Eaton® Static Transfer Switch 1000A 3-Pole

Bypass Procedures Manual

EAT•N

Powering Business Worldwide

IMPORTANT SAFETY INSTRUCTIONS · SAVE THESE INSTRUCTIONS

This manual contains important instructions that you should follow during installation and maintenance of the equipment. Please read all instructions before operating the equipment and save this manual for future reference.

CONSIGNES DE SÉCURITÉ IMPORTANTES — CONSERVER CES INSTRUCTIONS

Ce manuel contient des instructions importantes que vous devez suivre lors de l'installation et de la maintenance de l'équipement. Veuillez consulter entièrement ces instructions avant de faire fonctionner l'équipement et conserver ce manuel afin de pouvoir vous y reporter ultérieurement.

⚠WARNING

This is a product for restricted sales distribution to informed partners (EN/IEC 62040-2). Installation restrictions or additional measures may be needed to prevent electromagnetic disturbances.

EAT•N

Dear Customer,

On behalf of everyone at Eaton, we thank you for partnering with us, for trusting us to maintain your business continuity and for preventing downtime at your facility.

Our suite of backup power, power distribution and power management products are designed to protect you from a host of threats including power outages, surges, and lighting strikes, and enable you to monitor and control your power infrastructure.

We trust that our products will deliver high quality, reliable power for your business, and we are committed to your success.

Please read this manual, which details the installation and operation processes for your new Eaton product.

Thank you for choosing Eaton!

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Chapter 1 Introduction

The 1000A Static Transfer Switch (STS) has bypass circuits to allow maintenance to occur on the STS while the bypass circuit provides power to the load. The procedures for going between normal or static mode STS operation and bypass operation use Kirk Keys to control which paths are active.

Kirk Keys protect against two situations that can cross-connect STS sides causing damage to the STS and possibly to upstream equipment such as a UPS:

- The two Bypass MCCBs must not be both ON.
- A Bypass must not be active while the Source on the opposite side is active.

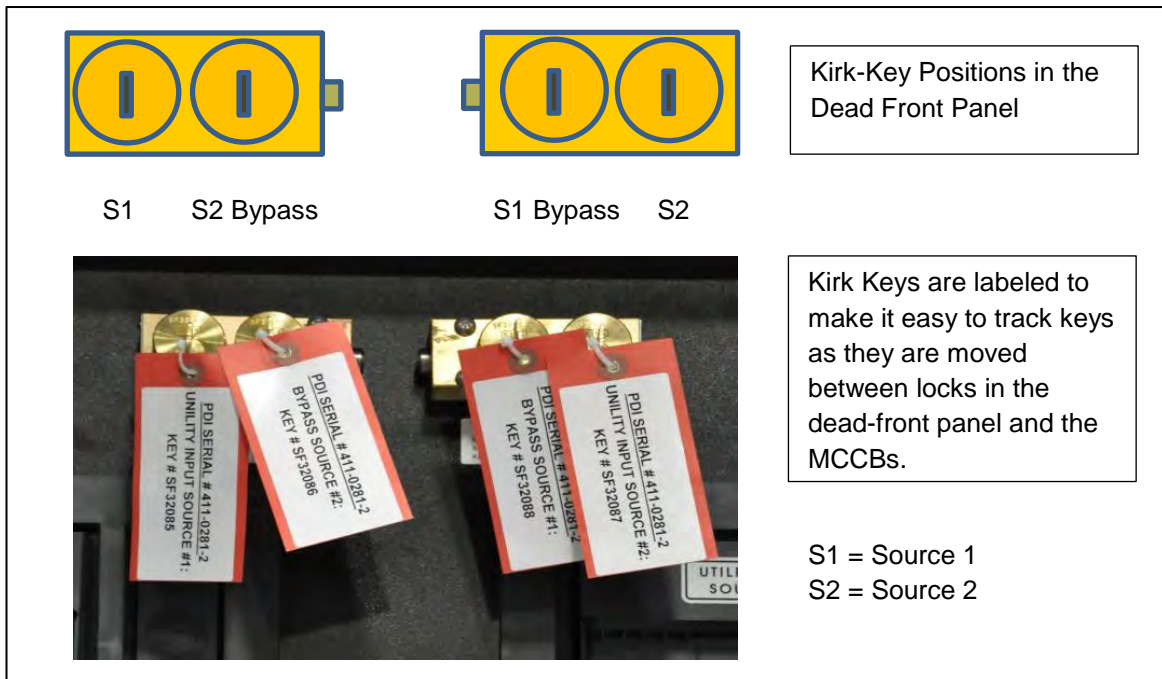The STS has Kirk-Key lock-outs to prevent these cross-connects occurring.

