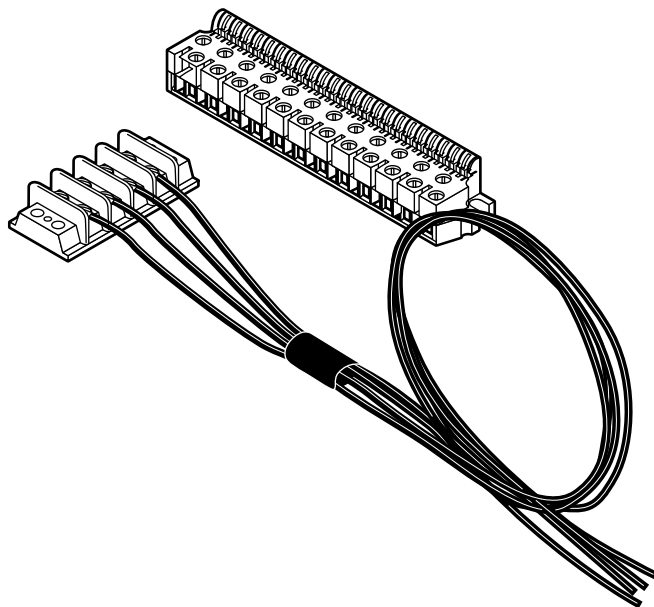




### Installation Instructions for the SPB ATR Adapter Kit



#### SAFETY PRECAUTIONS



#### WARNING

**POWER CIRCUIT BREAKERS ARE EQUIPPED WITH HIGH SPEED, HIGH ENERGY OPERATING MECHANISMS. THE BREAKERS AND THEIR ENCLOSURES ARE DESIGNED WITH SEVERAL BUILT-IN INTERLOCKS AND SAFETY FEATURES INTENDED TO PROVIDE SAFE AND PROPER OPERATING SEQUENCES. TO PROVIDE MAXIMUM PROTECTION FOR PERSONNEL ASSOCIATED WITH THE INSTALLATION, OPERATION, AND MAINTENANCE OF THESE BREAKERS, THE FOLLOWING PRACTICES MUST BE FOLLOWED. FAILURE TO FOLLOW THESE PRACTICES MAY RESULT IN DEATH, PERSONAL INJURY, OR PROPERTY DAMAGE.**

- Only qualified persons, as defined in the National Electric Code, who are familiar with the installation and maintenance of power circuit breakers and their associated switchgear assemblies should perform any work associated with these breakers.

- Completely read and understand all instructions before attempting any installation, operation, maintenance, or modification of these breakers.
- **Always turn off and lock out the power source feeding the breaker prior to attempting any installation, maintenance, or modification of the breaker. Do not use the circuit breaker as the sole means for isolating a high voltage circuit. Follow all lockout and tagging rules of the National Electric Code and all other applicable codes, regulations, and work rules.**
- Do not work on a closed breaker or a breaker with the closing springs charged. Trip (open) the breaker and be sure the stored energy springs are discharged before performing any work. The breaker may trip open or the charging springs may discharge, causing crushing or cutting injuries.
- For drawout breakers, trip (open), and then remove the breaker to a well-lit work area before beginning work.
- Do not perform any maintenance: including breaker charging, closing, tripping, or any other function which could cause significant movement of the breaker while it is on the extension rails. Doing so may cause the breaker to slip from the rails and fall, potentially causing severe personal injury to those in the vicinity.
- **Do not leave the breaker in an intermediate position in the switchgear cell. Always leave it in the connected, disconnected, or (optional) test position. Failure to do so could lead to improper positioning of the breaker and flashover, causing death, serious personal injury, and / or property damage.**
- **Do not defeat any safety interlock. Such interlocks are intended to protect personnel and equipment from damage due to flashover and exposed contacts. Defeating an interlock could lead to death, severe personal injury, and / or property damage.**

## Introduction

The SPB ATR Adapter Kit allows the use of a Digitrip 510 Trip Unit in applications where the SPB Breaker was originally provided with a POW-R-TRIP 7 Unit and an Automatic Trip Relay (ATR). The ATR Style Numbers must be in the sequence: 1293C99G01 - G08.

