ADB Airfield Solutions

Service Bulletin

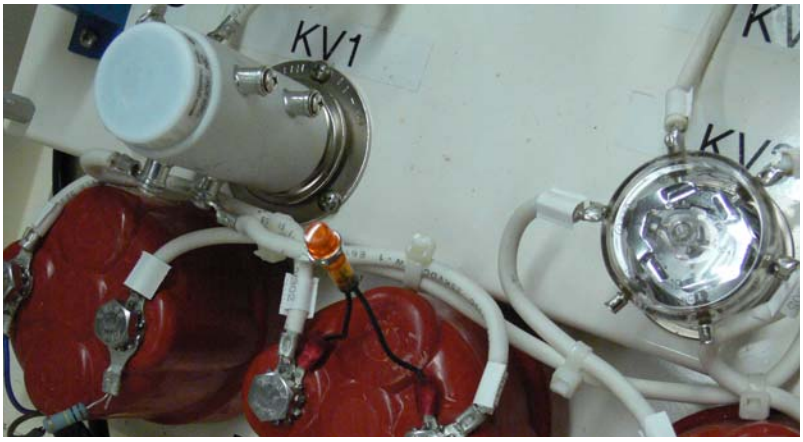
ALN154

Retain for future use.

Rev. A, 6/13/13

Circuit Selector 53B0166 relay replacement with kit 94A0611

KV1, KV3, KV5 or KV7



Disclaimer

This manual could contain technical inaccuracies or typographical errors. ADB Airfield Solutions reserves the right to revise this manual from time to time in the contents thereof without obligation of ADB Airfield Solutions to notify any person of such revision or change.

Details and values given in this manual have been compiled with care. They are not binding, however, and ADB Airfield Solutions disclaims any liability for damages or detriments suffered as a result of reliance on the information given herein or the use of products, processes or equipment to which this manual refers. No warranty is made that the use of the information or of the products, processes or equipment to which this manual refers will not infringe any third party's patents or rights.

Warranties

Products of ADB Airfield Solutions manufacturer are guaranteed against mechanical, electrical, and physical defects (excluding lamps) for a period of one year from the date of installation or a maximum of 18 months from date of shipment and are guaranteed to be merchantable and fit for the ordinary purposes for which such products are made.

ADB Airfield Solutions will correct by repair or replacement, at its option, equipment or parts which fail because of mechanical, electrical or physical defects, provided that the goods have been properly handled and stored prior to installation, properly installed and properly operated after installation, and provided further that Buyer gives ADB Airfield Solutions written notice of such defects after delivery of the goods to Buyer. Refer to the Safety section for more information on Material Handling Precautions and Storage precautions that must be followed.

ADB Airfield Solutions reserves the right to examine goods upon which a claim is made. Said goods must be presented in the same condition as when the defect therein was discovered. ADB Airfield Solutions furthers reserves the right to require the return of such goods to establish any claim.

ADB Airfield Solutions' obligation under this guarantee is limited to making repair or replacement within a reasonable time after receipt of such written notice and does not include any other costs such as the cost of removal of defective part, installation of repaired product, labor or consequential damages of any kind, the exclusive remedy being to require such new parts to be furnished.

ADB Airfield Solutions' liability under no circumstances will exceed the contract price of goods claimed to be defective. Any returns under this guarantee are to be on a transportation charges prepaid basis. For products not manufactured by, but sold by ADB Airfield Solutions, warranty is limited to that extended by the original manufacturer.

This is ADB Airfield Solutions' sole guarantee and warranty with respect to the goods; there are no express warranties or warranties of fitness for any particular purpose or any implied warranties of fitness for any particular purpose or any implied warranties other than those made expressly herein. All such warranties being expressly disclaimed.

Trademarks

General notice: other product names used here are for identification purposes only and may be trademarks of their respective companies.

