# $CO_2$ and C4-FN Gas Mix Refill Kit

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★ To meet the California Air Resources Board (CARB) requirements for hermetically sealed, an inaccessible fill port cap is provided as standard with Vista Green Underground Distribution Switchgear.

March 23, 2026

## Qualified Persons

**⚠ WARNING**

Only qualified persons knowledgeable in the installation, operation, and maintenance of overhead and underground electric distribution equipment, along with all associated hazards, may install, operate, and maintain the equipment covered by this publication. A qualified person is someone trained and competent in:

- The skills and techniques necessary to distinguish exposed live parts from nonlive parts of electrical equipment
- The skills and techniques necessary to determine the proper approach distances corresponding to the voltages to which the qualified person will be exposed
- The proper use of special precautionary techniques, personal protective equipment, insulated and shielding materials, and insulated tools for working on or near exposed energized parts of electrical equipment

These instructions are intended only for such qualified persons. They are not intended to be a substitute for adequate training and experience in safety procedures for this type of equipment.

## Read This Instruction Sheet

***NOTICE***

Thoroughly and carefully read this instruction sheet and all materials included in the product's instruction handbook before operating and maintaining the Vista Green Underground Distribution Switchgear. Become familiar with the Safety Information on page 3 and Safety Precautions on page 4. The latest version of this publication is available online in PDF format at **sandc.com/en/contact-us/product-literature/**.

## Retain This Instruction Sheet

This instruction sheet is a permanent part of the $CO_2$ and C4-FN Gas Mix Refill Kit. Designate a location where users can easily retrieve and refer to this publication.

## Proper Application

**⚠ WARNING**

The equipment in this publication is only intended for refilling Vista Green Underground Distribution Switchgear using a mix of $CO_2$ and C4-FN gas. Check the switchgear nameplate to make sure the equipment is Vista Green Underground Distribution Switchgear before performing the procedure in this instruction sheet. The United States Environmental Protection Agency (EPA) expressly prohibits the mixing of $CO_2$ and C4-FN gas mix with $SF_6$ gas.

## Understanding Safety-Alert Messages

Several types of safety-alert messages may appear throughout this instruction sheet and on labels and tags attached to the product. Become familiar with these types of messages and the importance of these signal words:

**⚠ DANGER**

"DANGER" identifies the most serious and immediate hazards that will likely result in serious personal injury or death if instructions, including recommended precautions, are not followed.

**⚠ WARNING**

"WARNING" identifies hazards or unsafe practices that can result in serious personal injury or death if instructions, including recommended precautions, are not followed.

**⚠ CAUTION**

"CAUTION" identifies hazards or unsafe practices that can result in minor personal injury if instructions, including recommended precautions, are not followed.

***NOTICE***

"NOTICE" identifies important procedures or requirements that can result in product or property damage if instructions are not followed.

## Following Safety Instructions

If any portion of this instruction sheet is unclear and assistance is needed, contact the nearest S&C Sales Office or S&C Authorized Distributor, or call the S&C Global Support and Monitoring Center at 1-888-762-1100. Telephone numbers are also listed on S&C's website, **sandc.com**.

***NOTICE***

Read this instruction sheet thoroughly and carefully before refilling Vista Green Underground Distribution Switchgear.

## Replacement Instructions and Labels

If additional copies of this instruction sheet are required, contact the nearest S&C Sales Office, S&C Authorized Distributor, S&C Headquarters, or S&C Electric Canada Ltd.

It is important any missing, damaged, or faded labels on the equipment be replaced immediately. Replacement labels are available by contacting the nearest S&C Sales Office, S&C Authorized Distributor, S&C Headquarters, or S&C Electric Canada Ltd.

## ⚠ DANGER

**Vista Underground Distribution Switchgear operates at high voltage. Failure to observe the precautions below will result in serious personal injury or death.**

Some of these precautions may differ from your company's operating procedures and rules. Where a discrepancy exists, follow your company's operating procedures and rules.