These Installation Instructions are to be used in conjunction with the instructions provided with the Digitrip 510 Retrofit Kit for the SPB Breaker.

### Step 1: General Breaker Preparation

Before attempting to remove the Breaker from the Cell or perform any conversion operation, be sure to read and understand the Safety Precautions section of this manual.



## WARNING

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**DO NOT ATTEMPT TO INSTALL OR PERFORM MAINTENANCE ON EQUIPMENT WHILE IT IS ENERGIZED. SEVERE PERSONAL INJURY OR DEATH CAN RESULT FROM CONTACT WITH ENERGIZED EQUIPMENT. VERIFY THAT NO VOLTAGE IS PRESENT BEFORE PROCEEDING.**

- A. Trip the Breaker and remove it from the Cell. Move the Breaker to a clean, well-lit work bench.

**NOTE: It is the responsibility of the person performing the conversion to insure that the Breaker and all original components are in good condition. Visually inspect all Breaker components for signs of damage or wear. If any signs of damage or wear are detected for components not included in the conversion kit, secure the necessary replacement parts before beginning the conversion process.**

To begin the conversion process, refer to the components list at the end of this manual. Lay out the components and hardware according to the steps outlined. The components and hardware will be used to complete each step in the conversion process.

### Step 2: Removing the POW-R 7 Trip Unit

Follow the Westinghouse SPB Power Circuit Breaker Instruction Manual, originally supplied with the Breaker, to perform the following procedures.

- A. Remove the cover from the Breaker (save the mounting hardware for use later in the conversion process).
- B. Remove the Rating Plug from the POW-R-TRIP 7 Trip Unit.
- C. Remove POW-R-TRIP 7 Trip Unit from its receptacle.

*For Breakers Equipped with a 12-Pin Edge Card Connector Only (w/o Ground Fault)*

### Step 3: Installing the 24-Pin Edge Card Connector

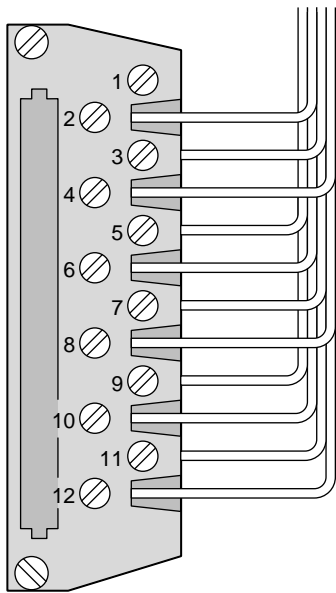
**Note: If the Breaker being converted was supplied with Ground Fault and a 24-Pin Edge Card Connector, skip to Step 4.**

- A. Remove and scrap the hardware securing the 12-Pin Edge Card Connector to the Trip Unit Mounting Bracket.
- B. Move the 12-Pin Edge Card Connector away from the Trip Unit Mounting Bracket enough to provide sufficient access to the individual wires.

**Note:** It may be necessary to cut the wire tie(s) securing the wires to provide sufficient access.

*When transferring the wires from the original 12-Pin to the supplied 24-Pin Edge Card Connector, the wires must be connected to the same **physical** position - **not the same numerical position**.*

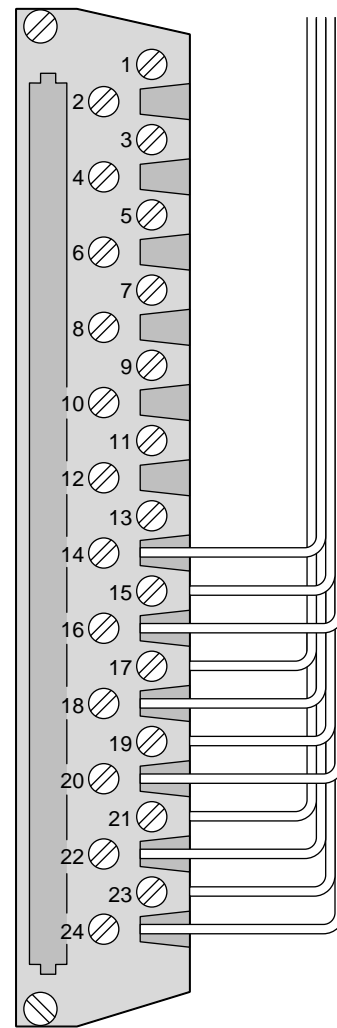
- C. Starting with the bottom wire connected to the 12-Pin Edge Card Connector (Position #12), loosen the terminal screw and remove the wire from the connector (see Figure 1).
- D. While holding the supplied 24-Pin Edge Card Connector near the original Edge Card Connector, insert the wire just removed into the bottom terminal of the new Edge Card Connector (Position #24). Tighten the terminal screw to 5 to 8 in-lbs. Check to assure that the wire is firmly connected to the terminal.