Proprietary Information

This information carrier contains proprietary information, which shall not be used for other purposes than those for which it has been released, nor be reproduced or disclosed to third parties without the prior written consent of ADB Airfield Solutions.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, mechanical, photocopy, recording, or otherwise, without the prior written permission of ADB Airfield Solutions. No patent liability is assumed with respect to the use of the information contained herein. Neither is any liability assumed for damages resulting from the use of the information contained herein.

ADB Airfield Solutions shall not be liable to the purchaser of this product or third parties for damages, losses, costs, or expenses incurred by purchaser or third parties as a result of accident, misuse, or abuse of this product or unauthorized modifications, repairs, or alterations to this product. ADB Airfield Solutions shall not be liable against any damages arising from the use of any options or parts other than those designated as approved products.

1.0 94A0611 Circuit Selector Relay Upgrade Kit

1.1 Safety

This section contains general safety instructions for installing and using ADB Airfield Solutions equipment. Some safety instructions may not apply to the equipment in this manual. Task- and equipment-specific warnings are included in other sections of this manual where appropriate.

1.1.1 To use this equipment safely:

WARNING

Read installation instructions in their entirety before starting installation.

- Refer to the FAA Advisory Circular AC 150/5340-26, Maintenance of Airport Visual Aids Facilities, for instructions on safety precautions.
- Observe all safety regulations. To avoid injuries, always disconnect power before making any wiring connections or touching any parts. Refer to FAA Advisory Circular AC 150/5340-26.
- Become familiar with the general safety instructions in this section of the manual before installing, operating, maintaining or repairing this equipment.
- Read and carefully follow the instructions throughout this manual for performing specific tasks and working with specific equipment.
- Make this manual available to personnel installing, operating, maintaining or repairing this equipment.
- Follow all applicable safety procedures required by your company, industry standards and government or other regulatory agencies.
- Install all electrical connections to local code.
- Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local codes.
- Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment.
- Protect components from damage, wear, and harsh environment conditions.
- Allow ample room for maintenance, panel accessibility, and cover removal.
- Protect equipment with safety devices as specified by applicable safety regulations.
- If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning prior to returning power to the circuit.

1.1.1.1 Additional Reference Materials:

- NFPA 70B, Electrical Equipment Maintenance.
- NFPA 70E, Electrical Safety Requirements for Employee Workplaces.
- ANSI/NFPA 79, Electrical Standards for Metalworking Machine Tools.
- OSHA 29 CFR, Part 1910, Occupational Health and Safety Standards.
- National and local electrical codes and standards.

1.1.2 Qualified Personnel

The term **qualified personnel** is defined here as individuals who thoroughly understand the equipment and its safe operation, maintenance and repair. Qualified personnel are physically capable of performing the required tasks, familiar with all relevant safety rules and regulations and have been trained to safely install, operate, maintain and repair the equipment. It is the responsibility of the company operating this equipment to ensure that its personnel meet these requirements.

Always use required personal protective equipment (PPE) and follow safe electrical work practices.

1.2 Circuit Selector Introduction

The L-847 circuit selector switch is designed to switch the output of a 6.6 A or 20 A constant current regulator (CCR) to one, two, three, or four series lighting loops using remote or local control. Turning off the L-847 from remote or local control short-circuits the CCR output and disconnects all series lighting loops from the CCR output.

Each L-847 series lighting circuit control is identical and consists of a time delay relay PCB (Item 5), a Remote/Off/Local switch, and a set of high voltage vacuum relays. The Remote/Off/Local switch activated the time delay PCB, which controls the set of high voltage vacuum relays. Relays KV2, 4, 6 and 8 short or engage the constant current regulator while relays KV1, 3, 5 and 7 connect or disconnect the series lighting loops. A 24VDC power supply powers the coils of the high voltage vacuum relays and the time delay PCBs.

See Internal Wiring in the Wiring Schematic section for internal wiring connections for all four FAA types of circuit selector switches in manual 96A0204.

See Internal Wiring in the Wiring Schematic section for internal wiring connections for the L-847 Reverse type of circuit selector switch in manual 96A0204.