1. **QUALIFIED PERSONS.** Access to Vista Underground Distribution Switchgear must be restricted only to qualified persons. See the "Qualified Persons" section on page 2.
2. **SAFETY PROCEDURES.** Always follow safe operating procedures and rules. Always maintain proper clearance from energized components.
3. **PERSONAL PROTECTIVE EQUIPMENT.** Always use suitable protective equipment, such as rubber gloves, rubber mats, hard hats, safety glasses, and arc-flash clothing in accordance with safe operating procedures and rules.
4. **SAFETY LABELS.** Do not remove or obscure any of the "DANGER," "WARNING," "CAUTION," or "NOTICE" labels.
5. **DOORS.** High-voltage compartment doors must be securely closed and latched, with padlocks in place at all times unless work is being performed inside the enclosure.
6. **KEY INTERLOCKS.** Optional key interlocks, if furnished, must be in place. Check the operating sequence of key interlocks to verify proper sequencing. After the switchgear is installed, destroy all duplicate keys or make them accessible only to authorized persons so the key-interlock scheme will not be compromised.
7. **OPENING DOORS.** Do not apply any undue force when attempting to open a door. The use of undue force may damage the door-latching mechanism.
8. **ENERGIZED BUSHINGS.** Always assume the bushings are energized unless proven otherwise by test, by visual evidence of an open-circuit condition at the load-interrupter switch or fault interrupter, or by observing that the load-interrupter switch or fault interrupter is grounded.
9. **BACKFEED.** Bushings, cables, load-interrupter switches, and fault interrupters may be energized by backfeed.
10. **GROUNDING.**
    - Vista switchgear must be connected to a suitable earth ground before energizing and at all times when energized.
    - The ground wire(s) must be bonded to the system neutral, if present. If the system neutral is not present, proper precautions must be taken to ensure the local earth ground cannot be severed or removed.
    - After the switchgear has been completely disconnected from all sources of power and tested for voltage, properly ground the load-interrupter switches and fault interrupters before touching any bushings or components that are to be inspected, replaced, serviced, or repaired.
11. **LOAD-INTERRUPTER SWITCH OR FAULT-INTERRUPTER POSITION.**
    - Always confirm the **Ground/Open/Closed** position of the load-interrupter switch or fault interrupter by visually observing the position of the isolating disconnect.
    - Be aware that the load-interrupter switch or fault interrupter may be energized by backfeed.
    - Be aware that the load-interrupter switch or fault interrupter may be energized in any position.
12. **MAINTAINING PROPER CLEARANCE.** Always maintain proper clearance from energized components.

## Before Starting

Vista Green Underground Distribution Switchgear has been carefully designed to provide extremely reliable gas seals. S&C expects gas leaks to be extremely rare. Gas pressure is indicated by the internal pressure gauge. The switchgear can be operated when the gauge is in the **Green** or **Green/Yellow** zone, but it should not be operated or field filled if it is in the **Red** zone. In the unlikely event a gas leak develops, the Vista Green switchgear tank can only be refilled in the field if the pressure gauge is in the **Green/Yellow** zone. See Figure 1 and Figure 2.

If the gauge indicates pressure has dropped to the **Red** zone, the tank may have absorbed moisture and must be evacuated prior to refilling. If this is necessary, the switchgear must be returned to S&C for repair and rework. Even if the gauge is not yet in the **Red** zone, any loss of gas should be investigated thoroughly so the leak can be repaired before refilling. See Figure 3.

Refill cylinders (CUA-10467) are filled to 9 bar and are small for ease of handling. The cylinders have a pre-mix of the Vista Green switchgear gas. Vista Green switchgear models with 4 or fewer ways require one cylinder to refill the tank when it is in the **Green/Yellow** zone. Switchgear models with 5 or 6 ways require two cylinders.

Contact the local S&C Sales Office or call the Global Support and Monitoring Center at 1-888-762-1100 with any questions or concerns.