**Figure 1**  
Original Connections to the 12-Pin Edge Card Connector

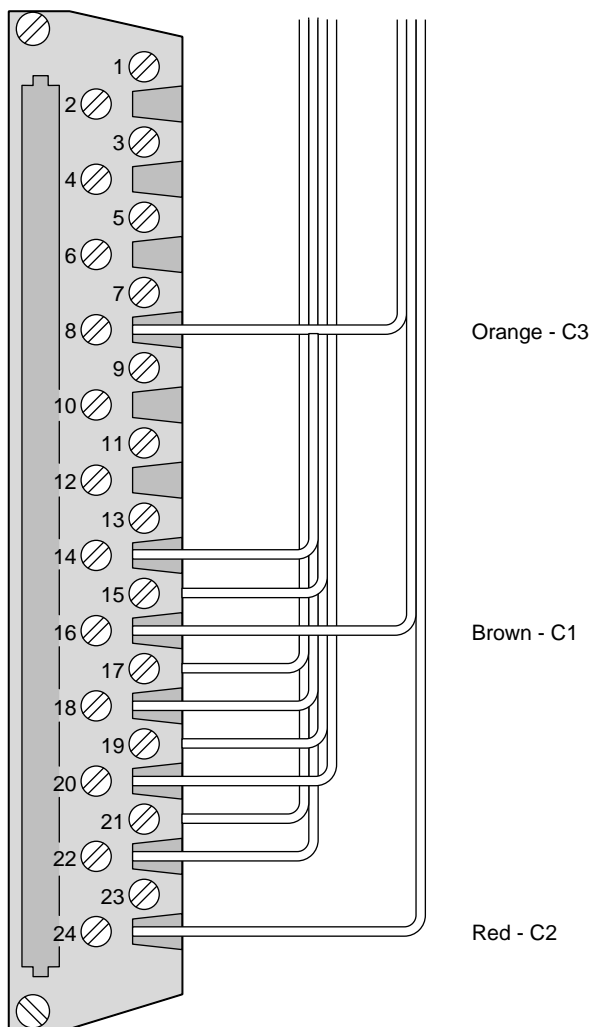
**Note:** DO NOT over-tighten the terminal screws. Exceeding the torque value listed above can strip the terminals.

- E. Continuing to work from the bottom towards the top, repeat Steps 3-C and D until all wires have been transferred to the 24-Pin Edge Card Connector (see Figure 2). Scrap the original 12-Pin Edge Card Connector.
- F. Disconnect the orange wire from Position #23 and reconnect it to Position #8 (see Figure 3).



**Figure 2**  
Connections to the New 24-Pin Edge Card Connector

- G. If any wire ties were cut in Step 3-B, use the wire ties supplied to secure the wires.
- H. Using the (2) .138-32 × .500" screws, (2) lock washers, and (2) flat washers supplied, secure the 24-Pin Edge Card Connector to the Trip Unit Mounting Bracket.
- I. Verify that the leads from the 24-Pin Edge Card Connector, as shown in Figure 3 are connected to the Secondary Disconnect Leads Block locations C1, C2, and C3.
- J. Proceed to Step 5.



**Figure 3**  
Correct Position for the Orange Wire and  
Connections to the Secondary Disconnect Leads

*For Breakers Equipped with a 24-Pin Edge Card Connector Only (w/ Ground Fault)*

#### Step 4: Modifying the Original Wiring Connections

- A. Remove and scrap the hardware securing the 24-Pin Edge Card Connector to the Trip Unit Mounting Bracket.
- B. Move the Edge Card Connector away from the Trip Unit Mounting Bracket enough to provide sufficient access to the individual wires.

