

Circuit Card and Front Panel Assembly Replacement

Table of Contents

Section	Page	Section	Page
Introduction		Safety Precautions	4
Qualified Persons	2	Overview	5
Read this Instruction Sheet	2	Circuit Card and Front Panel Assembly Replacement Procedure	6
Retain this Instruction Sheet	2	Appendix	11
Proper Application	2		
Warranty	2		
Safety Information			
Understanding Safety-Alert Messages	3		
Following Safety Instructions	3		
Replacement Instructions and Labels	3		



Introduction

Qualified Persons

WARNING

Only qualified persons who are knowledgeable in the installation, operation, and maintenance of 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 who is 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 installing or operating a Micro-AT Source-Transfer Control. Familiarize yourself with the Safety Information and Safety Precautions on pages 3 and 4. The latest version of this publication is available online in PDF format at sandc.com/en/support/product-literature/.

Retain this Instruction Sheet

This instruction sheet is a permanent part of the Micro-AT Source-Transfer Control. Designate a location where you can easily retrieve and refer to this publication.

Proper Application

WARNING

The equipment in this publication must be selected for a specific application. The application must be within the ratings furnished for the equipment.

Warranty

The warranty and/or obligations described in S&C's Price Sheet 150, "Standard Conditions of Sale—Immediate Purchasers in the United States," (or Price Sheet 153, "Standard Conditions of Sale—Immediate Purchasers Outside the United States"), plus any special warranty provisions, as set forth in the applicable product-line specification bulletin, are exclusive. The remedies provided in the former for breach of these warranties shall constitute the immediate purchaser's or end user's exclusive remedy and a fulfillment of the seller's entire liability. In no event shall the seller's liability to the immediate purchaser or end user exceed the price of the specific product that gives rise to the immediate purchaser's or end user's claim. All other warranties, whether express or implied or arising by operation of law, course of dealing, usage of trade or otherwise, are excluded. The only warranties are those stated in Price Sheet 150 (or Price Sheet 153), and **THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ANY EXPRESS WARRANTY OR OTHER OBLIGATION PROVIDED IN PRICE SHEET 150 (OR PRICE SHEET 153) IS GRANTED ONLY TO THE IMMEDIATE PURCHASER AND END USER, AS DEFINED THEREIN. OTHER THAN AN END USER, NO REMOTE PURCHASER MAY RELY ON ANY AFFIRMATION OF FACT OR PROMISE THAT RELATES TO THE GOODS DESCRIBED HEREIN, ANY DESCRIPTION THAT RELATES TO THE GOODS, OR ANY REMEDIAL PROMISE INCLUDED IN PRICE SHEET 150 (OR PRICE SHEET 153).**


Understanding Safety-Alert Messages

Several types of safety-alert messages may appear throughout this instruction sheet and on labels and tags attached to the Micro-AT Source-Transfer Control. Familiarize yourself with these types of messages and the importance of these various 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 you do not understand any portion of this instruction sheet and need assistance, contact your nearest S&C Sales Office or S&C Authorized Distributor. Their telephone numbers are listed on S&C’s website sandc.com, or call the S&C Global Support and Monitoring Center at 1-888-762-1100.

NOTICE	
Read this instruction sheet thoroughly and carefully before installing a Micro-AT Source-Transfer Control.	

Replacement Instructions and Labels

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

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

DANGER



Micro-AT Source-Transfer Control operates equipment 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 a Micro-AT Source-Transfer Control 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.
3. **PERSONAL PROTECTIVE EQUIPMENT.** Always use suitable protective equipment, such as rubber gloves, rubber mats, hard hats, safety glasses, and 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. **OPERATING MECHANISM AND BASE.** Do not remove or disassemble operating mechanisms or remove access panels on the Micro-AT Source-Transfer Control unless directed by S&C Electric Company.
6. **ENERGIZED COMPONENTS.** Always consider all parts live until de-energized, tested, and grounded.
7. **MAINTAINING PROPER CLEARANCE.** Always maintain proper clearance from energized components.

⚠ CAUTION

The equipment covered by this publication must be selected for a specific application and it must be operated and maintained by qualified persons who are thoroughly trained and who understand any hazards that may be involved. This publication is written only for such qualified persons and is not intended to be a substitute for adequate training and experience in safety procedures for this type of equipment.