1.3 Relay Replacement Overview

This service bulletin is for replacing the KV1, KV3, KV5 or KV7 relay that is depicted in Figure 1 and replacing it with the relay depicted in Figure 2.

Figure 1: Circuit Selector with older type 53A0451 relays

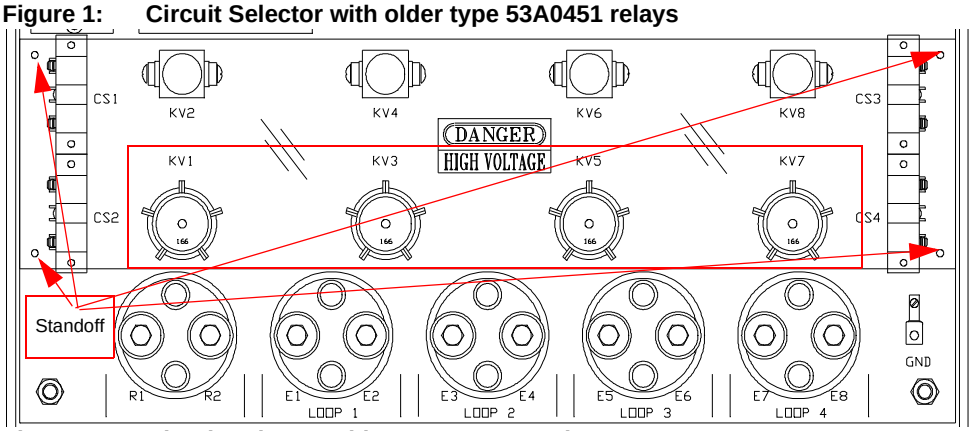
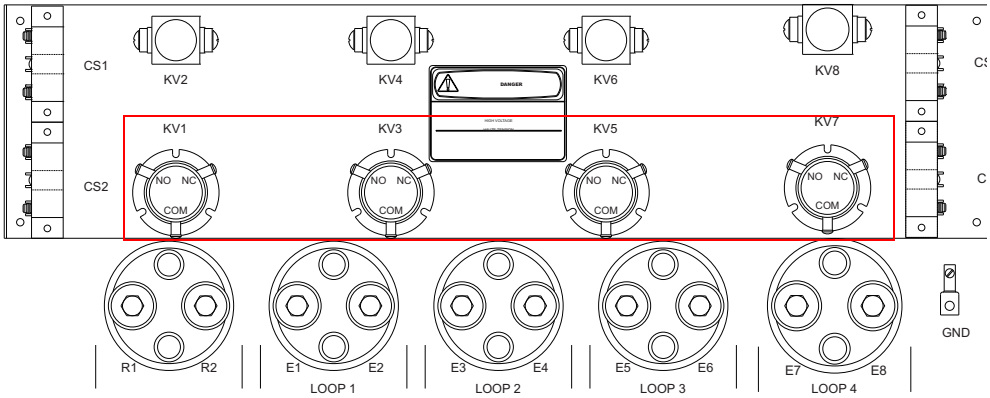


Figure 2: Circuit Selector with new 53A0166 relays

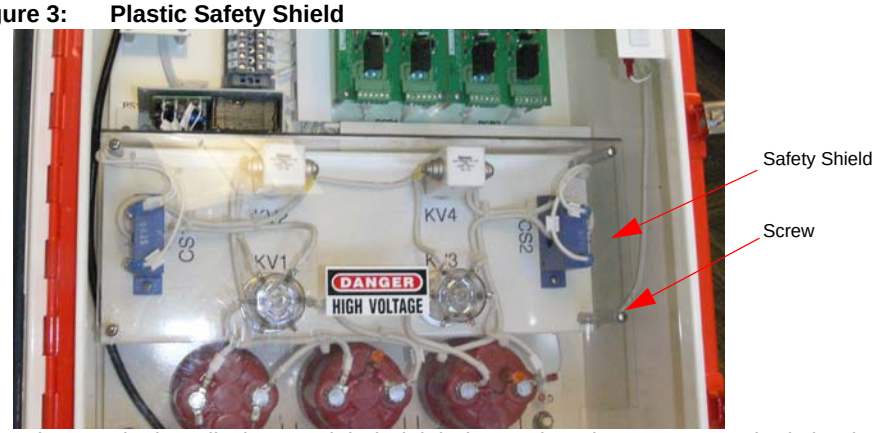


Because the new 53A0166 relay is taller, there is some modifications required.