1.1 Dead-Front Kirk Key Layout

Customers with other WaveStar Static Transfer Switches should note that these bypass procedures are different than bypass procedures for Eaton PDI STSs of different amperages. Unlike MCCBs on other Eaton PDI STSs, the Bypass MCCBs on the 1000A STS are available with only a single Kirk-Key lock, which does not provide sufficient interlock control. To provide the needed interlocks, four (4) Kirk Key locks are installed above the MCCBs on the dead-front panel. Kirk Keys are moved between the dead-front panel locks and the MCCBs or MCSWs for the bypass procedures.

The dead-front Kirk Keys locks are labeled (Figure 1) as follows:

- Left Kirk-Key block: Utility Input Source #1 (left key), Bypass Source #2 (right key)
- Right Kirk-Key block: Bypass Source #1 (left key), Utility Input Source #2 (right key)

Figure 1. Kirk-Key Layout in Dead Front Panel

S1   S2 Bypass   S1 Bypass   S2

Kirk-Key Positions in the Dead Front Panel

Kirk Keys are labeled to make it easy to track keys as they are moved between locks in the dead-front panel and the MCCBs.

S1 = Source 1
S2 = Source 2

1.2 Static Mode Key Positions

The normal operating position of the 1000A Static Transfer Switch is static mode in which both input sources are enabled (Source 1 and Source 2 MCCBs are closed), allowing the STS to switch between them, and Isolation MCCBs or MCSWs are closed,. The static mode key configuration is shown in Figure 2.

Figure 2. Static Mode: Kirk Key Positions and MCCB States

Source 1

Source 2

S1 and S2 MCCBs are closed (ON).

S1 Key is in S1 MCCB key lock.
S2 Key is in S2 MCCB key lock.

Bypass Source 1 and Bypass Source 2 MCCBs are both locked open (OFF) without keys in locks.

Bypass Source 1

Bypass Source 2

Isolation switches are shown open here but are closed in Static Mode operation.