This publication provides instructions for replacing a circuit card or front panel assembly of a Micro-AT Source-Transfer Control when such replacement is indicated in Instruction Sheet 515-520, “Micro-AT Source-Transfer Controls: *Troubleshooting Guide*.”

When replacing a circuit card or front panel assembly, precautions should be taken to prevent static charges, which can damage not only the existing component but the replacement component as well. Although spare circuit cards and front panel assemblies are furnished in static-shielded bags, the use of a static-dissipative work surface, such as the 3M 8501 Portable Static-Dissipative Field Service Kit (available from S&C as catalog number 9931-218), is highly recommended. This kit includes a static-dissipative work mat and a ground cord assembly with a wrist strap for connecting the mat—along with the person changing the component—to the same ground point.

Circuit Card and Front Panel Assembly Replacement Procedure

Use the following procedure to replace the circuit card and front panel assembly on a Micro-AT Source-Transfer Control:

- STEP 1.** Place the MANUAL/AUTOMATIC operation selector switch on the Micro-AT Source-Transfer Control in the **Manual** position.
- STEP 2.** Decouple each operator from its interrupter switch, unless temporary service interruptions are permissible. Refer to the S&C instruction sheet furnished with the pad-mounted gear or metal-enclosed switchgear or, in weatherproof enclosure applications, the S&C instruction sheet furnished with the switch operators.
- STEP 3.** ***For pad-mounted gear and metal-enclosed switchgear applications:*** If necessary, remove the appropriate cover assembly to access the input plug. See Figure 1.

Note: In metal-enclosed switchgear originally furnished with a Type AT-2 or Type AT-3 Source Transfer Control, as well as metal-enclosed switchgear manufactured after June 1993, the input plug is accessible by drawing out the Micro-AT Source-Transfer Control from the switchgear-bay stile. Remove the input plug from the input receptacle and immediately transfer it to the shorting receptacle.

NOTICE

Failure to immediately place the input plug on the shorting receptacle may result in damage to the voltage sensors and voltage limiters that will render the automatic-transfer scheme inoperative.

In pad-mounted gear applications, this procedure short-circuits and isolates the secondaries of the voltage sensors and also isolates the current sensors used with the optional **Overcurrent Lockout** feature, if furnished. In metal-enclosed switchgear applications, this procedure short-circuits and isolates the secondaries of the voltage sensors, if furnished, and isolates the voltage transformers. In Source-Transfer Vista® Underground Distribution Switchgear Applications, this procedure isolates the voltage sensors and the voltage transformers.

For weatherproof enclosure applications: Remove the voltage-transformer secondary fuses.

- STEP 4.** Open up the static-dissipative work mat in front of the Micro-AT Source-Transfer Control. See Figure 2 on page 7.

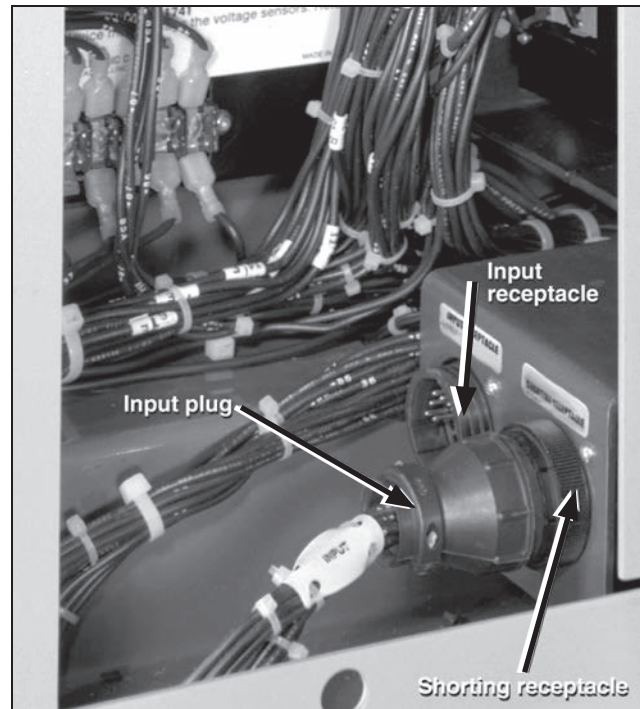


Figure 1. Transferring the input plug to the shorting receptacle. A typical pad-mounted gear application is shown; a metal-enclosed switchgear application is similar.

