



DEH-500012 Operation Manual

SecoVac^{*} Lift Truck

For Use with 5kV - 15kV IEEE SecoVac Vacuum Circuit Breakers



Table of Contents

1. General Description4

Floor Lock 4

Compartment Interlock..... 4

Hand Winch 4

2. Installing the SecoVac VCB.....5

3. Removing the SecoVac VCB.....9

4. Racking the SecoVac VCB to Connected Position 10

5. Racking the SecoVac VCB to Disconnected/Test Position ... 11

Hazard Classifications

The following important highlighted information appears throughout this document to warn of potential hazards or to call attention to information that clarifies a procedure. Carefully read all instructions and become familiar with the devices before trying to install, operate, service or maintain this equipment.

CAUTION

Indicates that if the hazard is not avoided could result in minor or moderate injury.

NOTICE

It is used to notify of practices not related to personal injury.

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SecoCube®	SecoBloc®
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No warranties of merchantability or fitness for purpose shall apply.

Contact your local sales office if further information is required concerning any aspect of SecoGear switchgear operation or maintenance.

1. General Description

The SecoVac Vacuum Circuit Breaker (VCB), Voltage Transformer (VT) tray, Control Power Transformer (CPT) tray, and Ground and Test (G&T) device should only be handled with Lift Truck during installation and removal. The lift truck allows the before mentioned parts to be elevated to the top or bottom compartment in the SecoGear switchgear or SecoBloc OEM Modules, Figure 1.



Figure 1. Lift Truck and SecoVac VCB

Floor Lock

For additional safety during the handling of the SecoVac VCB or the other components, the lift truck is equipped with a floor lock, Figure 2.

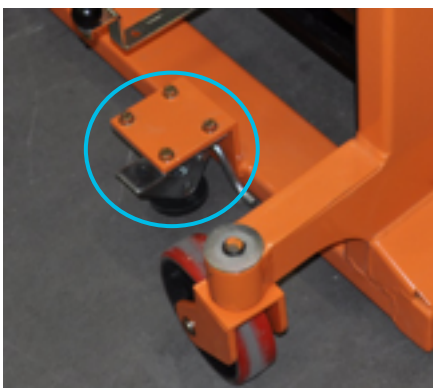


Figure 2. Floor Lock

Compartment Interlock

The compartment interlock will lock the lift truck to the SecoGear switchgear or SecoBloc OEM Module compartment for a safe transfer to and from the equipment during installation or removal, Figure 3.

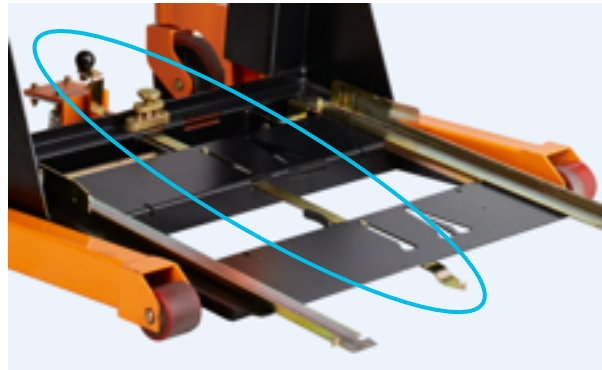


Figure 3. Compartment Interlock

Hand Winch

The hand winch is connected to a system of pulleys on both sides of the lift truck to facilitate the lifting or lowering the SecoVac VCB, VT & CPT trays, and G&T device. The system is designed for a 700lbs lifting capacity, Figure 4.



Figure 4. Hand Winch

2. Installing the SecoVac VCB

A. Place the VCB onto the Lift Truck

NOTICE

Maximum recommended lifting capacity for the lift truck is 700 lbs.

Before loading the SecoVac VCB onto the lift truck, assure that it is in the open position and with the springs discharged by checking the status of the indicators on the front cover.

1. Check the lifting and interlocking mechanisms of the lift truck for smooth operation, and inspect the cables in the hand winch system for any signs of damage, fatigue, or wear before operation.
2. To pick up a VCB from the floor level, first lower the lifting platform to the lowest position, Figure 5.



Figure 5. Lowered Lifting Platform

3. Adjust the rails on the hoist before loading the VCB. The rails are adjustable and have 3 sets of slots on each side of the hoist platform. These rails must be latched into the center most slots of the platform for proper operation to pick up the VCB, Figure 6.

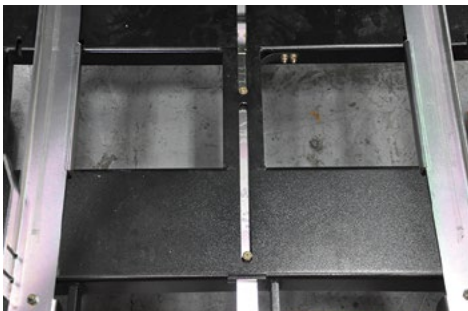


Figure 6. The Hoist Rail Slots

4. Move the lift truck in front of the VCB and lock truck in place using the floor lock shown in Figure 7. Now roll the VCB onto the rails of the lift truck. The wheels on the VCB should follow the rail guides.