Isolation Switches
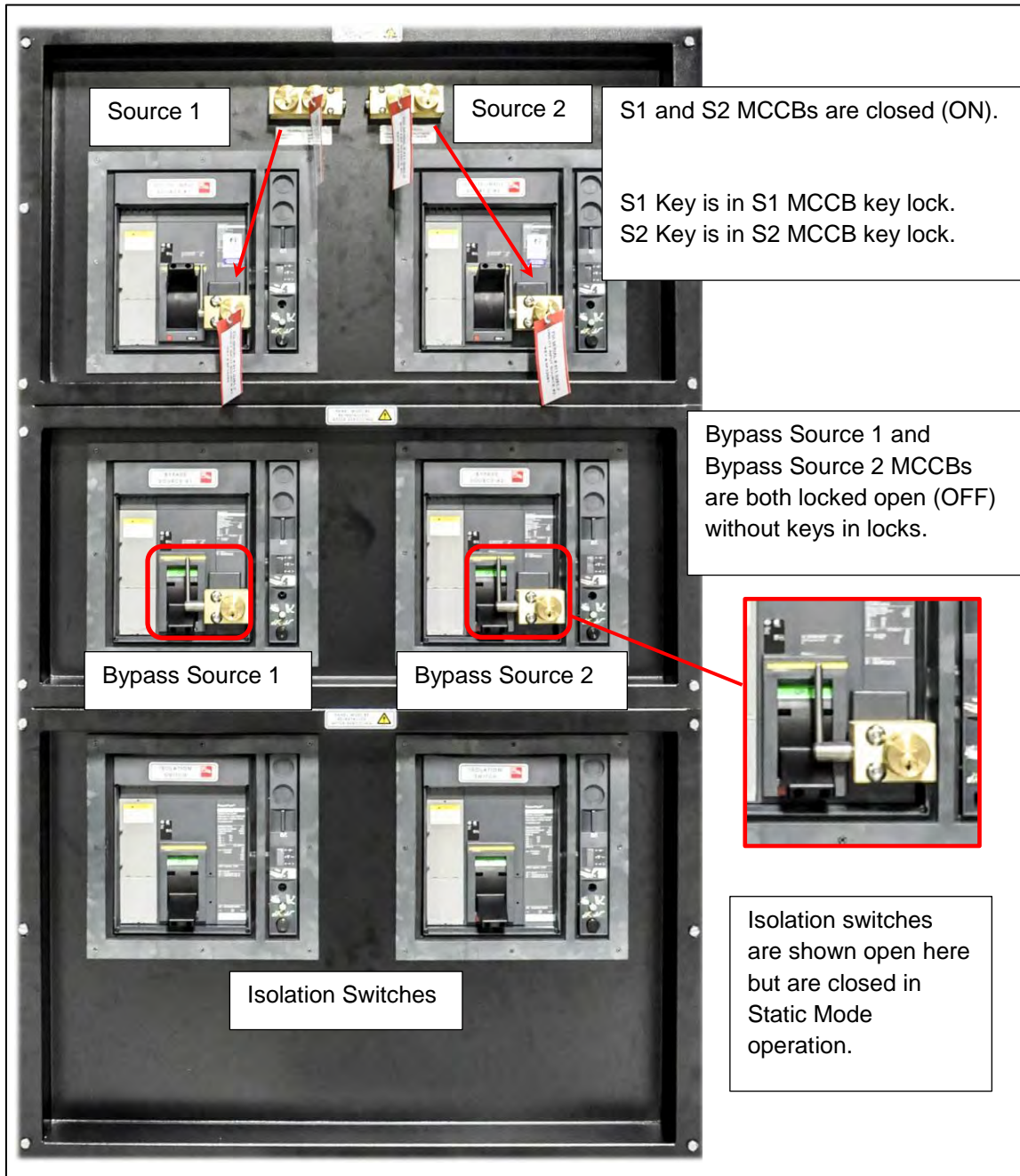
1.3 Using This Manual

Read this manual thoroughly and make sure you understand the procedures before you attempt to install, set up, operate or carry out any maintenance work on this Eaton product.

Read through each procedure before beginning the procedure. Perform only those procedures that apply to the unit being installed or operated.

1.4 Conventions Used in This Manual

This manual uses these type conventions:

> ℹ️ **NOTE** Some conventions only apply to display screens (if installed).

- **Bold type** highlights important concepts in discussions, key terms in procedures, and menu options, or represents a command or option that you type or enter at a prompt.
- *Italic type* highlights notes and new terms where they are defined.
- Screen type represents information that appears on the screen or LCD.

Icon	Description
ℹ️	Information notes call attention to important features or instructions.
[Keys]	Brackets are used when referring to a specific key, such as [Enter] or [Ctrl].

1.5 Symbols, Controls, and Indicators

The following are examples of symbols used on the STS or accessories to alert you to important information:

RISK OF ELECTRIC SHOCK - Observe the warning associated with the risk of electric shock symbol.

CAUTION: REFER TO OPERATOR'S MANUAL - Refer to your operator's manual for additional information, such as important operating and maintenance instructions.

This symbol indicates that you should not discard waste electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.