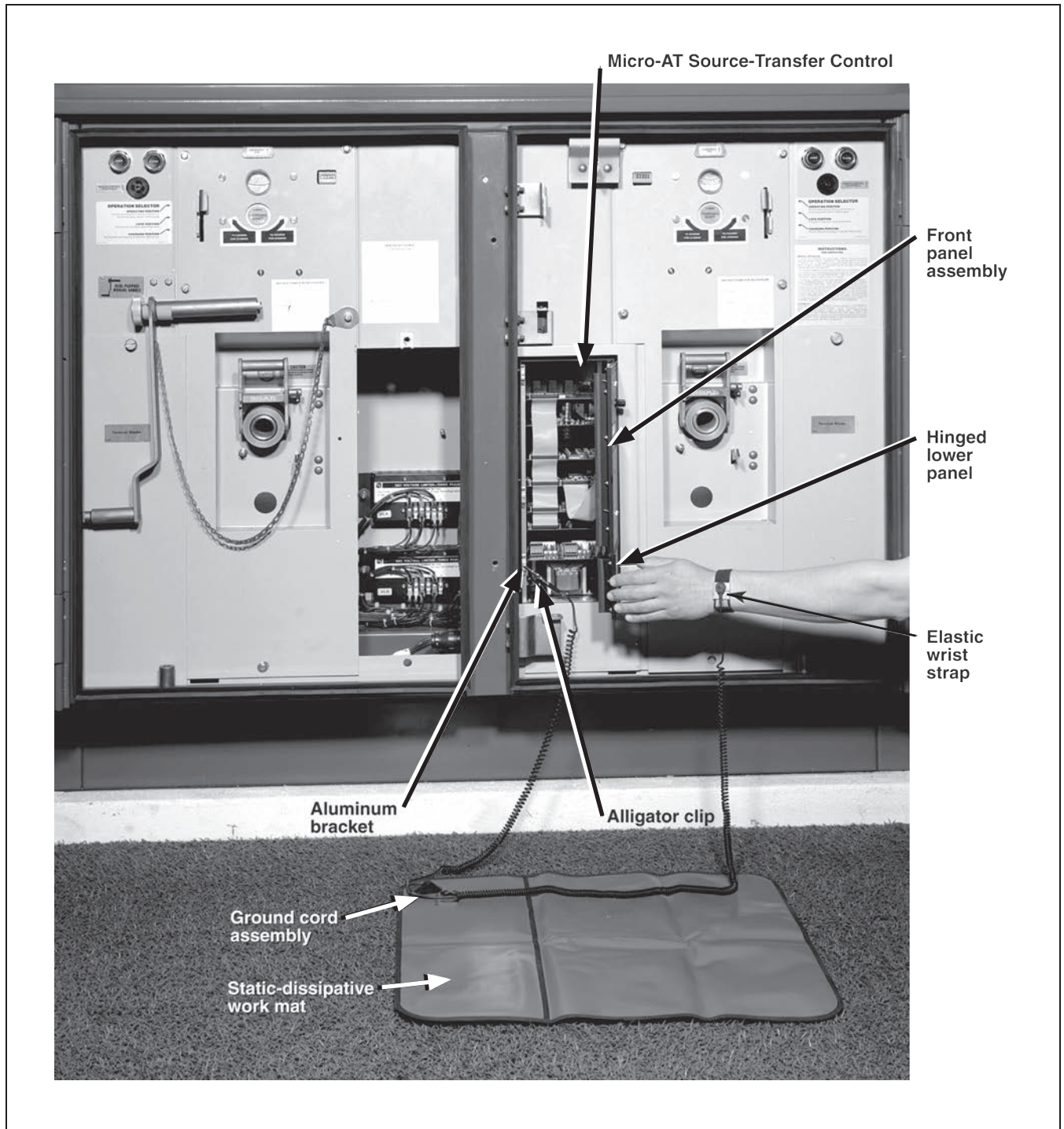


Figure 2. Setting up a 3M 8501 Portable Static-Dissipative Field Service Kit.

Circuit Card and Front Panel Assembly Replacement Procedure

NOTICE

If a circuit card or front panel assembly is to be replaced in pad-mounted gear originally furnished with a Type AT-12 Source-Transfer Control—the Micro-AT Source-Transfer Control is on the left-hand side of the low-voltage control compartment in such installations, as shown in Figure 4 on page 12—omit Steps 5 through 21 and, instead, follow the step-by-step procedure outlined in the Appendix on page 11.