**Note: It may be necessary to cut the wire tie(s) securing the wires to provide sufficient access.**

- C. Depending on the original configuration of the Breaker, Positions 8, 9, and 10 on the Edge Card Connector may be occupied by a white / yellow wire, a black wire, and a yellow wire respectively (see Figure 4). If this situation exists, remove these wires from those positions on the Edge Card Connector and from the "D" Block on the back of the Breaker.
- D. Disconnect the orange wire from Position #23 and reconnect it to Position #8. Tighten the screw to 5 to 8 in-lbs. Check to assure that the wire is firmly connected to the terminal (see Figure 5).

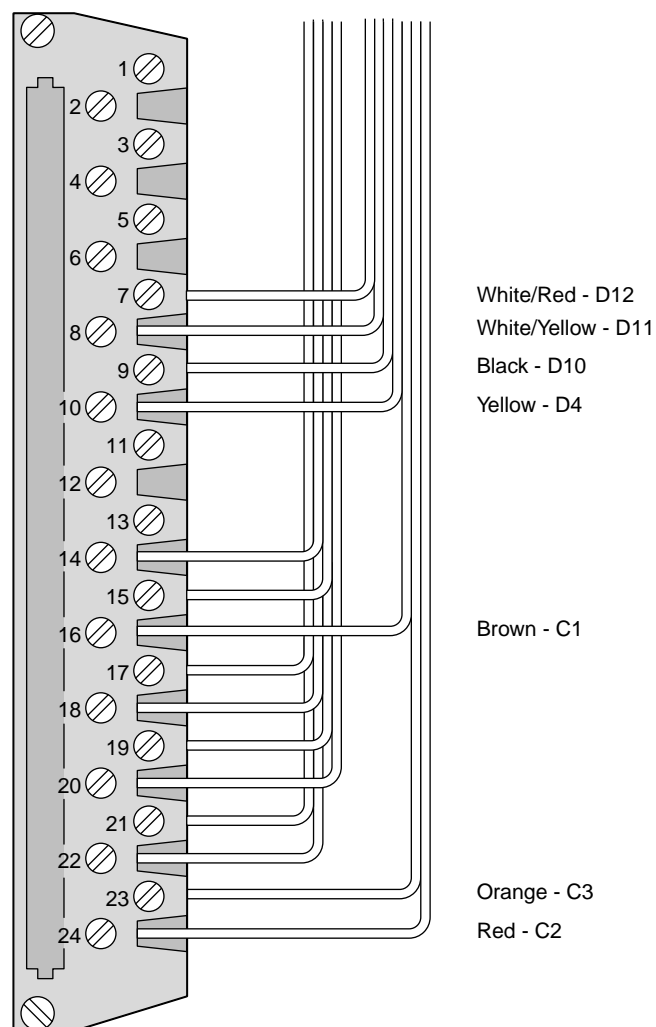
**Note: DO NOT over-tighten the terminal screws. Exceeding the torque value listed above can strip the terminals.**

- E. If any wire ties were cut in Step 4-B, use the wire ties supplied to secure the wires.
- F. Using the (2) .138-32 × .500" screws, (2) lock washers, and (2) flat washers supplied, secure the 24-Pin Edge Card Connector to the Trip Unit Mounting Bracket.
- G. Verify that the leads from the 24-Pin Edge Card Connector, as shown in Figure 4, are connected to the Secondary Disconnect Leads Block locations C1, C2, C3, and D12 (see Figure 5).

**Step 5: Installing the New Digitrip Trip Unit**

Install the Digitrip 510 Retrofit Kit following the instructions supplied with the kit.