1.4 Relay Replacement Procedure

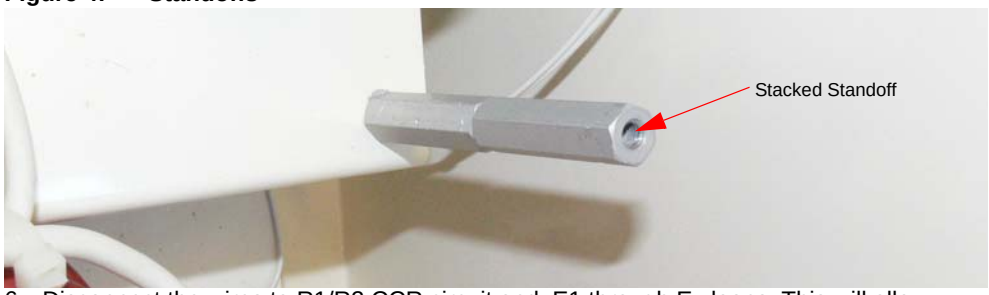
1. First turn off the equipment and isolate from all electrical sources; tag out the Constant Current Regulator. Wait 60 seconds; test the circuit with a meter before touching any component.
2. Remove the plastic safety shield (4 screws and washers); retain for later use.

Figure 3: Plastic Safety Shield



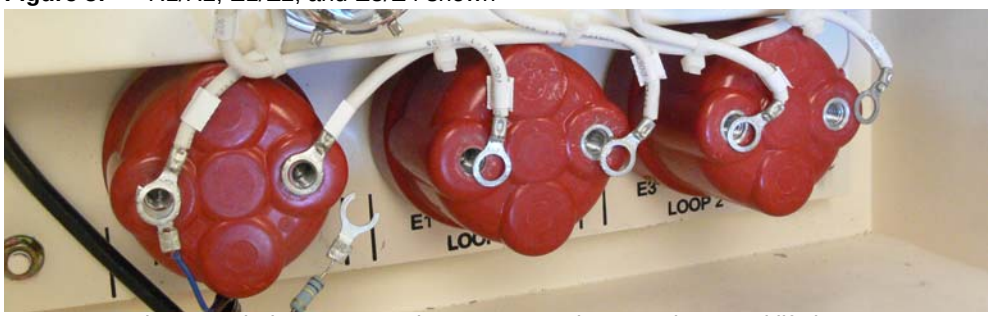
3. Make certain that all wires are labeled; label any wires that are not marked clearly.
4. Disconnect the wires with a soldering iron from the relay to be replaced.
5. Remove the 2 standoffs at each corner of the relay support plate.

Figure 4: Standoffs



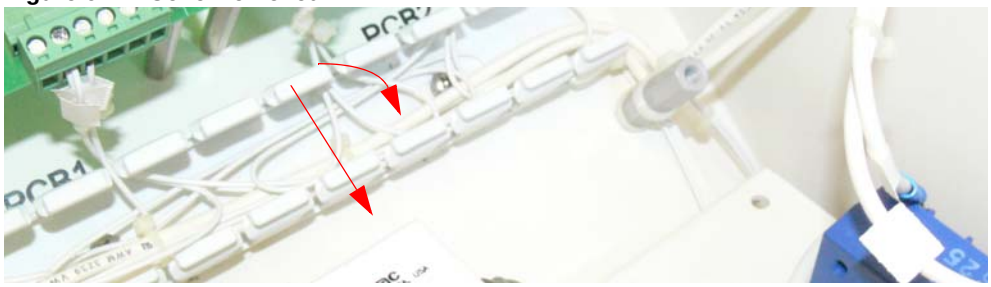
6. Disconnect the wires to R1/R2 CCR circuit and, E1 through Ex loops. This will allow access under the relays.