STEP 5. Loosen the two screws that retain the front panel assembly and swing open the front panel assembly. Also, loosen the screw that retains the hinged lower panel and swing open the lower panel. See Figure 2 on page 7.

STEP 6. Attach the ground cord assembly onto the work mat by means of the large black snap. See Figure 2 on page 7.

STEP 7. Attach the alligator clip on the shorter of the two wire leads to one of the three aluminum brackets on the source-transfer control enclosure. See Figure 2 on page 7. The lowest bracket is generally the most convenient to use.

STEP 8. Slip on the elastic wrist strap and attach the band so it fits snugly, but comfortably. Attach the longer of the two wire leads to the wrist band by means of the small plastic snap. See Figure 2 on page 7.

STEP 9. *If a circuit card is to be replaced:* Replace the affected circuit card using the following procedure. See Figure 3.

Note: In most instances it will be necessary to carefully disconnect one or more of the ribbon connector plugs from their receptacles on the circuit cards to access a particular circuit card.

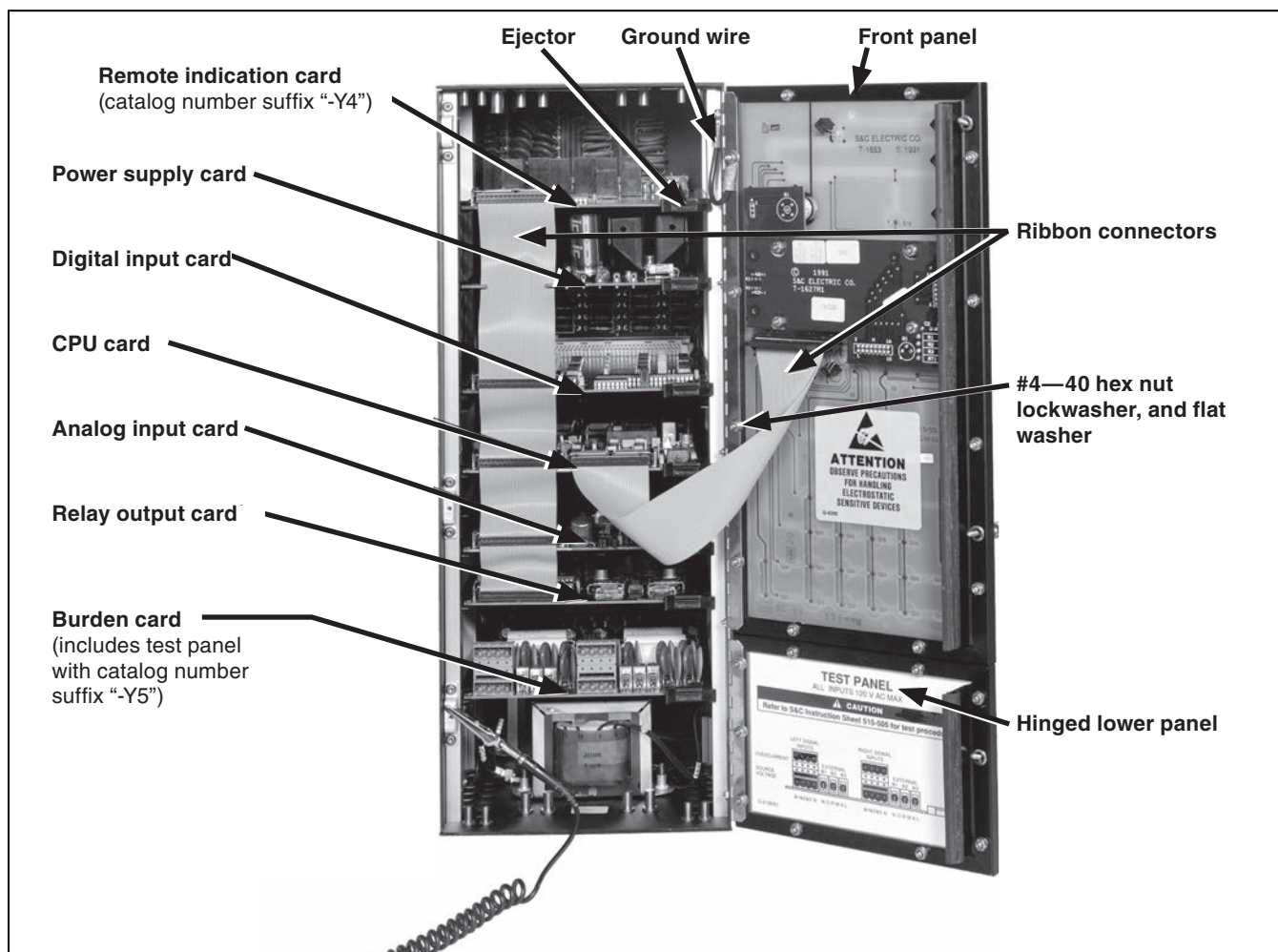


Figure 3. Layout of circuit cards in a Micro-AT Source-Transfer Control.

- (a) Pull the ejector on the right edge of the affected circuit card to withdraw the circuit card connector from its receptacle on the source-transfer control enclosure. Then, place the circuit card on the static-dissipative work mat.
- (b) Remove the replacement circuit card from its static-shielded bag. Plug in the replacement circuit card, making sure the connector on the circuit card is fully inserted in its receptacle on the source-transfer control enclosure.
- (c) Carefully reconnect the ribbon connector plugs to their receptacles on the circuit cards, making sure each connector is fully inserted.
- (d) Insert the replaced circuit card in the static-shielded bag.

STEP 10. *If the front panel assembly is to be replaced:*
Replace the front panel assembly using the following procedure. See Figure 3 on page 8.

STEP 11. Carefully disconnect the ribbon connector plug from the receptacle on the back of the front panel assembly.

- (a) Remove and retain the four #4–40 hex nuts, lockwashers, and flat washers that attach the front panel assembly to the hinge. Support the front panel assembly before removing the last set of hardware to prevent the panel from falling. Then, place the front panel assembly on the static-dissipative work mat.
- (b) Remove the replacement front panel assembly from its static-shielded bag.
- (c) Attach the replacement front panel assembly to the hinge using the four #4–40 hex nuts, lockwashers, and flat washers removed earlier. Be sure to attach the ground wire as shown.
