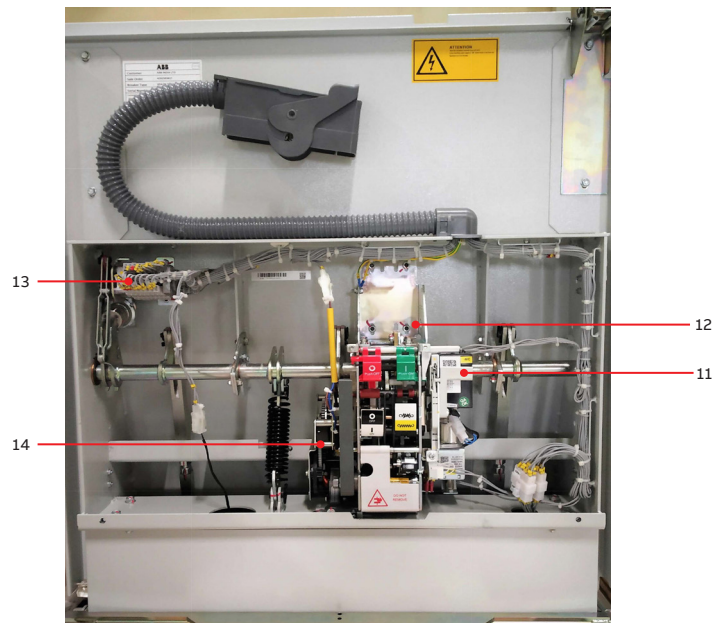


Fig 10.2

Instructions for VD4 CB operations

Safety indications

All VD4 circuit-breakers guarantee a minimum IP2X degree of protection when installed in switchgear.

The operator is fully guaranteed against accidental contact with moving parts under these conditions.

Should mechanical operations be carried out on the circuit-breaker outside the switchgear, take great care of the moving parts. The CB is provided with an interlocking mechanism.

The interlocking device prevents closed CB from being transferred to the connected or isolated position, and against closing of CB during its movement in the cubicle.

If the operations are prevented, do not force the mechanical interlocks and check that the operating sequence is correct.

Racking the circuit-breaker in and out of the switchgear must be done properly to avoid shocks, which may deform the mechanical interlocks.

Switching and signaling parts

(figure 11.1)

Legends of figure 11.1

- 1 Front cover
- 2 Opening push button
- 3 Closing push button
- 4 Indication for circuit-breaker OPEN / CLOSE
- 5 Indication for closing spring charged / discharged
- 6 Operation counter
- 7 Lever for manually charging the closing spring
- 8 Rating plate
- 9 Earthing contact
- 10 Cable stem

Circuit-breaker closing and opening operations

Circuit-breaker operation can be either manual or electrical (Figure 11.1).

a) Manual closing spring charging for VD4 circuit-breakers in earthed-test position

Repeatedly activate the charging lever (7) (maximum rotation angle of the lever: about 90°) until the yellow indicator (5) appears.

The maximum forces which can normally be applied to the lever are <250 N for EL3 operating mechanism.

b) Electrical spring charging operation

On request, the circuit-breaker can be fitted with the following accessories for electrical operation:

- Geared motor for automatic closing spring charging
- Shunt closing release
- Shunt opening release

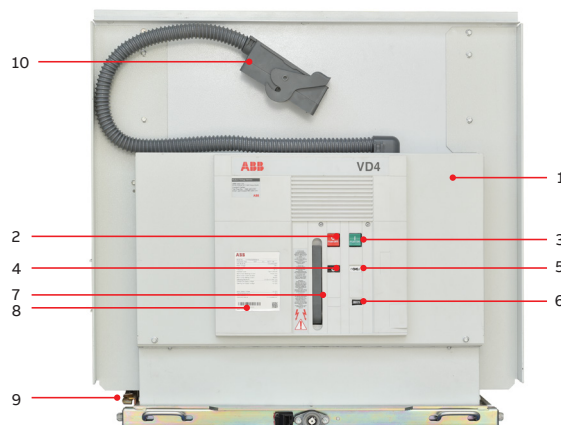


Fig 11.1 - VD4 basic version

Instructions for VD4 CB operations

The geared motor automatically recharges the spring after each closing operation until the yellow indicator (5) appears. If the power is cut off during charging, the geared motor stops and automatically starts recharging the springs again when the power returns.

