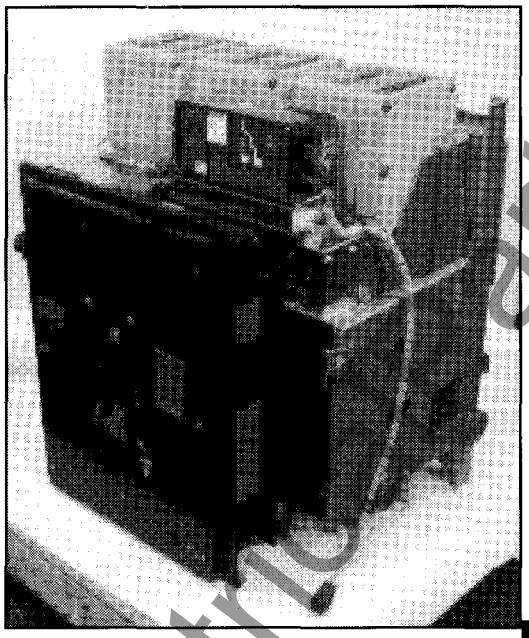
Westinghouse Digitrip Retrofit System For



ITE K-3000 ACB

Westinghouse Electric Corp.
ILS
Commercial Operations Division
Distribution & Control Business Unit
Five Parkway Center
Pittsburgh, PA 15220

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 lighted 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, TEST,** or **DISCONNECTED** 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 WILL LEAD TO DEATH, SEVERE PERSONAL INJURY AND/OR PROPERTY DAMAGE.**

The instructions for installation, testing, maintenance or repair herein are provided for the use of the product in general commercial applications and may not be appropriate for use in a nuclear application. Additional instructions may be available upon specific request to replace, amend or supplement these instructions to qualify them for use with the product in safety-related applications in a nuclear facility.

The information, recommendations, descriptions and safety notations in this document are based on Westinghouse's experience and judgment with respect to **RETROFITTING OF POWER BREAKERS. THIS INFORMATION SHOULD NOT BE CONSIDERED TO BE ALL INCLUSIVE OR COVERING ALL CONTINGENCIES.** If further information is required, the Westinghouse Electric Corporation should be consulted.

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WESTINGHOUSE ELECTRIC CORP.
SPECIALTY PRODUCTS AND SERVICES
COMMERCIAL OPERATIONS DIVISION
DISTRIBUTION & CONTROL BUSINESS UNIT
FIVE PARKWAY CENTER
PITTSBURGH, PENNSYLVANIA

RN 33-858-3-1
DATE: AUG. 16, 1991

REVISION NOTICE: FOR IL 33-858-3
ITE K-3000 ACB

NOTICE: CURRENT SENSORS STYLE NO. 2817C83G26 (AND MOUNTING) HAVE BEEN SUPERSEDED BY CURRENT SENSORS STYLE NO. 8258A24H01 (AND MOUNTING). IT IS RECOMMENDED THAT ANY ITE K-3000 ACB RETROFITTED WITH THE WESTINGHOUSE DIGITRIP RETROFIT SYSTEM AND CURRENT SENSOR STYLE NO. 2817C83G26 BE UPGRADED TO USE CURRENT SENSORS STYLE NO. 8258A24H01.

REVISE STEP 11: STEPS A, B, C AND D ARE NOT TO BE USED, FOLLOW THE STEP 11 INSTRUCTIONS THAT FOLLOW.

STEP 11: A. DRILL THE BREAKER FRAME PER FIGURE NO. 1.