- (d) Carefully reconnect the ribbon connector to the receptacle on the back of the replacement front panel assembly, making sure it is fully inserted.
- (e) Insert the replaced front panel assembly in the static-shielded bag.

STEP 12. Remove the wrist strap and detach the ground cord assembly lead from the aluminum bracket on the source-transfer control enclosure. Then, remove the static-dissipative kit from the work area.

STEP 13. Close the front panel assembly and tighten the two screws that retain it. Also, close the lower panel and tighten the screw that retains it.

STEP 14. *For pad-mounted gear and metal-enclosed switchgear applications:* Remove the input plug from the shorting receptacle and immediately transfer it to the input receptacle. See Figure 1 on page 6.

NOTICE

Failure to immediately place the input plug on the shorting receptacle may result in damage to the voltage sensors and voltage limiters that will render the automatic-transfer scheme inoperative.

For weatherproof enclosure applications:
Replace the voltage-transformer secondary fuses.

STEP 15. *If the CPU card was replaced:* Refer to S&C Instruction Sheet 515-500 or 515-600 and perform all the programming steps outlined in the “Field Adjustment and Programming” section.

STEP 16. *If the analog input card or the burden card was replaced:* Refer to S&C Instruction Sheet 515-500 or 515-600 and normalize the left and right sources following the procedure outlined in the “Field Adjustment and Programming” section.

STEP 17. Refer to Instruction Sheet 515-500 or 515-600 and perform the steps outlined in the “Operational Testing” section.

STEP 18. Place the MANUAL/AUTOMATIC operation selector switch on the Micro-AT Source-Transfer Control in the **Manual** position.

STEP 19. Couple each operator to its interrupter switch. Refer to the S&C instruction sheet furnished with the pad-mounted gear or metal-enclosed switchgear or, in weatherproof enclosure applications, the S&C instruction sheet furnished with the switch operators.

Circuit Card and Front Panel Assembly Replacement Procedure

STEP 20. Place the MANUAL/AUTOMATIC operation selector switch on the Micro-AT Source-Transfer Control in the **Automatic** position and confirm that the automatic-transfer READY indicator lamp is illuminated.

STEP 21. Replace any cover assemblies that were removed. Close and padlock the gear or weatherproof enclosure and return it to service.

STEP 22. To obtain repair service for the replaced component, perform the following:

Contact your local S&C Representative for a Return Authorization and Flat-Rate Repair quotation.