Figure 5: R1/R2, E1/E2, and E3/E4 shown



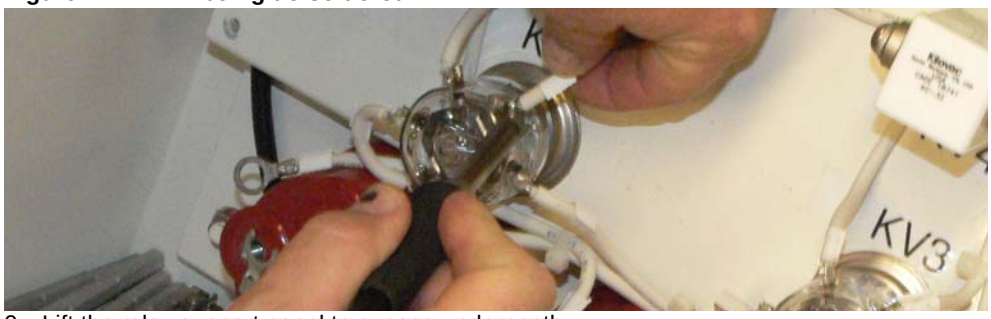
7. Remove the cover below PCB1 and PCB2 ... Gently press down and lift the top.

Figure 6: Cover removed



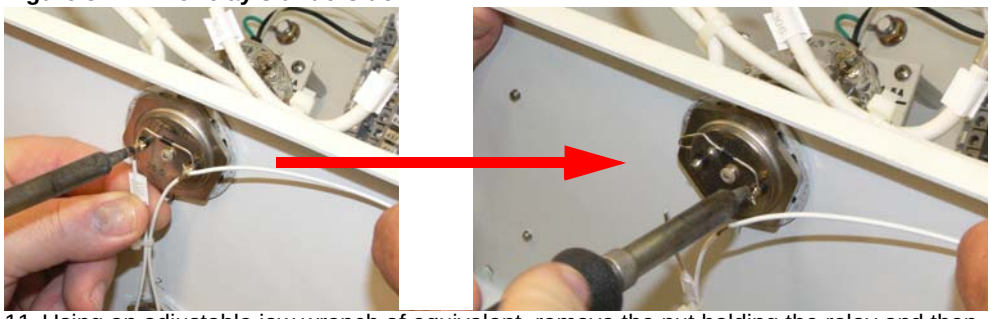
8. Disconnect the wires with a soldering iron from the relay to be replaced.

Figure 7: KV1 being de-soldered



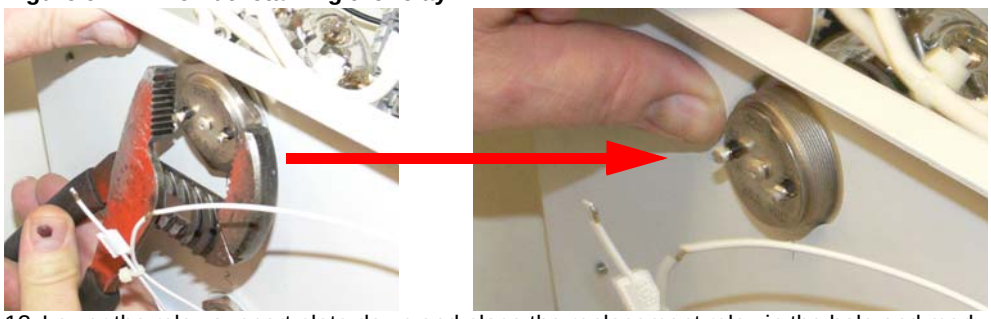
9. Lift the relay support panel to expose underneath.
10. Remove the wires and diode to the relay's underside with a soldering iron. Retain the diode.