In any case, it is always possible to complete the charging operation manually.

c) **Circuit-breaker closing**

The operation can only be carried out with the closing spring completely charged. For manual closing, press the push button (3 - figure 11.1)

When there is a shunt closing release, the operation can also be carried out remotely by means of a special control circuit.

Closing having taken place is indicated by the signaling device (4 - figure 11.1)

d) **Circuit-breaker opening**

For manual opening, press the push button (2 - figure 11.1). When there is a shunt opening release, the operation can also be carried out remotely by means of a special control circuit. Opening having taken place is indicated by the signaling device (4 - figure 11.1)

Installation

Preliminary operations

- Collect all auxiliary material required for installation of the cradle retrofit solution
- Clean the insulating bushings on panel side with clean dry cloths

CAUTION



Use proper personal protective equipment like hand gloves, helmets etc. while handling switchgears & making cable connections.

NOTE

When carrying out installation work, the regulations in the country of installation must be strictly complied with.
Disconnect power, then earth and short circuit connection before proceeding to work on the switchgear.

- Bottom plate assembly after preparing it along with guide rails, guide brackets and earth guides
- Rear bottom plate of CB compartment
- Top cover (upper door) assembly above CB compartment main door
- CB compartment main door suitable for cradle retrofit solution VCB
- Bottom front door
- 64 pin socket along with wiring up to terminal blocks in panel

Once the preparation of panel assembly is completed by mounting new bottom plate with guide rail & new front door, withdrawable VD4-36kV cradle retrofit solution VCB can be inserted in the panel with the help of CB handling trolley (refer fig 8.2 - Handling with trolley).

Circuit-breaker racking-in/-out must be carried out properly to avoid shocks which may deform the mechanical interlocks and the limit switches. If operations are prevented or difficult, do not force them and check that the operating sequence is correct.

Installation of VD4-36kV cradle retrofit solution in VHA36 switchgear

The installation of VD4-36kV cradle retrofit solution VCB in existing switchgear type VHA 36 requires modifications in existing switchgear panel. Refer below steps for installation of VD4-36kV cradle solution.

1. Remove following components from existing VHA36 panel (refer fig 14.1, 14.2, 14.3, 14.4)
 - SF6 circuit breaker HPA36
 - CB compartment door (top) fixed with shock absorber
 - CB compartment main door
 - Bottom front door
 - Rear sheet of CB compartment
 - Racking mechanism assembly
 - LHS and RHS guide rails in CB compartment
 - 24 pin socket and TEST/SERVICE limit switches along with wiring from terminal blocks in panel
 - Emergency trip assembly and earth guide
2. Fix/mount following new components in existing VHA36 panel (refer fig 15.1, 15.2, 15.3)

CAUTION



During installation of VD4-36kV cradle solution with withdrawable VCB, ensure that power supply to the panel is completely switched off and there is no residual charge present on cubicle contact by use of proper earthing.

Wiring of auxiliary circuit

The auxiliary circuits of the withdrawable circuit-breaker are fully cabled from the factory up to male connector.

For the external connections, please refer to the electric diagram of the enclosure or of the switchgear. The female connector in the existing panel must be replaced with the corresponding female connector suitable for male connector of CB & cabling of the panel to be done up to the female connector during installation.