1.6 Getting Help

If help is needed with any of the following:

- Scheduling initial startup
- Regional locations and telephone numbers
- A question about any of the information in this manual

- A question this manual does not answer

Please call the Eaton Help Desk at:

United States:**1-800-843-9433** or **1-919-870-3028**

Canada:**1-800-461-9166 ext 260**

All other countries:**Call your local service representative**

Please use the following e-mail for manual comments, suggestions, or to report a technical error in this manual.

E-ESSDocumentation@eaton.com

Eaton PDI Static Transfer Switch website: Eaton PDI Static Transfer Switch

1.7 Warranty and End User License Agreement

To view the warranty please click on the link or copy the address to download from the Eaton website:

Eaton Product Warranty

https://www.eaton.com/content/dam/eaton/products/backup-power-ups-surge-it-power-distribution/backup-power-ups/portfolio/eaton-three-phase-ups-warranty.pdf

https://www.eaton.com/content/dam/eaton/products/backup-power-ups-surge-it-power-distribution/backuppower-ups/portfolio/eaton-three-phase-ups-warranty.pdf

To view the End User License Agreement please click on the link or copy the address to download from the Eaton website:

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Chapter 2 Bypass Procedures

2.1   Bypass 1 Procedure

2.1.1   Overview

At the start of this procedure, Source 1 is assumed the active power source. Refer to the STS Monitor's One-Line mimic on the STS Home screen to verify that Source 1 (SCR 1) is powering the load.

If going to bypass on Bypass Source 1:

1. Turn OFF (open) Source 2 and lock out. (This ensures that the source on the opposite side is not active while Bypass 1 is active.)

2. Turn ON (close) Bypass Source 1. (Bypass Source 1 and 2 cannot be active together. The bar on the dead front panels prevents you removing both Bypass 1 and Bypass 2 keys at once.)

3. Turn OFF (open) the Isolation MCCBs or MCSWs.

4. Turn OFF (open) Source 1 and lock out.

2.1.2   Going to Bypass 1

Figure 3. Open Source 2 MCCB and Lock
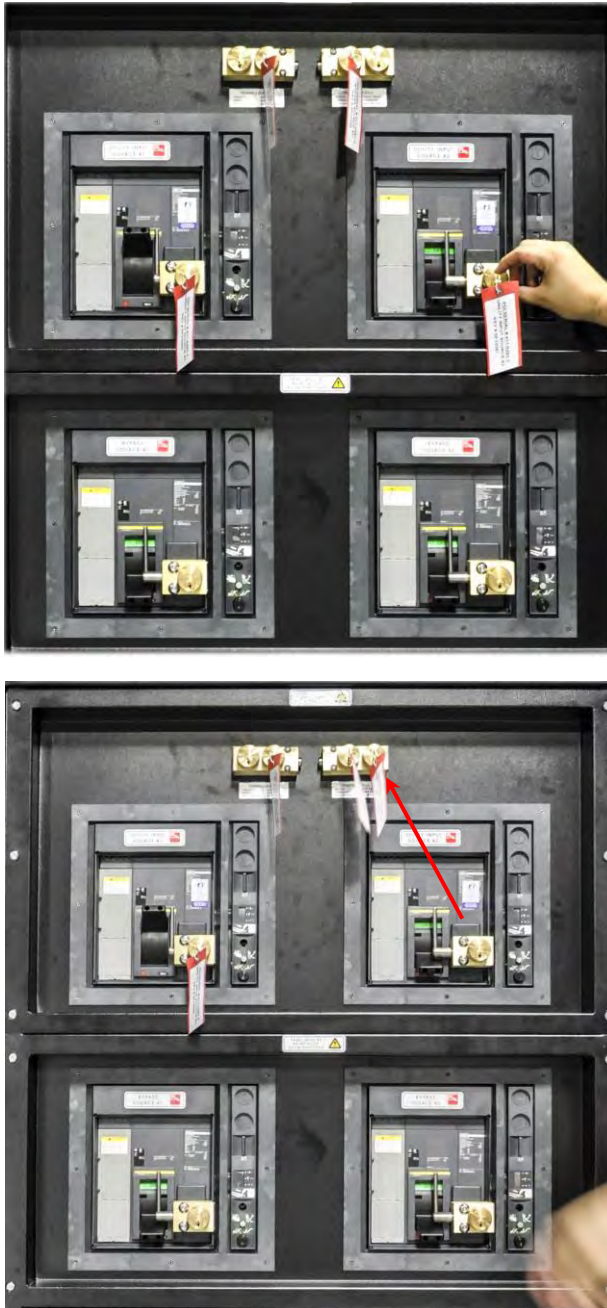
Open Source 2 and lock OFF:

1. **Open** (turn OFF) **Source 2** MCCB.