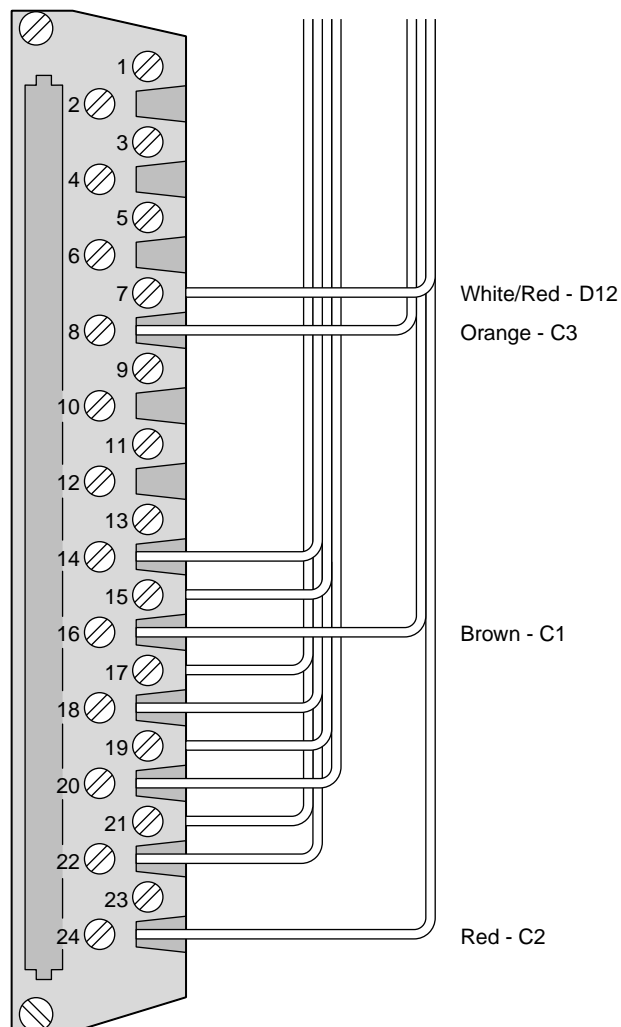
- A. Using the appropriate Digitrip Retrofit Kit and following the instructions supplied with the kit, install the new Digitrip Trip Unit and related components.

**Figure 4**

Removal of Wires from Positions 8, 9, and 10 from the Edge Card Connector and from the "D" Block

**Step 6: Installing the Breaker Cover**

- A. Align the Breaker Cover with the Breaker. Verify that all leads are clear of all mounting surfaces.
- B. Using the original mounting hardware, secure the Breaker Cover to the Breaker.

**Figure 5**

Correct Position for the Orange wire and Connections to the Secondary Disconnect Leads

### Step 7: Modifying Connections to the ATR

- A. Verify that no power is being supplied to the ATR or the Breaker Cell.

**Note: Refer to Figure 6 for details of Steps 7-B through 7-E.**

- B. Remove the original dark brown lead from the C1 terminal on the ATR (lead coming from the Secondary Disconnect Leads Block terminal C1). Connect the lead to the corresponding open terminal (with new dark brown lead) of the supplied 4-Point Terminal Block. Attach new dark brown lead to the C1 terminal on the ATR.
- C. Remove the original red lead from the C2 terminal on the ATR (lead coming from the Secondary Disconnect Leads Block terminal C2). Connect the lead to the corresponding open terminal (with new red lead) of the supplied 4-Point Terminal Block. Attach new red lead to the C2 terminal on the ATR.
- D. If the Breaker being converted was supplied with a ground fault panel, remove the original white / red lead from the D12 terminal on the

ATR (lead coming from the Secondary Disconnect Leads Block terminal D12). Connect the lead to the corresponding open terminal (with new white / red lead) of the supplied 4-Point Terminal Block. Attach new white / red lead to the D12 terminal on the ATR.

- E. Remove the original orange lead from the C3 terminal on the ATR (lead coming from the Secondary Disconnect Leads Block terminal C3). Connect the lead to the corresponding open terminal (with new orange lead) of the supplied 4-Point Terminal Block. Attach new orange lead to the C3 terminal on the ATR.
- F. Check all connections to insure good contact is being made.
- G. Mount the 4-Point Terminal Block in a convenient, secure location using the (2) .138-16 × .500" thread cutting screws, (2) lock washers, and (2) flat washers supplied. (.116 hole recommended.)