Installation

Components to be removed from existing VHA 36 Panel

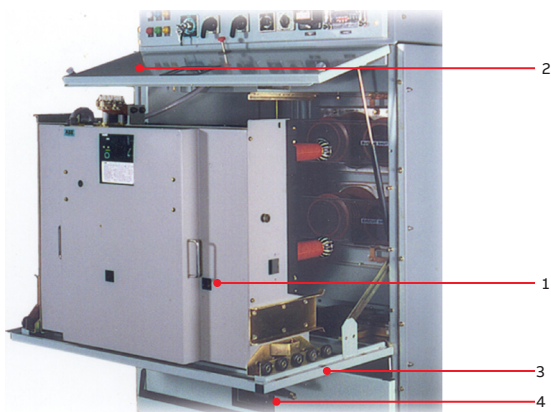


Fig 14.1

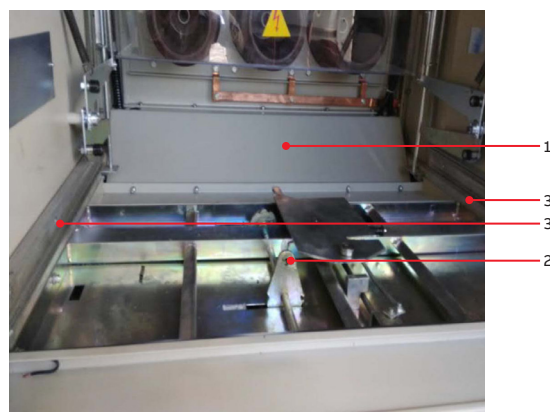


Fig 14.3

- 1 CB compartment rear sheet
- 2 Racking mechanism assembly
- 3 LHS & RHS guide rails

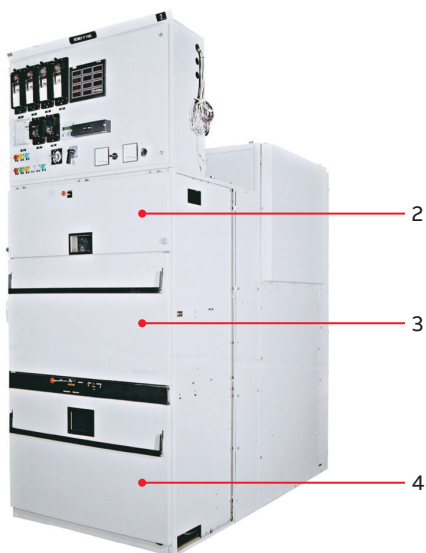


Fig 14.2

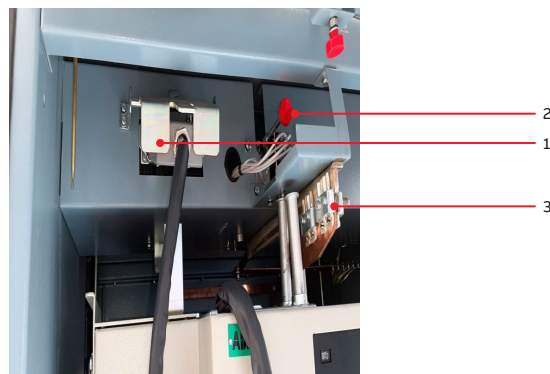


Fig 14.4

- 1 24 pin socket
- 2 Emergency trip assembly
- 3 Earth guide assembly

Legends of fig 14.1 and 14.2:

- 1 SF6 circuit breaker HPA36
- 2 CB compartment door (top)
- 3 CB compartment main door
- 4 Bottom front door

Installation

New components to be fixed/
mounted on existing VHA 36 Panel

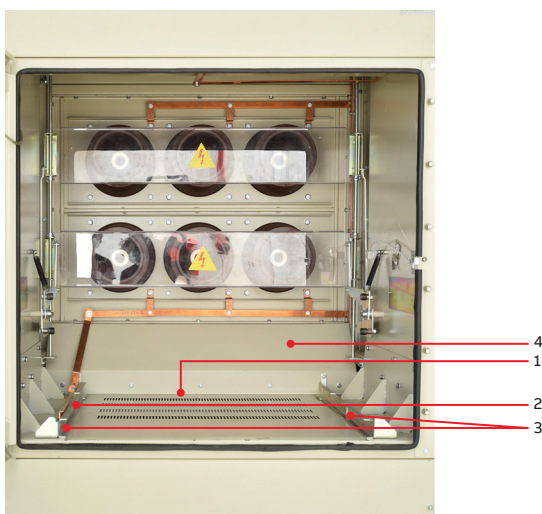


Fig 15.1

- 1 Bottom plate assembly
- 2 Earth guide
- 3 LHS & RHS guide rails
- 4 Rear bottom plate