2. Lock Source 2: Turn **S2 key** to extend locking bar on the breaker.

Source 2 is now locked OFF, but Source 1 is active.

3. Remove **S2 Key** from Source 2 lock.

Insert **S2 Key** in **S2 key position** in dead front panel Kirk-Key blocks.
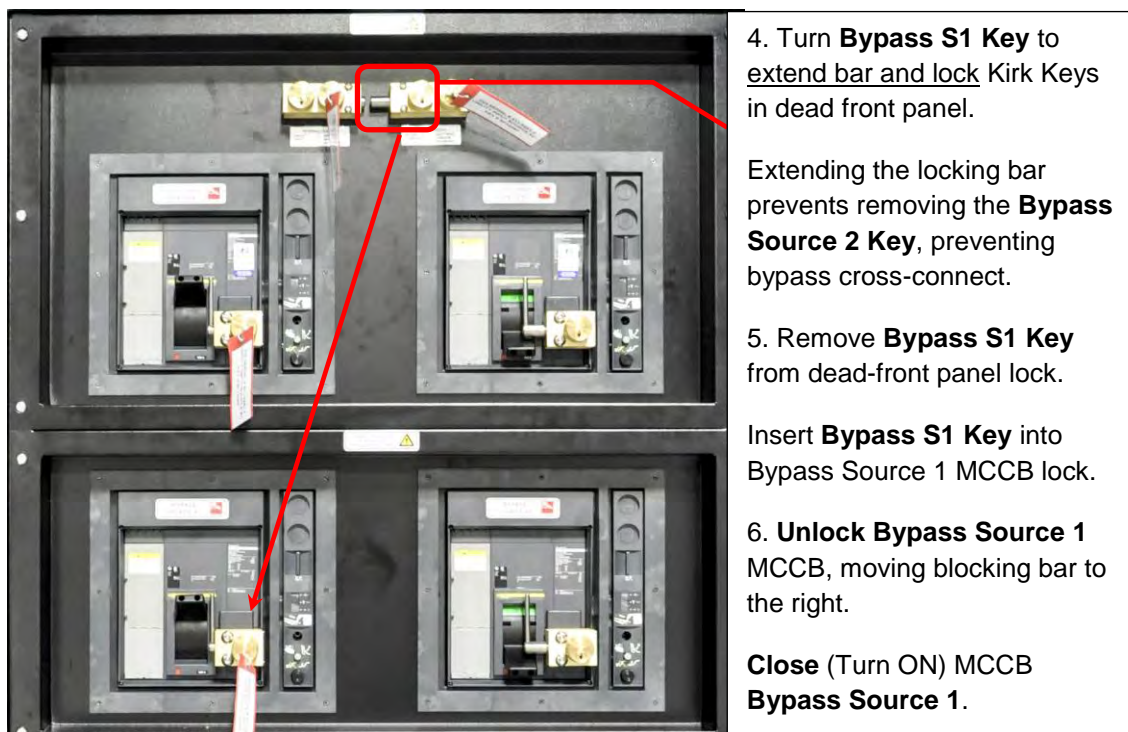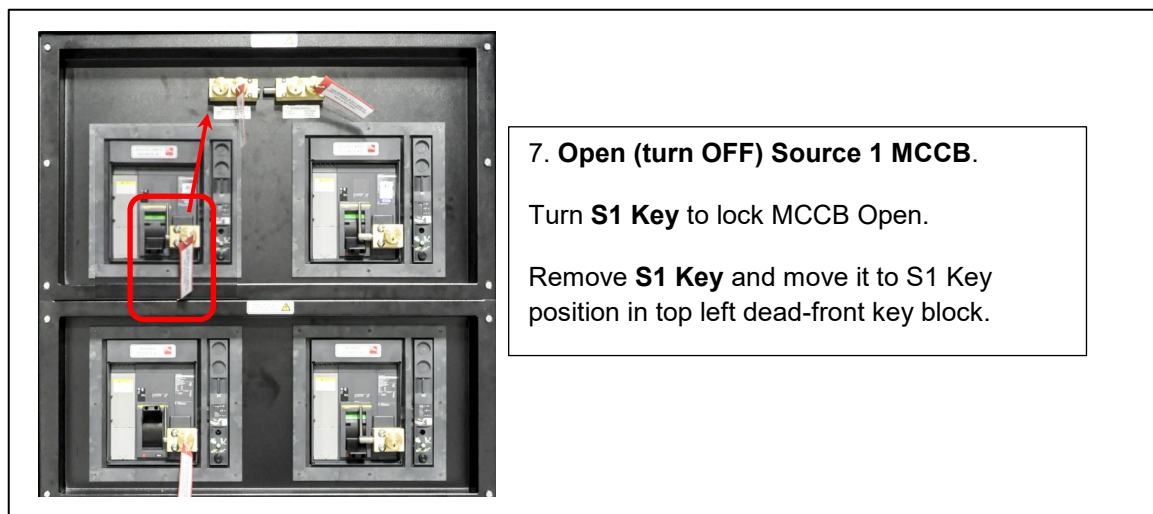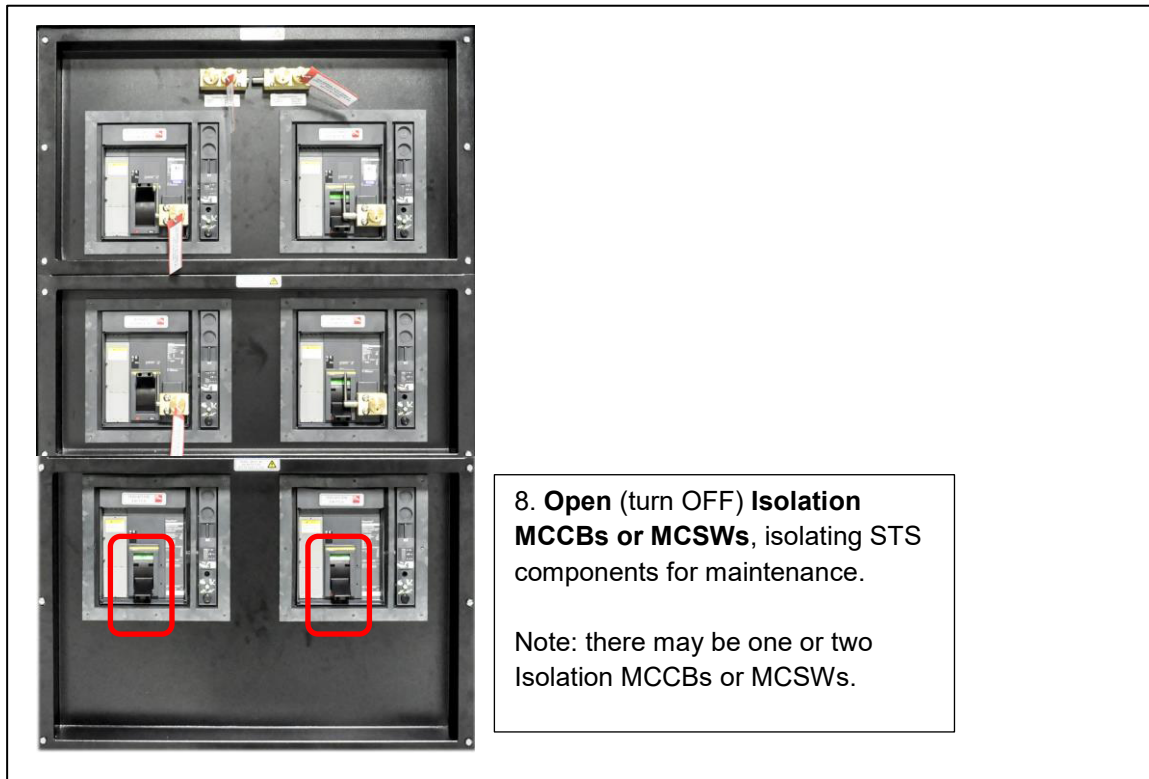
Figure 4. Close Bypass Source 1