B. MOUNT THE BOTTOM SENSOR MOUNTING AS SHOWN WITH THE HARDWARE PROVIDED.

C. SET A SENSOR (CENTERED OVER EACH TOP STUD) IN THE BOTTOM SENSOR MOUNTING.

D. MOUNT THE TOP SENSOR MOUNTING AS SHOWN WITH THE HARDWARE PROVIDED.

E. ROUTE THE SENSOR WIRES UP TO THE TERMINAL BLOCKS, CUT TO LENGTH AND STRIP A 1/4 INCH. CRIMP A RING TERMINAL ON EACH WIRE AND CONNECT TO THE TERMINAL BLOCKS.
3000A = X1 (BLACK) - X3 (WHITE)
2500A = X1 (BLACK) - X2 (RED)

STEP 11 INSTALLATION COMPONENTS:

DESCRIPTION	STYLE NO.	REQD.
SENSOR 3000A MR	8258A24H01	3
SENSOR MOUNTING HARDWARE	8189A29G10	1
TOP SENSOR MOUNTING		1
BOTTOM SENSOR MOUNTING		1
.250-20 X 1.00 LNG HEX BOLT		4
.250 FLAT WASHER STL		6
.250 LOCK WASHER STL		4
.250-20 NUT HEX STL		2
RING TERMINAL		9

Step 1: Trip Breaker and remove from Cell. Take Breaker to a clean well lit work bench to perform the Retrofit.

Before attempting to perform the Retrofit, be sure to read and understand the Retrofit Application Data supplied with this kit.

Refer to the components listing at the rear of this booklet. Lay out the components and hardware according to the steps as outlined. The components and hardware will be used to complete each assembly step that follows.

Step 2: Follow the ITE Instruction Manual supplied with this breaker to perform the following steps.

A. Remove the Arc Chutes.

B. Remove the bottom Finger Clusters.

C. Remove the three Pole Unit Assemblies from the Breaker.

D. Remove bottom Stud Assembly from each Pole Unit.

E. Remove the Electromechanical Trip Units from each Pole Unit.

F. Install the bottom Stud Assembly back in each pole unit. The bottom right hand bolt (Breaker rear view) is to be replaced with a 3.50" screw, washer and lockwasher provided with kit.

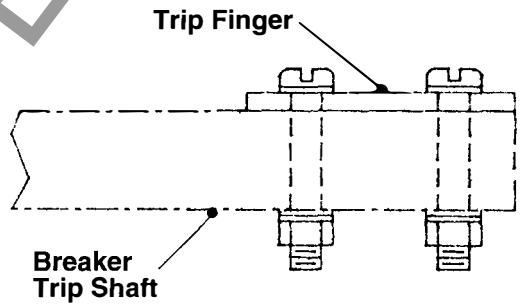
G. Install the Pole Unit Assemblies back into the Breaker.

H. Adjust the Main Contact and Arcing Contact pressure according to the ITE Instruction Manual.

I. Install the bottom Finger Clusters.

J. Install the Arc Chutes.

Step 3:

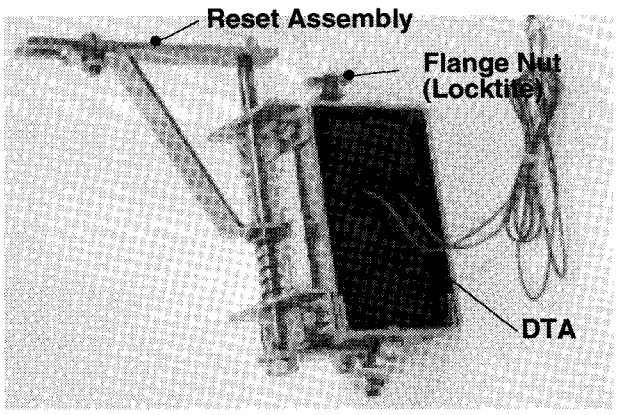


A. Remove the front Cover Assembly from the Breaker.

B. Remove the three Trip Fingers from the Trip Shaft in the Breaker.

C. Install the Retrofit Trip Finger on the top right end of the Trip Shaft using the hardware supplied. The long end should face the front.