NOTICE

If a circuit card or front panel assembly is to be replaced in pad-mounted gear originally furnished with a Type AT-12 Source-Transfer Control—the Micro-AT Source-Transfer Control is on the left-hand side of the low-voltage control compartment in such installations, as shown in Figure 4 on page 12. Follow the step-by-step procedure outlined below after having completed Steps 1 through 4.

- STEP 1.** With the access cover assembly on the right-hand side of the low-voltage control compartment removed, as shown in Figure 5 on page 13, loosen the two screws that retain the door assembly of the source-transfer control enclosure and swing open the door assembly. See Figure 5, inset.
- STEP 2.** Attach the ground cord assembly onto the work mat by means of the large black snap. See Figure 2 on page 7.
- STEP 3.** Attach the alligator clip on the shorter of the two wire leads to one of the three aluminum brackets on the source-transfer control enclosure. See Figure 5, inset, on page 13. The lowest bracket is generally the most convenient to use.
- STEP 4.** Slip on the elastic wrist strap and attach the band so it fits snugly, but comfortably. Attach the longer of the two wire leads to the wrist band by means of the small plastic snap. See Figure 2 on page 7.
- STEP 5.** *If a circuit card is to be replaced:* Replace the affected circuit card using the following procedure. See Figure 5, inset, on page 13. In most instances it will be necessary to carefully disconnect one or more of the ribbon connector plugs from their receptacles on the circuit cards to access a particular circuit card.
- Pull the ejector on the right edge of the affected circuit card to withdraw the circuit card connector from its receptacle on the source-transfer control enclosure. Then, place the circuit card on the static-dissipative work mat.
 - Remove the replacement circuit card from its static-shielded bag. Plug in the replacement circuit card, making sure the connector on the circuit card is fully inserted in its receptacle on the source-transfer control enclosure.
 - Carefully reconnect the ribbon connector plugs to their receptacles on the circuit cards, making sure each connector is fully inserted.

- Insert the replaced circuit card in the static-shielded bag.
- Proceed to Step 7.

STEP 6. *If the front panel assembly is to be replaced:* Replace the front panel assembly using the following procedure:

- With the access cover assembly on the left-hand side of the low-voltage control compartment removed, as shown in Figure 5 on page 13, remove and retain the four #8–32 hex nuts that secure the front panel assembly to the source-transfer control enclosure.
- Carefully disconnect the ribbon connector plug from the receptacle on the back of the front panel assembly. See Figure 6 on page 14. Then, place the front panel assembly on the static-dissipative work mat.
- Remove the replacement front panel assembly from its static-shielded bag.
- Carefully reconnect the ribbon connector to the receptacle on the back of the replacement front panel assembly, making sure it is fully inserted. See Figure 6 on page 14.
- Attach the replacement front panel assembly to the source-transfer control enclosure using the four #8–32 hex nuts removed earlier. See Figure 5 on page 13.
- Insert the replaced front panel assembly in the static-shielded bag.

STEP 7. Remove the wrist strap and detach the ground cord assembly lead from the aluminum bracket on the source-transfer control enclosure. Then, remove the static-dissipative kit from the work area.

STEP 8. Close the door assembly and tighten the two screws that retain it.

STEP 9. Remove the input plug from the shorting receptacle and immediately transfer it to the input receptacle. See Figure 1 on page 6.

NOTICE

Failure to immediately place the input plug on the shorting receptacle *may* result in damage to the voltage sensors and voltage limiters that will render the automatic-transfer scheme inoperative.

STEP 10. *If the CPU card was replaced:* Refer to S&C Instruction Sheet 515-500 and perform all the programming steps outlined in the “Field Adjustment and Programming” section.