Figure 8: The relay's underside



11. Using an adjustable jaw wrench of equivalent, remove the nut holding the relay and then remove the relay.

Figure 9: The nut retaining the relay



12. Lower the relay support plate down and place the replacement relay in the hole and mark the three notches for drilling.

Figure 10: Marking the notches for drilling

13. Insure there is nothing to damage below the drilling area. Drill the pilot holes.

Figure 11: Drilling the pilot holes

14. Drill the holes to accept the 8-32x1/2-inch screws.

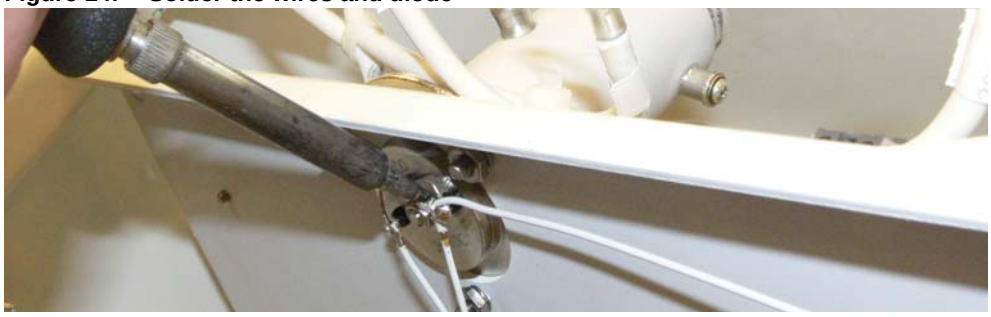
Figure 12: Drilling the holes for the screws

15. Attach the new relay with the supplied hardware. Three 8-32 screws, washers and nuts.

Figure 13: Mounting the relay

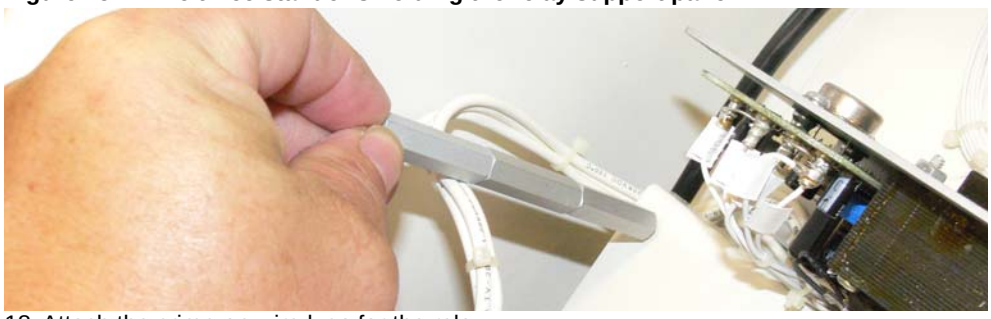
16. From underneath, solder the control wires and diode as they were on the relay that was replaced.

Figure 14: Solder the wires and diode



17. Mount the relay support panel with the three-standoff assembly. There are 2 stacked standoffs below each corner of the relay support plate. The plate has to be lowered by removing one of those standoffs at each corner. Those standoff will be added to the two standoff above the support plate that holds the plastic safety shield.