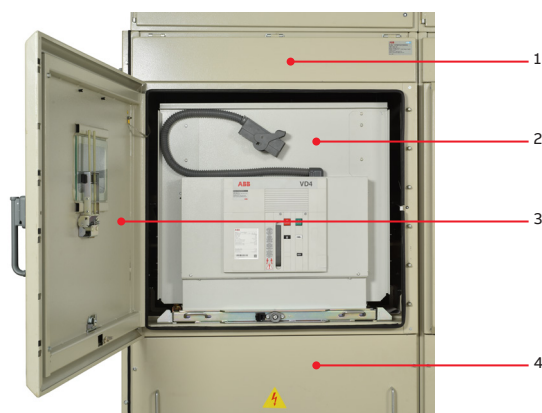


Fig 15.2

- 1 CB compartment top cover (upper door) assembly
- 2 VD4-36kV circuit breaker
- 3 CB compartment main door
- 4 Bottom front door

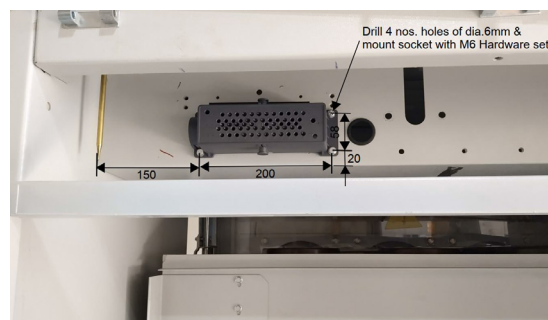


Fig 15.3



Fig 15.4 - ABB VHA36 panels retrofitted with VD4-36kV cradle solution

Putting into service

General procedures

CAUTION



During installation of VD4 CB first time with existing panel, before inserting VD4 CB inside cubicle ensure that power supply to the panel is completely switched off and there is no residual charge present on cubicle contact by use of proper earthing

CAUTION



All the operations regarding putting into service must be carried out by ABB personnel or personnel who are suitably qualified and have in- depth knowledge of the apparatus and installation. If the operations are prevented, do not force the mechanical interlocks, but check that the operation sequence is correct

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

While putting into service for the first time, before connecting secondary plug with panel socket, it is advisable to charge the circuit- breaker operating mechanisms manually so as not to overload the auxiliary power supply circuit.

When the CB is inserted in the in the guide fixed on panel side, check the following:

- Free movement of breaker from test to service position and vice versa
- Proper engagement of secondary plug and socket
- Proper functioning of various interlocks
- Proper engagement of earthing contact
- Proper engagement of VCB tulip contact with cubicle pin contact

Wiring of auxiliary circuit

The auxiliary circuits of the withdrawable circuit- breaker are fully cabled from the factory up to male connector.

For the external connections, please refer to the electric diagram of the enclosure or of the switchgear. The female connector in the existing panel must be replaced with the corresponding female connector suitable for male connector of CB & cabling of the panel to be done up to the female connector during installation.

Before putting the circuit-breaker into service, carry out the following operations:

- Check the tightness of the power connections on the circuit-breaker terminals
- Establish the setting of the direct solid-state overcurrent release (if provided)
- Check that the value of the supply voltage for the auxiliary circuits is within 85% and 110% of the rated voltage of the electrical devices
- Check that no foreign body, such as bit of packaging, has got into the moving parts
- Check that air circulation at the circuit-breaker installation site is adequate so that there is no danger of overheating
- Carry out the checks indicated in table 2.1 (see page 17)

Periodic checking

CAUTION



Before carrying out any operation, make sure that the operating mechanism springs are discharged, and that the apparatus is in the open position.

The frequency and sort of inspections basically depend on the service conditions. Various factors must be considered: frequency of operations, interrupted current values, relative power factor and the installation ambient.