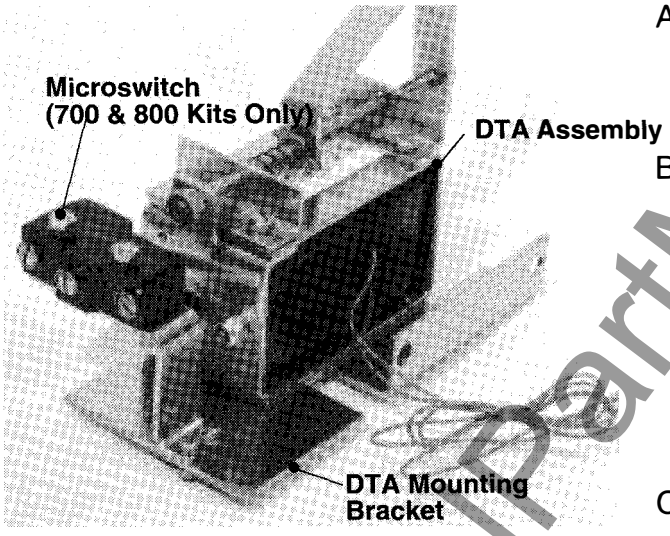
Step 4:



A. Apply Locktite to threads on the DTA shaft and install the flange nut flush with the end of the shaft.

B. Mount the Direct Trip Actuator (DTA) Reset to the DTA with the hardware provided as shown. The bottom fork should be around the DTA shaft.

Step 5:

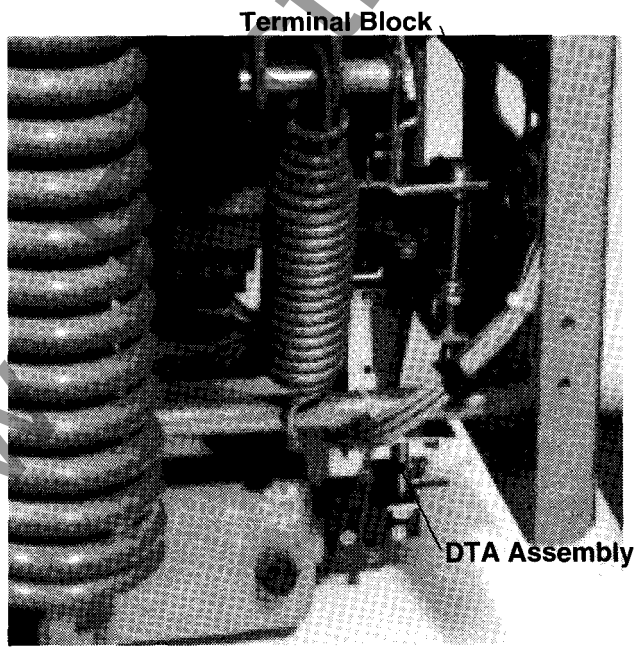


A. Mount the DTA to the Mounting Bracket with the hardware provided as shown.

B. *700 and 800 Kits Only.* Mount the Microswitch to the Mounting Bracket with the hardware provided. Mount the Assembly to the DTA Mounting Bracket with the hardware provided. Cut the lever of the Microswitch off even with the edge of the DTA.

C. The DTA Reset should be free to move. When you push it down, the spring should push it back up. If you have a Microswitch be sure it opens when the Reset is pushed down.

Step 6:

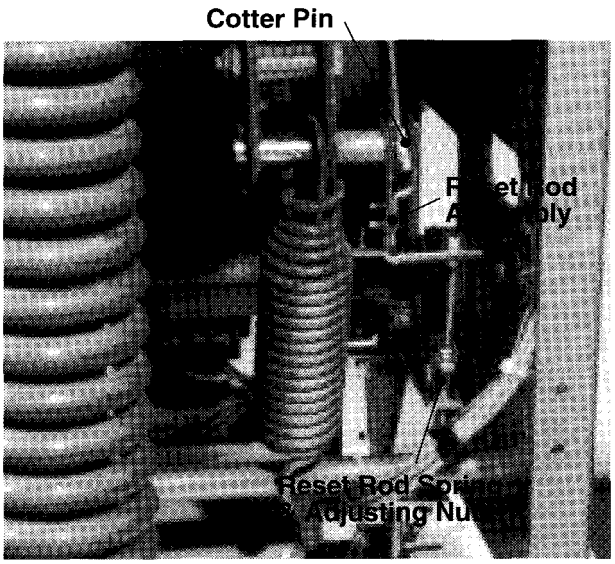


A. Mount the DTA in the Breaker with the hardware provided as shown. The existing holes for mounting the DTA are 7.38" back from the Front Flange.

B. Mount the Terminal Block in a clear area near the DTA on the inside. Drill two .164 dia holes and mount with the hardware provided.

C. Connect the two DTA wires to the terminals.

Step 7:



A. Remove the cotter pin from the end of the opening spring pin.

B. Install the Reset Rod Assembly on the pin as shown. Use the new cotter pin supplied. The end of the Reset Rod should go thru the slot in the top of the DTA Reset Assembly.

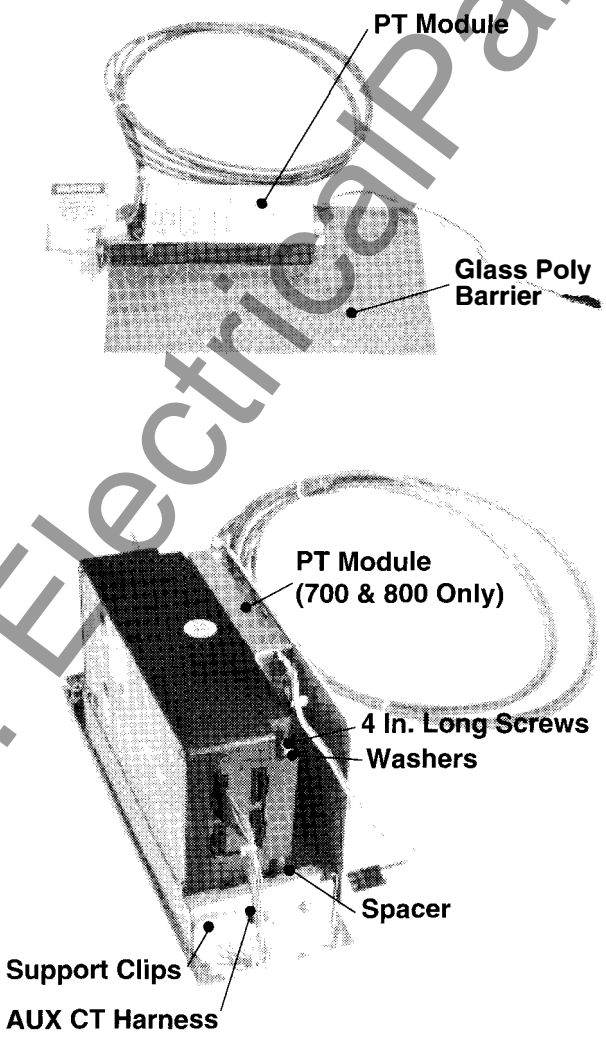
C. Connect a 24V DC power supply to the Terminal Block. (positive to positive and negative to negative.

D. Close the Breaker manually.

E. Energize the DC power supply until the DTA trips the Breaker. Disconnect the DC power. The DTA should have reset. If the DTA did not reset, adjust the spring tension on the Reset Rod Assembly. Repeat until DTA resets every time.

F. Install the Front Cover Assembly.

Step 8:



A. *700 & 800 Kits Only*. Mount the PT Module on to the Glass Poly (red) Barrier with hardware provided as shown.

B. Mount the RMS/R Trip Unit on to the top of the Aux. CT Module with 4 in. long screws, washers and spacers as shown. Do not tighten firmly yet.

C. Mount the left and right Trip Unit Support Clips on to the side of the Aux. CT Module and into the bottom front slots of the Trip Unit.