Figure 15: The three standoffs holding the relay support panel



18. Attach the crimp-on wire lugs for the relay.

Figure 16: Crimp-on lugs

19. Connect the R1/R2 CCR circuit and, E1 through Ex loop wires.

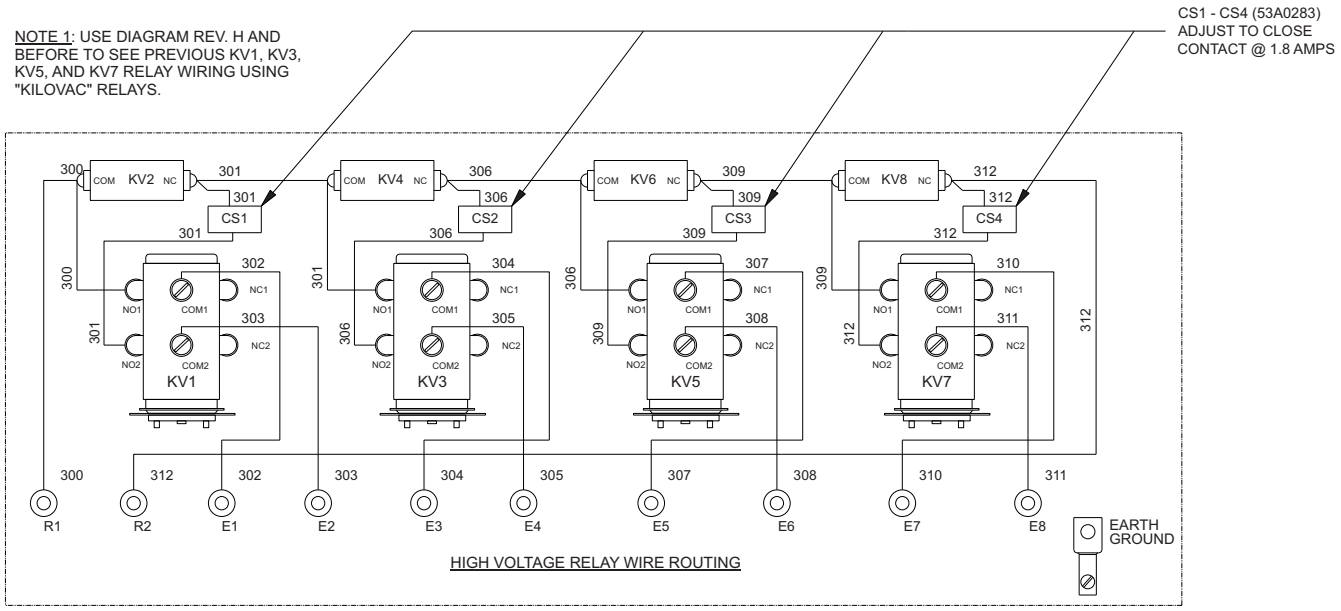
Figure 17: R1/R2, E1/E2 and E3/E4 wires shown

20. Replace the plastic raceway cover.
21. The raceway cover

22. Connect the wires to the replacement relay as per the schematics in 96A0204.

Figure 18: Relay wires

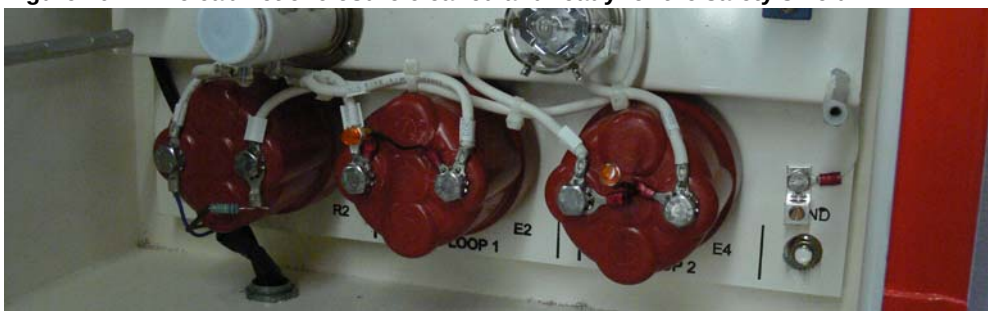
Figure 19: High Voltage Wiring Diagram for the new relays



See manual 96A0204 for the latest information on wiring the relays. The wiring diagrams are 43C1643/xxx