The following paragraph gives the checking program table, showing the relevant time intervals.

General

During normal service, the circuit-breakers are maintenance free.

As far as the time interval between these operations is concerned, it is advisable to comply with the specifications given in the table, at least during the first check. On the basis of the results obtained during the periodic inspections, set the optimal time limits for carrying out the operations listed in table 2.2 (see page 16).

Table 2.1

Subject of the inspection	Procedure	Positive check
1 Insulation resistance	<p>Medium voltage circuits With a 2500 V megger, measure the insulation resistance between phases and exposed conductive part of the circuit.</p> <p>Auxiliary circuits With a 500 V megger (installed equipment permitting) measure the insulation resistance between the auxiliary circuits and the exposed conductive part.</p>	<p>The insulation resistance should be a few MΩ and, in any case, constant over time.</p> <p>The insulation resistance should be at least 50 MΩ and, in any case, constant over time.</p>
2 Auxiliary circuits	Check that the connections to the control circuit are correct; proceed with relative supply.	Normal switching and signaling.
3 Manual operating mechanism	Carry out a few closing and opening operations. N.B. Supply the u/v release and the locking magnet on the operating mechanism at the relative rated voltage	The operations and relative signals occur correctly.
4 Motor operator*	Supply the geared motor for spring charging at the relative rated voltage. Carry out a few closing and opening operations. N.B. Supply the undervoltage release and the locking magnet on the operating mechanism at the relative rated voltage. (if provided)	<p>The springs are charged correctly. The signals are correct.</p> <p>The geared motor cuts off when the springs are charged.</p> <p>The geared motor recharges the springs after each closing operation.</p>
5 Under voltage release*	Supply the undervoltage release at the relative rated voltage and carry out the circuit-breaker closing operation. Disconnect the power supply to the release.	<p>The circuit-breaker closes correctly. The signals are correct.</p> <p>The circuit-breaker opens. The signal changes over.</p>
6 Shunt opening release and additional shunt opening release*	<p>Close the circuit-breaker.</p> <p>Supply the shunt opening release at the relative rated voltage.</p>	The circuit-breaker opens correctly. The signals are correct.
7 Shunt closing release*	Open the circuit-breaker. Supply the shunt closing release at the relative rated voltage.	The circuit-breaker closes correctly. The signals are correct.
8 Key lock*	<p>Open the circuit-breaker Turn the key and remove it</p> <p>Attempt the circuit-breaker closing operation</p> <p>Insert the key again and turn it 90°</p> <p>Carry out the closing operation</p>	Neither manual nor electric closing takes place. Both electric and manual closing take place correctly; in this position the key cannot be removed.
9 Locking electromagnet (RL1)*	With the circuit-breaker open, springs charged and locking electromagnet not supplied, attempt to close the circuit-breaker both manually and electrically.	Closing is not possible.
10 Auxiliary contacts in the operating mechanism	Insert the auxiliary contacts into suitable signaling circuits. Carry out a few closing and opening operations.	Signals occur correctly.
11 Racking device with lever on the unit	With closed circuit-breaker try to operate the lever.	The lever cannot be operated and the racking-out are not possible.

Periodic checking

Table 2.2

Checking operation	Time interval	Criteria
1 Carry out five mechanical opening/closing operations	1 year	The circuit-breaker must operate normally without stopping in intermediate positions.
2 Visual inspection of the poles (parts in resin)	1 year or 5000 operations	The parts in resin must be free of any accumulation of dust, dirt, cracks, discharges or traces of surface discharges.
3 Visual inspection of the operating mechanism and transmission	1 year or 5000 operations	The elements must be free of any deformation. Screws, nuts, bolts, etc. must be tight.
4 Visual inspection of the isolating contacts	5 years or 5000 operations	The isolating contacts must be free of any deformation or erosion. Lubricate the contact elements with industrial Vaseline grease.
5 Measuring the insulation resistance	5 years or 5000 operations	See table 2.1. point 1
6 Checking interlock operation	5 years	The interlocks provided must operate correctly

Maintenance

Maintenance must only be carried out by ABB personnel or in any case by suitably qualified personnel who have in-depth knowledge of the apparatus (IEC62271-1). Should the maintenance be carried out by non-ABB personnel, they are responsible for the interventions.