4. Turn **Bypass S1 Key** to extend bar and lock Kirk Keys in dead front panel.

Extending the locking bar prevents removing the **Bypass Source 2 Key**, preventing bypass cross-connect.

5. Remove **Bypass S1 Key** from dead-front panel lock.

Insert **Bypass S1 Key** into Bypass Source 1 MCCB lock.

6. **Unlock Bypass Source 1** MCCB, moving blocking bar to the right.

Close (Turn ON) MCCB **Bypass Source 1**.

Figure 5. Open Source 1 MCCB

7. **Open (turn OFF) Source 1 MCCB**.

Turn **S1 Key** to lock MCCB Open.

Remove **S1 Key** and move it to S1 Key position in top left dead-front key block.

    d.   Insert key into Bypass Source 1 position in top Kirk-Key blocks on dead front panel.

    e.   Turn key to retract locking bar.

4.   Make Source 2 active:

    a.   Remove Source 2 key from Source 2 key position in top key blocks in dead front panel.

    b.   Insert key into Source 2 MCCB lock.

    c.   Turn key to retract locking bar.

    d.   Close S2 MCCB.

STS is now in Static Mode.

2.3   Bypass 2 Procedure

2.3.1   Bypass 2 Procedure Overview

Bypass 2 Procedure is symmetric to the Bypass 1 Procedure.

At the start of this procedure, Source 2 is assumed the active power source. Refer to the STS Monitor's One-Line mimic on the STS Home screen to verify that Source 2 (SCR 2) is powering the load. If going to bypass on Bypass Source 2:

1.   Turn OFF Source 1. (This insures that the opposite source is not active while Bypass 2 is active.)

2.   Turn ON (close) Bypass Source 2. (Bypass Source 1 and 2 cannot be active together. The bar on the dead front panels prevents you removing both Bypass 1 and Bypass 2 keys at once.)

3.   Turn OFF (open) the Isolation MCCBs or MCSWs.

4.   Turn OFF (open) Source 2 and lock out.

2.3.2   Going to Bypass 2

1.   Open Source 1 MCCB and lock OFF:

    a.   Open (turn OFF) Source 1 MCCB.

    b.   Lock Source 1: Turn S1 key to extend locking bar.

    c.   Source 1 is now disabled, but Source 2 is active.

    d.   Remove S1 key from Source 1 lock.

    e.   Insert S1 key in S1 key position in dead-front panel Kirk-Key blocks.

2.   Close Bypass Source 2:

    a.   Turn Bypass S2 key to extend bar and lock Kirk Keys in dead-front panel. (Extending the locking bar prevents removing the Bypass S1 key, preventing bypass cross-connect.)

    b.   Remove Bypass S2 key from dead-front panel lock.

    c.   Insert Bypass S2 key into Bypass Source 2 MCCB lock.

    d.   Unlock Bypass Source 2 MCCB, moving blocking bar to the right.

    e.   Close (Turn ON) MCCB Bypass Source 2.

3.   Open Source 2 MCCB:

    a.   Open (turn OFF) S2 MCCB.

    b.   Turn S2 key to lock MCCB open.

    c.   Remove S2 key and move it to S2 key position in top left dead-front key block.