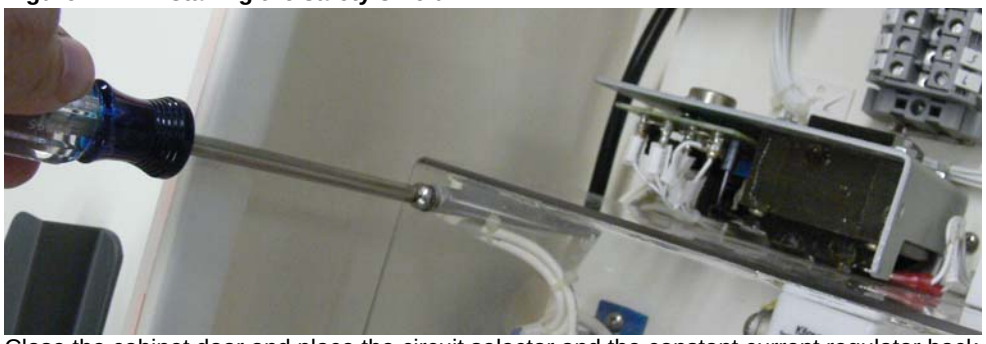
23. Clean up any debris, filings and parts from the cabinet enclosure.

Figure 20: The cabinet enclosure cleaned and ready for the safety shield



24. Install the plastic safety shield.

Figure 21: Installing the safety shield



Close the cabinet door and place the circuit selector and the constant current regulator back in service.

Registered office:

ADB Airfield Solutions LLC
977 Gahanna Parkway
Columbus, OH 43230
USA
Phone: +1 (614) 8611 304
Fax: +1 (614) 8642 069

Other addresses:

ADB Airfield Solutions Ltd.
5500 North Service Road, Suite 1108
Burlington, Ontario L7L 6W6
Canada
Phone: +1 (905) 331 6887
Fax: +1 (905) 331 9389

ADB Airfield Technologies Ltd.
01A Unit, 9F, LSH Plaza
8, Wangjing Jie
Chaoyang District
Beijing 100102
P.R. China
Phone: +86 10 8476 0106
Fax: +86 10 8476 0090

ADB N.V.
Dubai Silicon Oasis
Wing D - Office D-309
P.O. Box 341218
United Arab Emirates
Phone: + 971 4372 4970
Fax: + 971 4372 4975

ADB N.V./S.A.
39/47 Boulevard Ornano
93200 Saint-Denis
France
Phone: +33 (1) 4922 9250
Fax: +33 (1) 4922 9255

ADB Airfield Solutions GmbH & Co. KG
Von-der-Tannstr. 31
90439 Nürnberg
Germany
Phone: +49 (911) 9239 1287
Fax:+49 (911) 2852 582

ADB N.V.
Asia Pacific Regional HQ
Unit C-9.3.1, Level 9, Block C
Mines Waterfront Business Park
No. 3, Jalan Tasik
The Mines Resort City
43300 Seri Kembangan Selangor
Malaysia
Phone: +603 8941 4868
Fax: +603 8942 4869

ADB Airfield Solutions Netherlands
Prinses Beatrixlaan 614
Office D3.14
2595 BM Den Haag
The Netherlands
Phone: +31 (0)70 304 3611
Fax: +31 (0)70 333 8094

ADB Airfield Solutions, Ltd.
2nd Floor, 3 Rivonia Village
Cnr Mutual Road and Rivonia Boulevard
South
Rivonia 2128
South Africa
Phone: +27 (11)234 6768
Fax: +27 (11)234 6739

ADB
Unit 44, Business Innovation Centre
Binley Business Park
Harry Weston Road
Coventry, CV3 2TX
United kingdom
Phone: +44 (0)1455 883130
Fax: +44 (0)1455 883179

ADB
Airfield Solutions
Leuvensesteenweg 585
B-1930 Zaventem
Belgium
Phone: +32 (2) 722 17 11
Fax: +32 (2) 722 17 64
info.adb@adb-air.com
www.adb-air.com

ADB Airfield Solutions USA

977 Gahanna Pkwy
Columbus, Ohio 43230 USA
Telephone: (+1 614-861-1304)
Fax: +1 614-864-2069
www.adb-airfieldsolutions.com