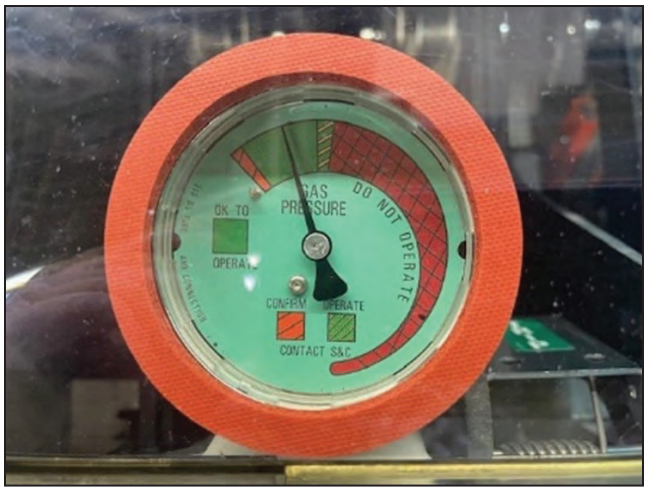


**Figure 1. Vista Green Switchgear gas gauge in the Green zone.**

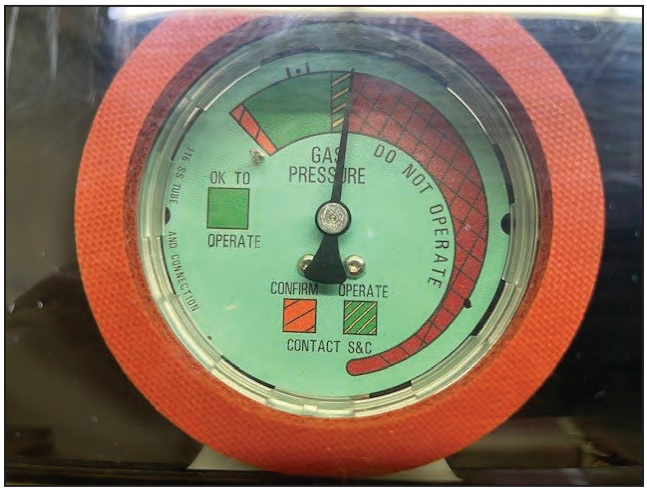


**Figure 2. Vista Green Switchgear gas gauge in Green/ Yellow zone.**

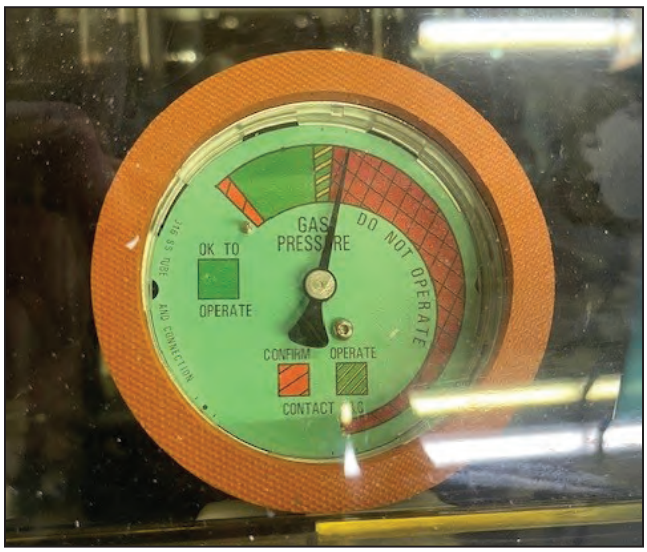


**Figure 3. Vista Green Switchgear gas gauge in Red zone.**

## Filling the Switchgear Tank

### *Tools and Supplies Required*

- CUA-10469 Fill hose
- TR-13684 Schrader valve extender
- TR-11749 ¼-inch NPT-to-Schrader chuck adapter
- CU-5987 Fill port cover screwdriver
- TR-13695 External pressure gauge
- CUA-10467 Refill cylinder

### *Recommended to Have Available*

- A set of O-rings for the fill port cover (CU-12051 and CU-12052)
- 9999-036 Molykote 44 grease
- TDA-31957 Vista Green switchgear O-ring installation tool

To fill the switchgear tank, complete the following steps:

**STEP 1.** Attach the fill hose (see Figure 4) to the vapor port on the refill tank. The ports are clearly marked. The vapor port is the top port with the blue handle and the liquid port is the bottom port with the red handle. See Figure 5.

**STEP 2.** Attach the Schrader valve extender to the fill hose's air chuck. See Figure 6. Open the valve on top of the fill tank for a few seconds to bleed the air out of the fill line. Then, remove the Schrader valve extender.