Figure 7. Press the Front Pedal to Lock Lift Truck

5. The VCB should be pushed onto the rails until the locking tabs on the side lock into the slots on the hoist rails. Check that the locking tabs on both sides are engaged and locked into position on the lift truck rails, Figure 8. Once both tabs are locked into the slots, the VCB is ready to be lifted to the correct position for installation. Figure 9 shows properly loaded VCB locked in position, and compartment interlock in the retracted position.



Figure 8. SecoVac VCB Tab Locked in Lift Truck Slot



Figure 9. SecoVac VCB Properly Mounted on Lift Truck

6. Release the floor lock by depressing the lever on the right or left-hand side of the floor lock and move the lift truck away, Figure 10.



Figure 10. Release Floor Lock

B. Insert the VCB into Switchgear

1. Check the lifting and interlocking mechanisms of the lift truck for smooth operation, and inspect the cables in the hand winch system for any signs of damage, fatigue, or wear before proceeding.
2. Open the SecoGear compartment door, and position the lift truck in front of the switchgear compartment.
3. Turn the hand winch clockwise to raise, or counterclockwise to lower, the VCB into position, Figure 11. Adjust the height of the VCB to align with the guide slots located in the switchgear compartment, Figure 14.



Figure 11. Lift Truck Crank Handle



Figure 12. Cable Winch Spool



Figure 13. Cable Secured to Hoist



Figure 14. Lift Truck Arm (Left) Aligned with Switchgear Guide Slot (Right)

4. Push the lift truck forward so that the rail guide arms fully engage the switchgear, Figure 15.



Figure 15. Lift Truck Guide Arm Stops

5. Lock the lift truck in position by pressing down on the floor lock lever, Figure 16.



Figure 16. Press the Front Lever to Lock Lift Truck

6. Engage the compartment interlock onto the switchgear compartment. This operation requires a combination of steps shown on Figures 17 through Figure 19.
 - a. Push the operation handle until it is fully engaged in the switchgear compartment slot.

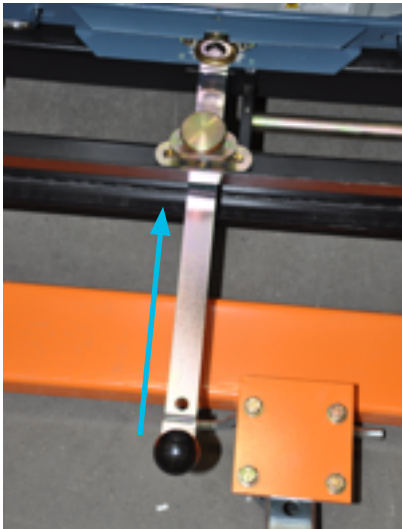


Figure 17. Operation Handle



Figure 18. Operation Handle Fully Engaged into Switchgear Compartment

- b. Lock the operation handle into place by pressing down and rotating the interlock pin clockwise until it is fully engaged.



Figure 19. Press Down on the Interlock Pin and Rotate Clockwise to Lock the Latch Handle

7. To insert the VCB into the switchgear compartment, push the two locking handles on the front of the VCB inward (toward the center) to release from the lift truck and push the VCB onto the rails and into the switchgear compartment, Figure 20.



Figure 20. Unlock VCB from Lift Truck

8. Lock the VCB in the DISCONNECTED/TEST position using the spring-loaded locking handles, Figure 21. The tabs on the VCB will engage slots in the switchgear compartment rails



Figure 21. Lock VCB into Switchgear

9. Once the VCB is in the switchgear compartment, disengage the lift truck compartment interlock by rotating the interlock pin counterclockwise, Figure 22, then move the handle to the left and pull the latch handle toward you and from the switchgear compartment until it is fully retracted, Figure 23.



Figure 22. Rotate Interlock Pin Counterclockwise to Unlock the Latch Handle

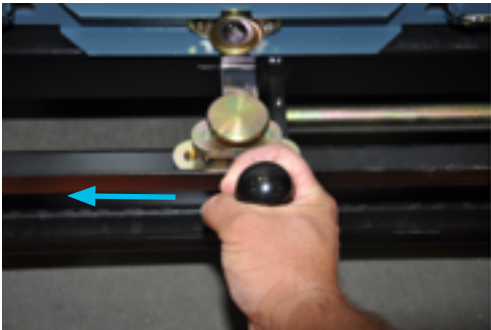


Figure 23. Interlock Latch Handle

CAUTION

Verify that the VCB safety stop in the switchgear compartment has returned to the normal extended position.

10. Verify that the VCB safety stop has returned to the extended position, Figure 24. If necessary, release by inserting a screw driver into the slot to dislodge, Figure 25.