4. Open (turn OFF) Isolation MCCBs or MCSWs. (There may be one or two Isolation MCCBs or MCSWs.)

2.3.3 Return from Bypass 2 to Static Mode

1. Close Isolation MCSWs or MCCBs.

2. Make Source 2 active:

   a. Remove Source 2 Key from top Kirk-Key block on top of dead-front panel.

   b. Insert Source 2 Key into S2 lock on Source 2 MCCB.

   c. Turn S2 Key to open lock on Source 2 MCCB.

   d. Close Source 2 MCCB.

   e. Verify that Source 2 (SCR 2) is active: check the one-line image on the STS Monitor on **Home** screen to verify that **SCR 2** (Source 2) is the active path.

⚠ CAUTION

DO NOT PROCEED IF SOURCE 2 IS NOT ACTIVE! You will drop the load when you turnoff Bypass Source 2.

3. Turn OFF Bypass Source 2:

   a. Open (turn OFF) Bypass Source 2 MCCB.

   b. Turn key in Bypass Source 2 to lock open.

   c. Remove key from Bypass Source 2 MCCB lock.

   d. Insert key into Bypass Source 2 position in top Kirk-Key blocks on dead front panel.

   e. Turn key to retract locking bar.

4. Make Source 1 active:

   a. Remove Source 1 key from Source 1 key position in top key blocks in dead front panel.

   b. Insert key into Source 1 MCCB lock.

   c. Turn key to retract locking bar.

   d. Close S1 MCCB.

STS is now in Static Mode.

2.4 Help Assistance for Bypass

The **Help** screen also has instructions to guide an operator through steps for going to Bypass 1 or 2 or returning from either Bypass to Normal operation (). When the system senses a step has been completed, the Help screen proceeds to the next step. The Voice Unit also calls out each step as the operator executes the procedure.

Figure 7. Help for Bypass

Help checklists guide an operator through the steps of going to bypass. There are checklists for going to Bypass 1 and 2 and returning to Normal STS operation.

Touch **Help**.
Help overlays the **Operator** and **Transfers** panels on the Home screen.

The process of going to bypass will normally generate alarms, for example, change of breaker status.

The **Help** panel indicates completion of the procedure ("In Bypass 1").

The **Status** panel shows "Load on Bypass!!!"

Bypass Procedures

Chapter 3 Eaton Service Contracts

Eaton Service contracts help to provide the added insurance that the reliability of your critical power systems is intact. By following our stringent maintenance procedures, Eaton's factory trained Customer Support Engineers provide the added assurance for the availability of critical systems, thereby maximizing the company's profitability. See below for further details.

3.1 The Service Promise

With factory-trained technicians in every major city in North America, Eaton can respond rapidly and provide on-site assistance in emergency down time situations. Eaton provides telephone support 24 hours a day, 7 days a week with a direct line to Service (1-800-843-9433).

3.2 Preventive Maintenance

During a preventive maintenance visit, Eaton technicians inspect, test, calibrate, update and clean components, as well as update software as applicable. You'll receive a report at the end of the visit detailing the results of the inspection and specific recommendations for remedial actions, proactive replacements, and upgrades.

3.3 Eaton Provides Flexibility and Commitment

- We understand that service plans are not "one size fits all." That's why we offer a broad range of service options, designed to meet the varied requirements and applications of businesses of all shapes and sizes. Eaton can modify your contract on variables such as number of PM visits per year, scope of coverage, response time and length of contract.

- Eaton employs 250+ field technicians with an average tenure of more than ten years. Eaton CSEs are experts on Eaton products and receive ongoing product training and certification. Our technicians have expertise in power, electrical engineering, software and connectivity, batteries, UPSs and related products, and can deliver advanced troubleshooting and a reduced mean time to repair.

- When you rely on an Eaton service plan, rest assured that every factory-trained field technician stocks a solid inventory of parts to remedy emergencies.

3.4 Time and Materials

In most cases the customer will be covered by startup service or Maintenance Contracts, however, there may be times when the customer needs Eaton service and lacks the benefits that these two packages provide. Therefore, Eaton provides Time and Material coverage for those in need of our customer support engineers.