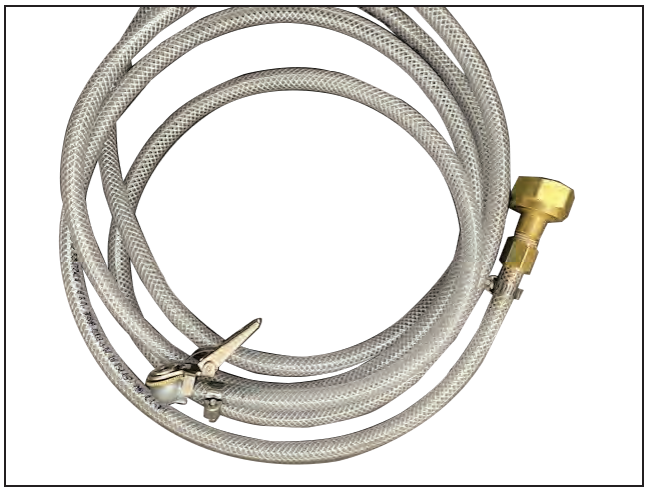

**Figure 4. Fill hose.**

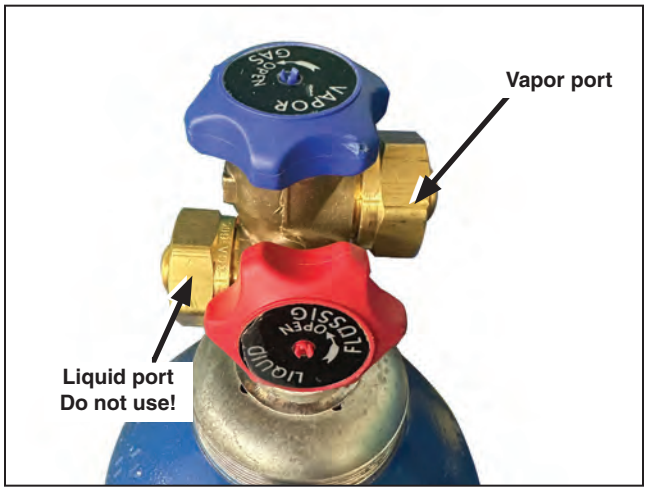


**Figure 5. The fill hose attaches to the vapor port.**

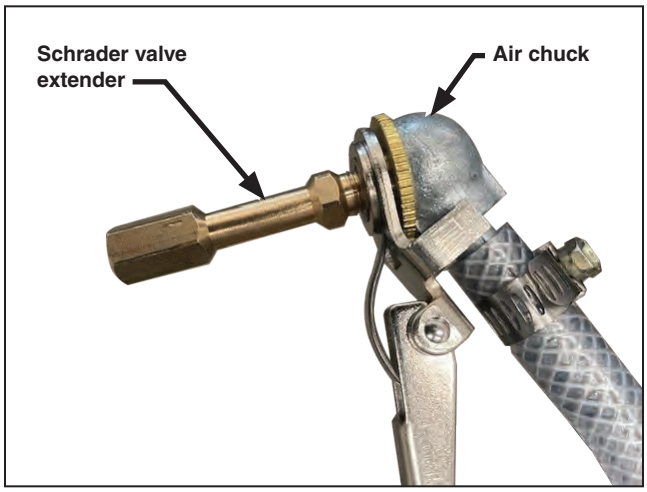


**Figure 6. The Schrader valve extender attached to the air chuck.**

**STEP 3.** Locate the fill port cover on the switchgear tank in the operation compartment. Clean off all dirt and debris from around the fill port. If the switchgear has the field inaccessible fill port as seen in Figure 7 contact the local Sales Office of the Global Support and Monitoring Center for assistance.

If the fill port appears as shown in Figure 8, use the fill port cover screwdriver and turn counterclockwise to open the fill port. See Figure 9.

**Figure 7. Location of fill port on Vista Green switchgear tank. Inaccessible fill port shown.**

**Figure 8. Location of fill port on Vista Green switchgear tank. Slotted accessible fill port shown.**

**Figure 9. Fill port cover screwdriver.**

**STEP 4.** The Schrader fill valve is located under the fill port cover. Thread the Schrader valve extender onto the Schrader valve. Tighten hand tight. Do not over tighten. See Figure 10.