Figure 24. Stop in Proper Position

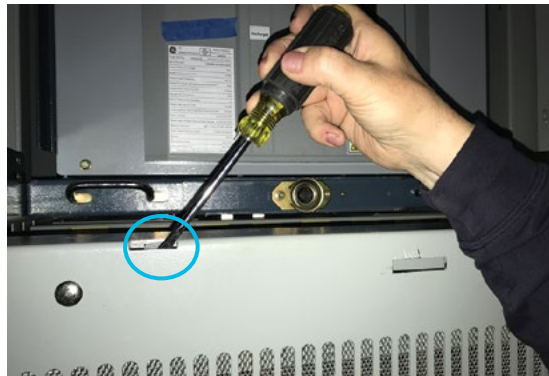


Figure 25. Eliminating Stop Interference

11. Release the lift truck floor lock by depressing the lever on the right or left-hand side of the floor lock and move the lift truck away from the switchgear, Figure 26.



Figure 26. Release Floor Lock

3. Removing the SecoVac VCB

The VCB must be open and in the DISCONNECTED/ TEST position before proceeding.

1. Check that the position indicator flag in lower right front corner of compartment shows DISCONNECTED/TEST.
2. Ensure that the spring energy is discharged. Check that indicators on the VCB front cover show DISCHARGED and OPEN.
3. Disconnect secondary control power plug.
4. Position the lift truck in front of the switchgear compartment, and rotate the lift truck crank handle to adjust the height of the lifting platform such that the ends of the lift arms align with the guide slots just below the VCB rails in the switchgear compartment. (Turn clockwise to raise, counterclockwise to lower.)
5. Push the truck forward so that the transfer truck arms fully engage in the switchgear rail guide slots and the rail stops engage the switchgear. Lock the lift truck in position by pressing down on the truck locking pedal, Figure 16.
6. **Engage the lift truck compartment interlock to secure the truck to the switchgear compartment.**
7. Push the two locking handles on the front of the VCB inward to unlock the VCB from the switchgear compartment, Figure 20.
8. Pull the VCB forward onto the lift truck rails and lock in position on the lift truck using the locking tabs on both sides of the VCB. Ensure they engage and lock into position, Figure 8.
9. **Release the lift truck compartment interlock.**
10. Release the floor lock of the lift truck, Figure 10, and move the lift truck away from the switchgear.
11. Lower the VCB to the ground.

4. Racking the SecoVac VCB to Connected Position

CAUTION

When racking the VCB from CONNECT to DISCONNECT, or DISCONNECT to CONNECT, do not stop or pause at any intermediate position. Failure to engage in either CONNECT or DISCONNECT position will render the VCB inoperable.

1. Connect the secondary plug of the VCB into the socket at the top of the switchgear compartment and lock it, Figure 27 and Figure 28.



Figure 27. Release Secondary Plug from VCB



Figure 28. Insert Secondary Plug and Lock into Switchgear Compartment Socket

2. Make sure the VCB is in open position. If it is closed, press the manual open pushbutton.
3. Close the door and insert the racking handle into the racking access hole located at the bottom of the door, Figure 29 and Figure 30, until the racking socket is engaged with the racking drive screw.
4. Turn the handle clockwise (approximately 20 turns) until it cannot be rotated any further.

CAUTION

Do not over torque the racking handle, applied force should not exceed 22.12 ft lb (30 N/m)

When it makes a clicking sound, the VCB is now in the Connected position. The VCB position indicator will change the status from “TEST” to “CONNECTED”, Figure 32 through Figure 34.

5. Racking the SecoVac VCB to Disconnected/Test Position

CAUTION

When racking the VCB from CONNECT to DISCONNECT, or DISCONNECT to CONNECT, do not stop or pause at any intermediate position. Failure to engage in either CONNECT or DISCONNECT position will render the VCB inoperable.

1. With the VCB in the CONNECTED position and open, close the door and insert the racking handle, Figure 29, into the racking access hole located at the bottom of the door, Figure 30, until the racking socket is engaged with the racking drive screw.



Figure 29. Racking Handle

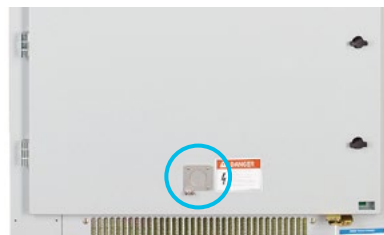


Figure 30. Racking Handle Insertion on Door



Figure 31. Access Hole Open

2. Turn the handle counterclockwise to drive the VCB out of the CONNECTED position. Do not stop turning until the indicator flag clearly shows DISCONNECTED.

As the VCB moves, the position indicator will change to reflect current position, Figure 32 through Figure 34, in the lower right front of the switchgear compartment.



Figure 32. Disconnected/Test Position (Green)



Figure 33. Intermediate Position (Yellow)



Figure 34. Connected Position (Red)

For more information on the installation, operation, and maintenance of the IEEE SecoVac VCB please see Publication# DEH-50001.



Imagination at work

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41 Woodford Avenue
Plainville, CT 06062
www.geindustrial.com

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