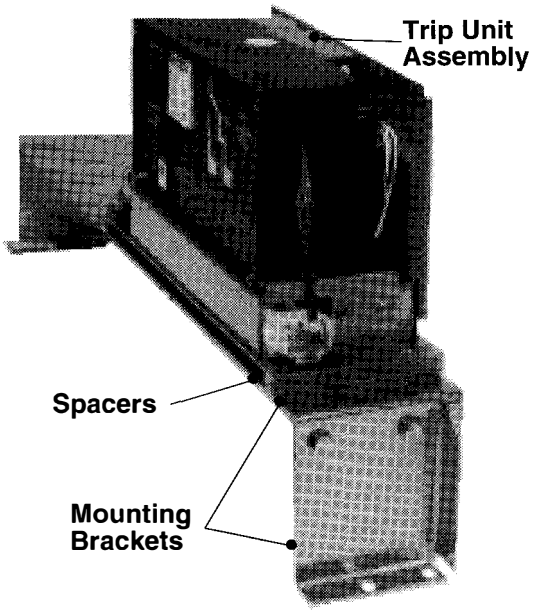
D. Tighten 4 in. long screws.

E. Mount the Glass Poly Barrier (Red) on to the back of the Aux. CT Module with hardware provided. (700 and 800 Kits will have the PT Module mounted in it.)

F. Remove Trip Unit cover and install Rating Plug, replace cover.

G. Install Aux. CT Harness between Trip Unit and Aux. CT Module.

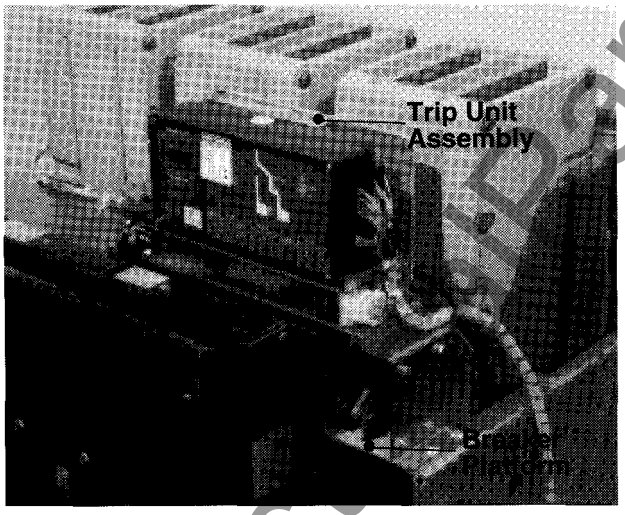
Step 9:



A. Mount the left and right Mounting Brackets to the top bracket as shown with the hardware provided.

B. Mount the Trip Unit Assembly with three spacers under each side to the top bracket with the hardware provided as shown.

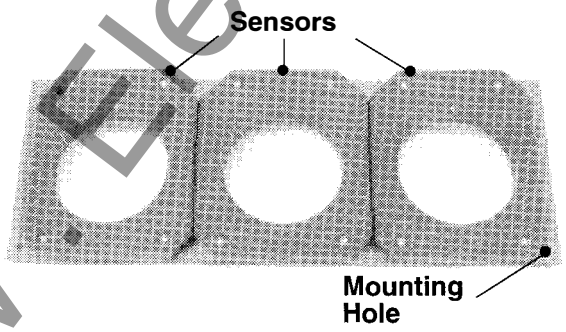
Step 10:



A. Remove the two screws from each end of the Breaker platform.

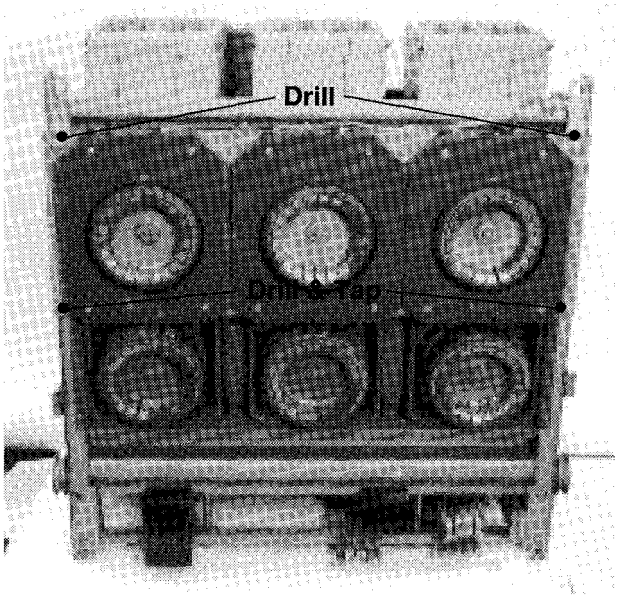
B. Mount the Trip Unit Assembly on top of the Breaker platform with the hardware provided as shown.

Step 11:



A. Mount the 3 Sensors to the Glass Poly Sensor Mounting (Red) on the opposite side of the Ribs with the nylon hardware provided.

B. Center the 3 Sensors over the Top Finger Clusters with the terminals facing up. (It may be necessary to trim the Glass Poly Insulation Angle to allow the Sensors to drop

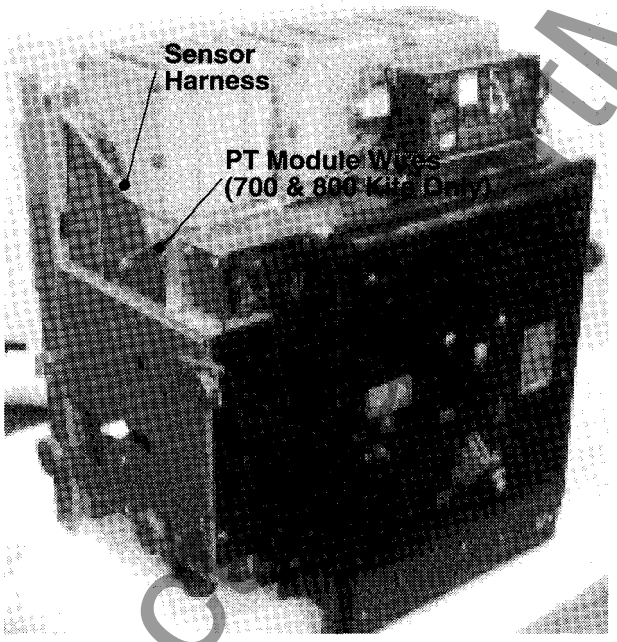


down and center). Mark the Breaker Frame where the Mounting Holes are. Remove Sensors.

C. Drill the top two holes .312 dia. Drill and .250-20 tap the bottom two holes.

D. Mount the Sensors with two washers between the Sensor Mounting and the Breaker Frame with the hardware provided as shown. Notch the Glass Poly Insulation Angle to clear the washers.

Step 12:



A. These instructions refer to the wiring diagrams in the Retrofit Application Data for proper connection and application.

B. Remove the Terminal Block Cover from the 7 Point Terminal Block on the left side of the Aux. CT Module.

C. Connect the Snap Spade Terminals of the Sensor Wire Harness to the proper terminals. (The long tan and green wires are for a Remote Neutral Sensor on a 4W Ground Breaker. (They should be removed if not required.)