**STEP 5.** Thread the ¼-inch NPT-to-Schrader chuck adapter onto the external pressure gauge. See Figure 11. Connect the external pressure gauge to the Schrader valve extender and read the pressure. Stop the fill procedure if the pressure reading is below 11.3 psig at 20°C (68°F). Tanks with pressure lower than this must not be field refilled. If the pressure is above 11.3 psig, continue with Step 6. See Table 1 to convert the temperature/pressure for other ambient temperatures.

**Table 1. Temperature/Pressure Conversion Chart for Vista Green Switchgear**

| Temperature | | Nominal Pressure (psig) | |
|---|---|---|---|
| Deg [C] | Deg [F] | Sea Level | 3300 ft (1006 m) |
| 55 | 131 | 17.9 | 19.6 |
| 50 | 122 | 17.4 | 19.1 |
| 40 | 104 | 16.4 | 18.1 |
| 30 | 86 | 15.5 | 17.1 |
| 20 | 68 | 14.5 | 16.1 |
| 10 | 50 | 13.5 | 15.1 |
| 0 | 32 | 12.5 | 14.1 |
| -10 | 14 | 11.5 | 13.1 |
| -20 | -4 | 10.5 | 12.1 |
| -30 | -22 | 9.5 | 11.1 |
| -40 | -40 | 8.0 | 9.6 |

**Note:** Use Table 1 when reading tank pressure using an external pressure gauge. Nominal readings are 14.5 ± 0.5 psi at 20°C (68°F). For other temperatures, use the information in Table 1 to convert the pressure.

**STEP 6.** Attach the air chuck to the Schrader valve extender. See Figure 12.

**Figure 10. Thread the Schrader valve extender to the Schrader valve inside the fill port.**

**Figure 11. External pressure gauge attached to ¼-inch NPT-to-Schrader chuck adapter.**

**Figure 12. Connect the air chuck to the Schrader valve extender.**

**STEP 7.** Open the valve on the cylinder. See Figure 13. Observe the tank pressure gauge needle and fill the tank until the needle reaches the set point. (One line on present production gauges, and the dot between two lines on older gauges; see Figure 14 and Figure 15.) It is acceptable to fill slightly over the set point.

**STEP 8.** Connect the external pressure gauge to the Schrader valve extender and read the pressure. The final fill pressure should be between 14.2 and 15.3 psig when checked with the external pressure gauge. Refer to Table 1 on page 8 to convert nominal pressure for other temperatures and altitudes.