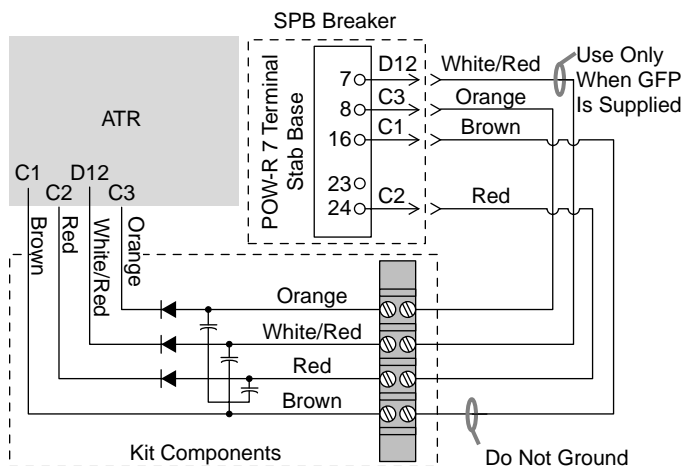
### Step 8: Installing the Converted Breaker in the Cell



#### WARNING

**Do not leave the Breaker in an intermediate position in the switchgear cell. Always leave it in the CONNECTED, DISCONNECTED, or (Optional) TEST position. Failure to do so could lead to improper positioning of the Breaker and flashover, causing death, serious personal injury, and / or property damage.**

**NOTE: It is the responsibility of the person performing the installation to insure proper Breaker / Cell fit. When racking the Breaker into the Connected position, the installer MUST FOLLOW BOTH the manufacturer's instructions and the customer's safety standards and procedures for racking a Breaker into the Connected position.**



**Figure 6**

Adapter Harness 4-Point Terminal Block to ATR Connections



- A. With the Breaker in the Open position and the springs discharged, slowly rack the Breaker into the Connected position, making sure there is no interference or binding. The Breaker should rack smoothly and without mechanical interference between any Breaker and Cell parts. The installer will feel some resistance when the primary fingers connect onto the stabs of the Cell. This is normal.

However, if any unusual resistance is detected that could be abnormal interference between the Breaker and Cell parts, stop immediately and move the Breaker out of the Connected position. Examine what is causing the interference and correct the situation.

### Step 9: Testing the Conversion

Following the Westinghouse SPB Power Circuit Breaker Instruction Manual, originally supplied with the Breaker, and / or the Instructions supplied with the Digitrip 510 Retrofit Kit, perform the following procedures.

- A. Reconnect power to ATR.
- B. Connect an Auxiliary Power Module to the Trip Unit.
- C. With main power still off the Breaker, perform the Trip Unit Self Test to assure correct functioning of the Trip Unit, Breaker, and ATR.
- D. Remove the Auxiliary Power Module from the Trip Unit.

### Installation Components for the SPB ATR Adapter Kit

Step	Description	Style No.	Qty.	Comment
Step 3	SPB ATR Adapter Kit (w/o Ground Fault)	4A35718G01	1	
	24-Pin Edge Card Connector		1	
	Mounting Hardware	4A35718G03	1	
	.138-32 × .500 Lng. Screw		2	
	.138 Lock Washer Stl.		2	
	.138 Flat Washer Stl.		2	
	Wire Tie Nylon		2	From Step 7
Step 4	SPB ATR Adapter Kit (w/ Ground Fault)	4A35718G02	1	
	Mounting Hardware	4A35718G03	1	
	.138-32 × .500 Lng. Screw		2	
	.138 Lock Washer Stl.		2	
	.138 Flat Washer Stl.		2	
	Wire Tie Nylon		2	From Step 7
Step 7	Adapter Harness and Mounting Hardware	4A35718G04	1	
	Adapter Harness (w/ 4-Point Terminal Block)		1	
	.138-16 × .500 Lng. Screw T. C.		2	
	.138 Lock Washer Stl.		2	
	.138 Flat Washer Stl.		2	
	Wire Tie Nylon		5	

*We wish to thank you for purchasing the Digitrip Retrofit System. Digitrip Retrofit Kits are designed and manufactured in America with pride. All the components are engineered to fit the existing Circuit Breaker with little or no modifications to the existing Breaker. However due to the wide variety and vintage of Breakers in use today, an occasional problem may arise. Please contact us with any questions, comments or concerns.*

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