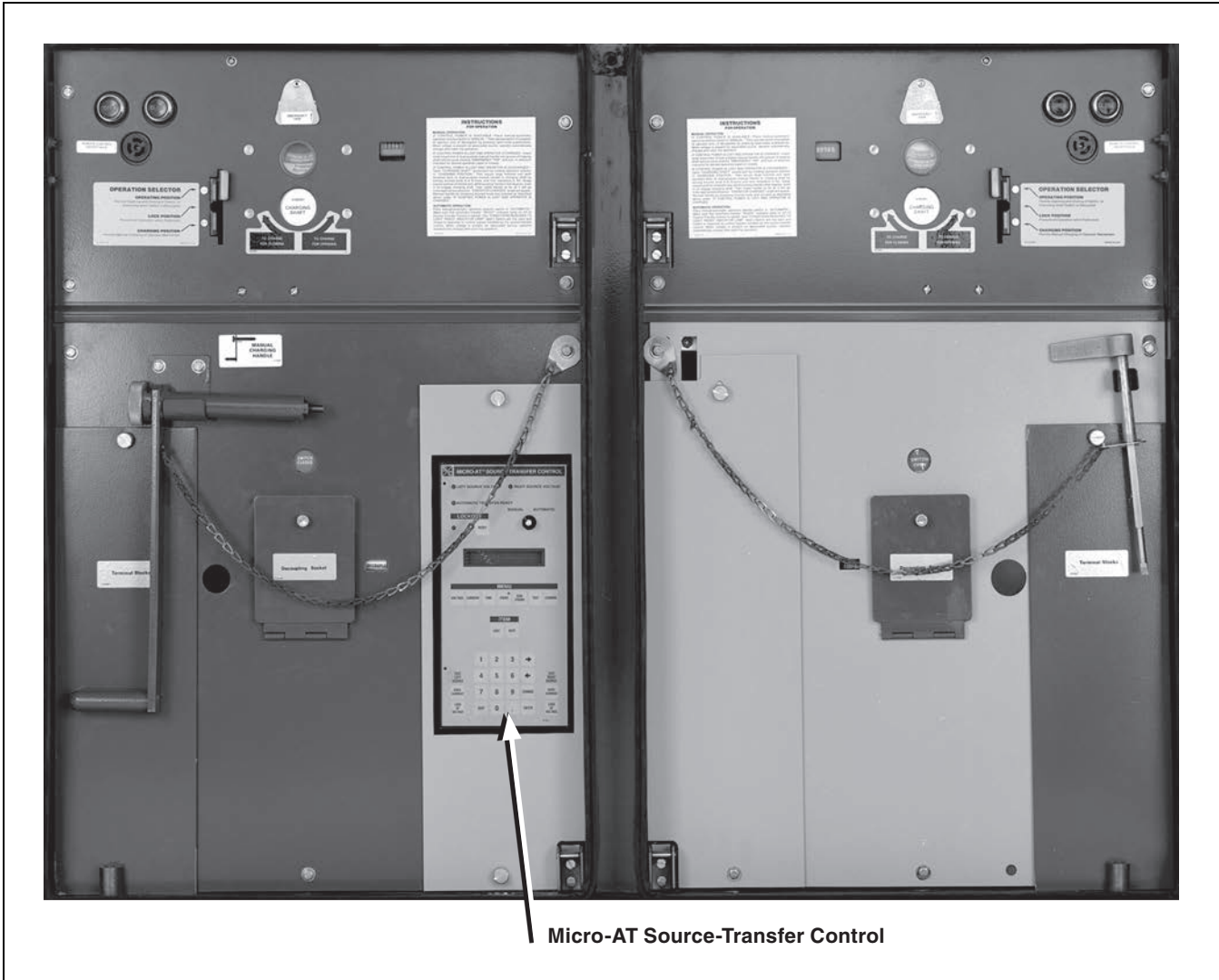


Figure 4. Pad-mounted gear originally furnished with a Type AT-12 Source-Transfer Control. Note the Micro-AT Source-Transfer Control is on the left-hand side of the low-voltage control compartment.