Replacement of any parts not included in the “list of spare parts / accessories” must only be carried out by ABB personnel.

In particular:

- Complete pole with bushings / connections
- Operating mechanism
- Closing spring unit
- Opening spring
- Spring charging geared motor with electrical signaling spring charged
- Epoxy bushing assembly
- Fixed contact

Electrical diagram

The standard VD4 circuit-breaker electric circuit diagram is as follows:

- VD4 electric diagram
Each circuit-breaker is always provided with the standard electric diagram or with a specific diagram in the case of a circuit-breaker with non-standard cabling.

The standard VD4 circuit breaker electric diagram is as per drawing 1VYN300901-UJ

Wiring of auxiliary circuits

- The auxiliary circuits of the withdrawable circuit- breaker are fully cabled in the factory up to male connector.
- For the external connections, please refer to the electric diagram of the enclosure or of the switchgear. The Female connector in the old panel must be replaced with the corresponding female connector suitable for male connector of CB & cabling of the panel to be done up to the female connector during installation

Spare parts

—

All assembly operations of spare parts / accessories must be carried out by ABB personnel or by suitably qualified customer personnel with in-depth knowledge of the apparatus, following the instructions enclosed with the spare parts, (IEC62271-1) and all the standards aimed at carrying out these interventions in safe conditions. Should maintenance be carried out by the customer's personnel, responsibility for the interventions lies with the customer. Before carrying out any operation, always make sure that the circuit-breaker is open, the spring discharged and that it is not energized (medium voltage circuit and auxiliary circuits)

To order circuit-breaker spare parts / accessories, refer to the ordering sales codes indicated in the technical catalogue and always state the following:

- Type of circuit-breaker
- Rated voltage of the circuit-breaker
- Rated normal current of the circuit-breaker
- Breaking capacity of the circuit-breaker
- Serial number of the circuit-breaker
- Rated voltage of any electrical spare parts

For availability and to order spare parts, please contact our service office.

List of spare parts for breaker

- Shunt opening release
- Additional shunt opening release
- Shunt closing release
- Contact signaling protection circuit-breaker of the geared motor open / closed
- Contact signaling closing spring charged / discharged
- Circuit-breaker auxiliary contacts
- Locking electromagnet on the operating mechanism
- Position contact of the withdrawable truck
- Contacts signaling connected / isolated
- Opening solenoid
- Charging motor
- Key lock in open position
- Protection for opening push button
- Protection for closing push button
- Set of six tulip contacts
- Open / closed signaling device
- Set of six fixed contacts
- Racking handle