D. Connect the green wire (Ring Terminal) to the rear screw of the left Trip Unit Support Clip.

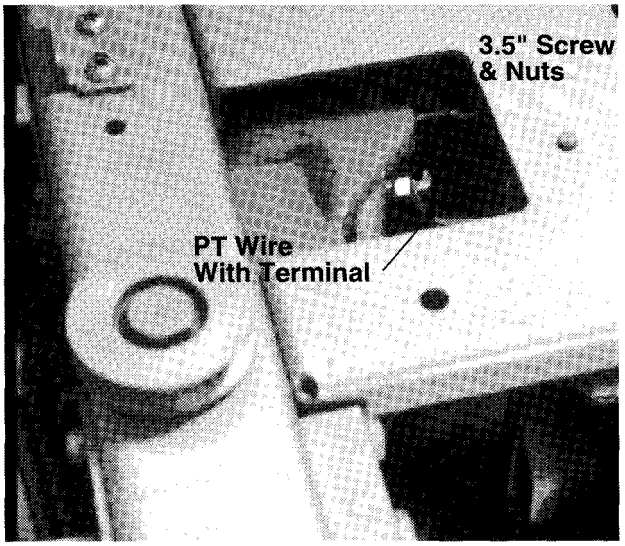
E. Route the Sensor Harness to the rear of the Breaker as shown.

F. Connect the Ring Terminals to the proper terminals of the Sensors per Connection Diagram.

G. Connect the + wire of the DTA Harness to the “OP” Terminal and the unmarked wire to the “ON” Terminal of the 7 Point Terminal Block.

H. Route the DTA Harness down into the Breaker to the 2 Point DTA Terminal Block. Connect the + wire to the same terminal as the + wire from the DTA. Connect the unmarked wire to the other terminal.

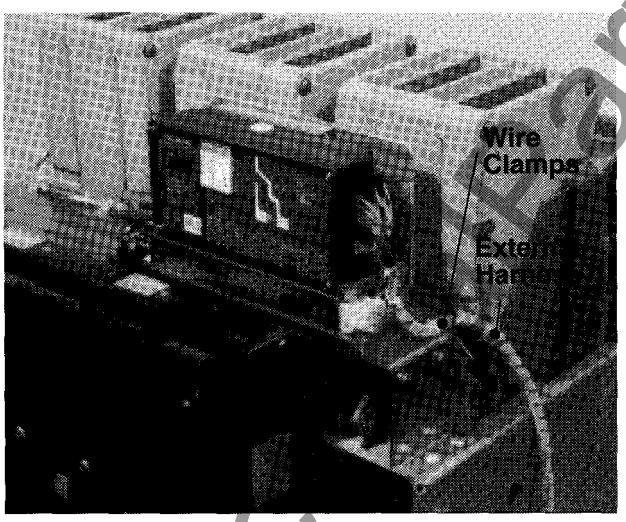
Step 12: (cont.)



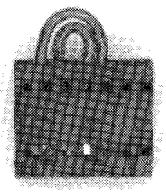
I. *700 and 800 Kits Only.* Route the 3 wires from the PT Module down into the Breaker. These wires are to connect to the 3.50" screws that project out of the Bottom Studs. Install a hex nut (supplied in step 2) on each of the three screws. Cut the wire marked with red to Phase 1. Cut the wire marked with yellow to Phase 2. Cut the wire marked with blue to Phase 3. Crimp a terminal on each wire. Connect the correct wire to each screw and install a hex. nut on each to Lock Terminal between hex. nuts as shown.

J. Use nylon wire ties and clamps to dress up wiring and keep it away from any interference of Breaker moving parts.

Step 13:



Note: For RMS/R 500 Basic Kits, the External Harness is the Plug pictured below. It is to be plugged into the right side of the Trip Unit.



A. Plug the External Harness into the sockets on the right side of the Trip Unit.

B. *700 and 800 Kits Only.* Connect the plug from the PT Module to the plug on the External Harness.

C. *700 and 800 Kits Only.* Connect the 2 wires with Ring Terminals from the External Harness to the Microswitch. One wire to the normally open screw and the other wire to common screw.