**STEP 9.** Remove the fill hose and Schrader valve extender from the fill port.


**Figure 13. The gas cylinder operating handle.**

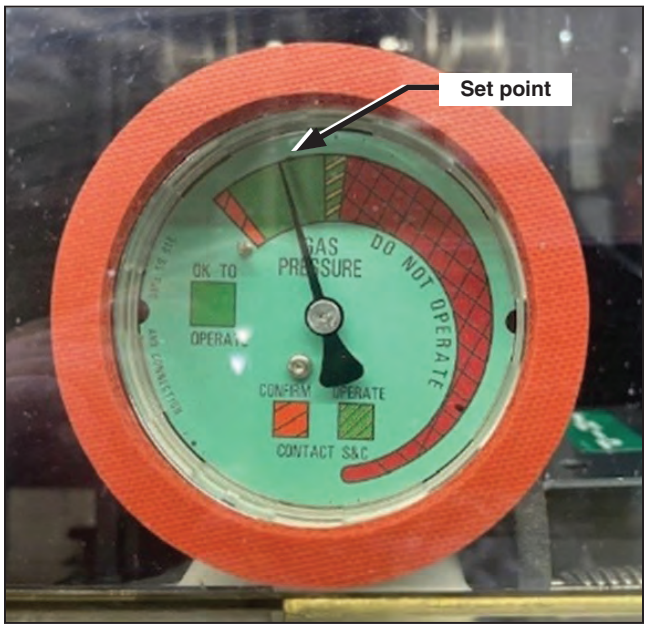


**Figure 14. The set point on current production gauge.**

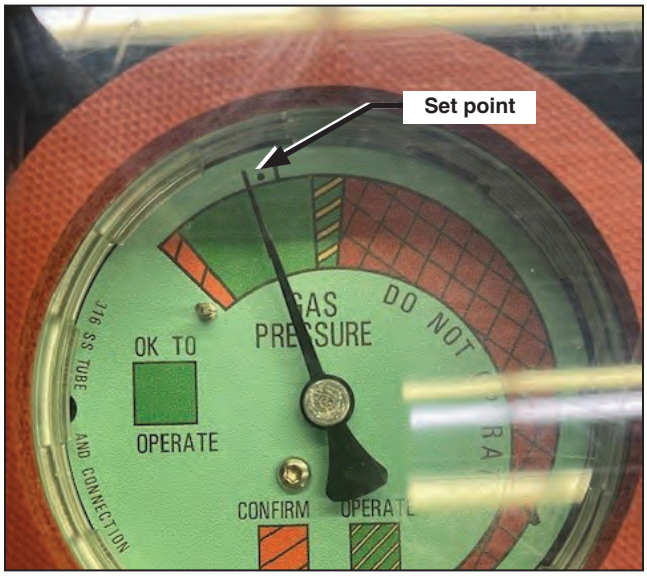


**Figure 15. The set point on older Vista Green switchgear gauges.**

**STEP 10.** Remove any dirt or debris from around the fill port area. Inspect the fill port cover and O-rings to be sure they are clean, and the O-rings are not damaged. If the O-rings are damaged, replace them using the following procedure:

(a) Set tool TDA-319587 on top of fill port cover. See Figure 16.

(b) Apply a thin film of Molykote 44 on O-rings. See Figure 17.

(c) Install CU-12052 (stiffer O-ring) on fill cover first and CU-12051 (with a white dot) second. Slide the O-rings down to install on fill port cover. See Figure 18.

**STEP 11.** Use the fill port cover screwdriver to reinstall the fill port cover over the Schrader valve, turning clockwise until hand tight.

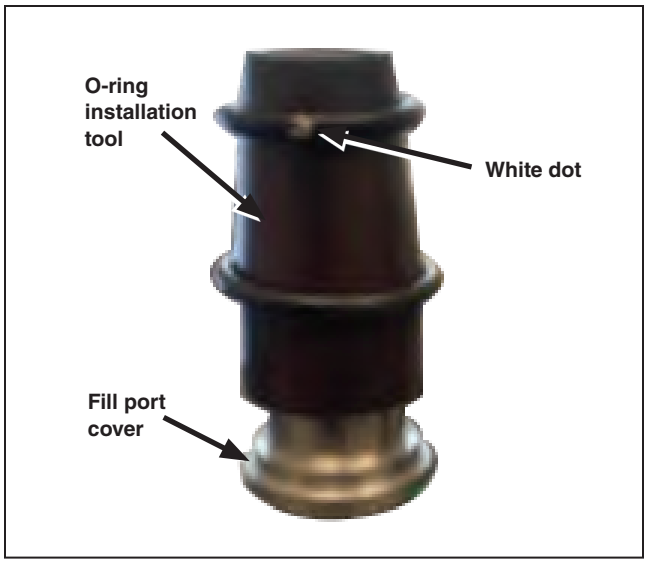


**Figure 16. O-ring installation tool installed on fill port cover.**

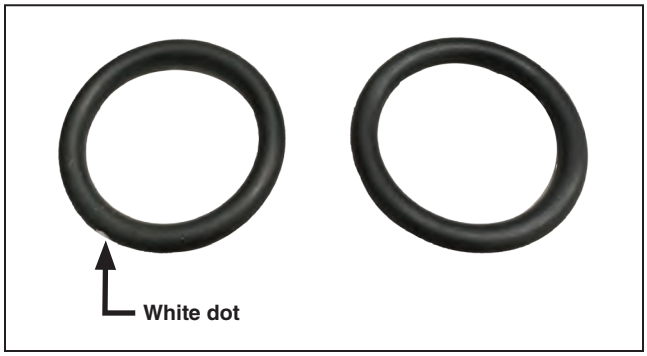


**Figure 17. O-rings for fill port cover.**

**Figure 18. O-rings installed on fill port cover.**