Overall dimension and ratings

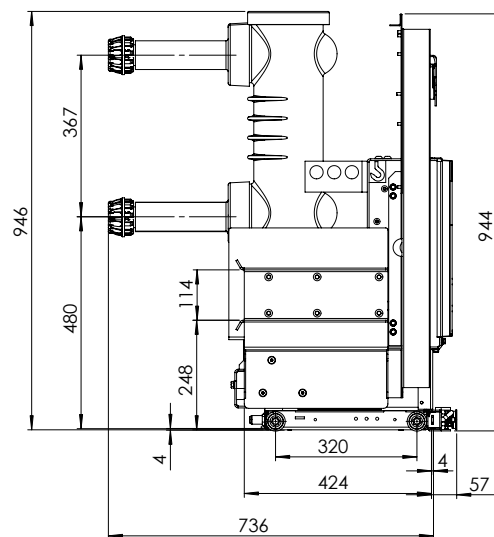
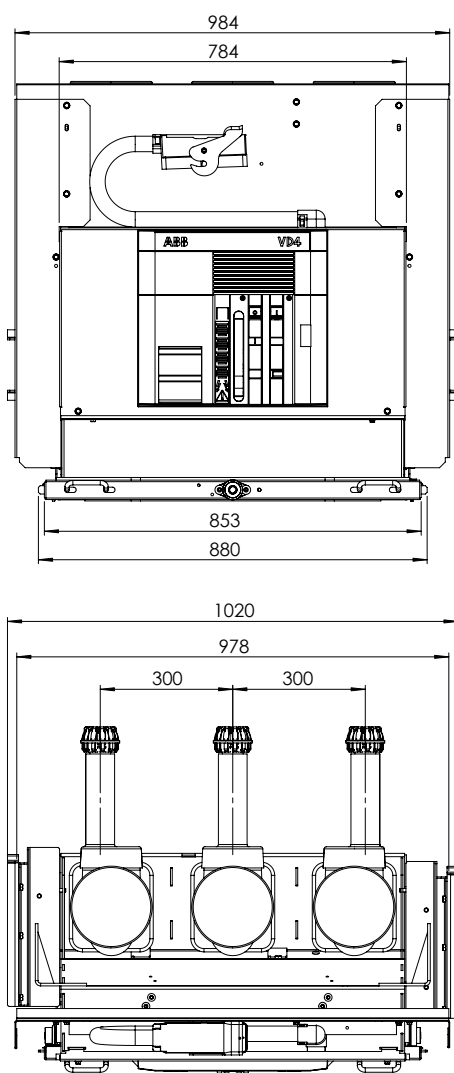
VD4-36kV vacuum circuit breaker cradle retrofit solution

VD4-36kV cradle retrofit solution

Ur 36kV

Ir 1250A

Isc 31.5kA



Overall dimension and ratings

VD4-36kV vacuum circuit breaker cradle retrofit solution

VD4-36kV cradle retrofit solution	
Ur	36kV
Ir	2000A
Isc	31.5kA

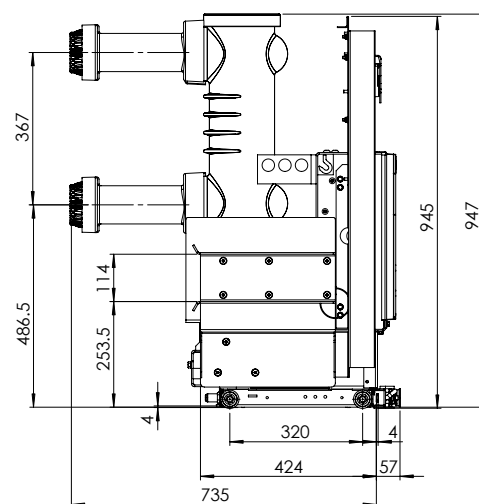
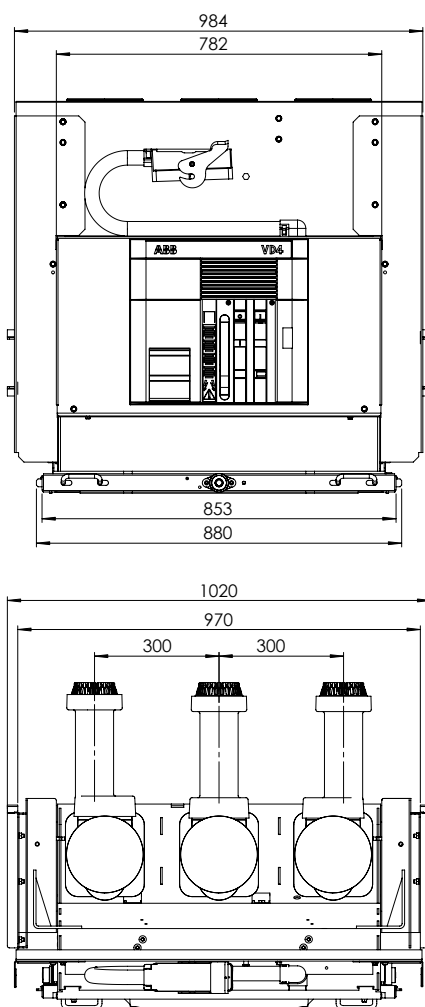




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Additional information

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