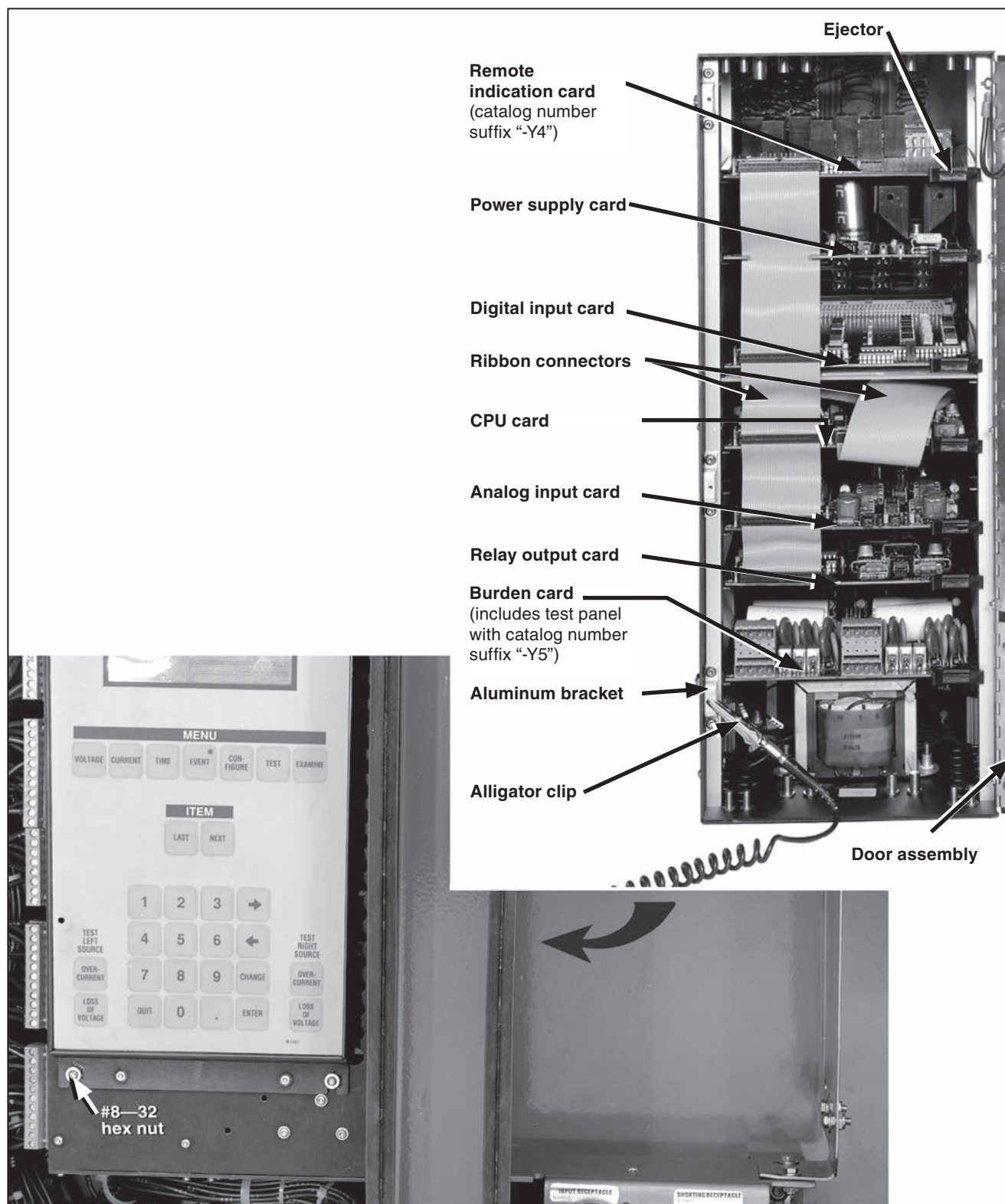


Figure 5. A circuit card and front panel assembly arrangement in pad-mounted gear originally furnished with a Type AT-12 Source-Transfer Control.

- STEP 11.** *If the analog input card or the burden card was replaced:* Refer to S&C Instruction Sheet 515-500 and normalize the left and right sources following the procedure outlined in the “Field Adjustment and Programming” section.
- STEP 12.** Refer to S&C Instruction Sheet 515-500 and perform the steps outlined in the “Operational Testing” section.
- STEP 13.** Place the MANUAL/AUTOMATIC operation selector switch on the Micro-AT Source-Transfer Control in the **Manual** position.
- STEP 14.** Couple each operator to its interrupter switch. Refer to the S&C instruction sheet furnished with the pad-mounted gear.
- STEP 15.** Place the MANUAL/AUTOMATIC operation selector switch on the Micro-AT Source-Transfer Control in the **Automatic** position and confirm the automatic-transfer READY indicator lamp is illuminated.
- STEP 16.** Replace the cover assemblies that were removed. Close and padlock the gear and return it to service.
- STEP 17.** To obtain repair service for the replaced component, perform the following:

Contact your local S&C Representative for a Return Authorization and Flat-Rate Repair quotation.



Figure 6. Disconnecting the ribbon connector plug from the receptacle on the front panel assembly in pad-mounted gear originally furnished with a Type AT-12 Source-Transfer Control.