D. Attach the External Harness to the trip unit Mounting Bracket with 2 nylon wire clamps and self threading screws.

E. Use nylon wire ties to dress up wires around the plugs.

Step 14: The Cell Harness is to be mounted in the Breaker Cell. The Plug End is to be mounted on the right front side of the Cell. The Terminal Blocks can be mounted anywhere space is available in the Cell. With the Breaker in the Cell and the External Harness connected to the Cell Harness the Breaker should be free to go from Disconnect to the Connected position, and all Retrofit Wiring should be out of the way.

Step 15: The Retrofit is now complete and ready to be tested. See the Retrofit Application Data for Test Procedures.

DIGITRIP RETROFIT KIT INSTALLATION COMPONENTS FOR ITE K-3000 BREAKERS

STEP	DESCRIPTION	STYLE NO.	QTY.	COMMENTS
STEP 2	POLE UNIT HARDWARE	8189A29G02	1	
	.312-18 X 3.5 SCREW RND HD		3	
	.312 LOCK WASHER		3	
	.312 FLAT WASHER		3	
	.312-18 NUT HEX		6	
STEP 3	TRIP FINGER ASSY	8189A29G03	1	
	TRIP FINGER		1	
	.164-32 X 1.0 LNG SCREW FIL		2	
	.164 FLAT WASHER STL		4	
	.164 LOCK WASHER STL		2	
	.164-32 NUT HEX STL		2	
STEP 4	DTA	6503C67G01	1	
	DTA ASSY PARTS	8189A29G04	1	
	DTA RESET MECHANISM		1	
	.164-32 X .25 LNG SCREW		2	
	.164-32 X .38 LNG SCREW		2	
	.164 FLAT WASHER STL		4	
	.164 LOCK WASHER STL		4	
	.250-20 FLANGE NUT		1	
	LOC-TITE 242		1	
STEP 5	DTA BRACKET ASSY PARTS	8189A29G05	1	
	DTA MTG BRACKET		1	
	.164-32 X .25 LNG SCREW		2	
	.164-32 X .38 LNG SCREW		2	
	.164 FLAT WASHER STL		4	
	.164 LOCK WASHER STL		4	
	AUX SWITCH KIT	8189A12G02	1	700/800 KITS ONLY
	MICROSWITCH		1	" " "
	.138-32 X 1.0 LNG FIL SCREW		2	" " "
	.138-32 NUT HEX STL		4	" " "
	.138 FLAT WASHER STL		8	" " "
	.138 LOCK WASHER STL		4	" " "
	MOUNTING BRACKET		1	" " "
	.138-32 X .50 LNG FIL SCREW		2	" " "
STEP 6	DTA ASSY PARTS	8189A29G06	1	
	TERMINAL BLOCK 2 PNT		1	
	.138-32 X .75 LNG FIL SCREW		2	
	.138-32 NUT HEX STL		2	
	.138 FLAT WASHER STL		4	
	.138 LOCK WASHER STL		2	
	.250-20 X .75 LNG HEX BOLT		2	
	.250 FLAT WASHER STL		4	
	.250 LOCK WASHER STL		2	
	.250-20 NUT HEX STL		2	
STEP 7	DTA RESET PARTS	8189A26G01	1	
STEP 8	RMS/R TRIP RH51BLI	1232C84G__	1	
	RATING PLUG PR6A30A300	3D86709G08	1	
	AUX CT MODULE	6503C59G__	1	
	AUX CT HARNESS	6502C84G01	1	
	PT MODULE	6502C82G01	1	700/800 KITS ONLY
	TRIP UNIT SUBASSY PARTS	8189A29G07	1	

DIGITRIP RETROFIT KIT INSTALLATION COMPONENTS FOR ITE K-3000 BREAKERS *(CONTINUED)*

STEP	DESCRIPTION	STYLE NO.	QTY.	COMMENTS
STEP 8	TRIP UNIT SUPPORT BKT RH		1	
(CONT)	TRIP UNIT SUPPORT BKT LH		1	
	BARRIER		1	
	DIGITRIP NAMEPLATE		1	
	.190-32 X 4.0 LNG SCREW FIL		2	
	SPACER BRASS		2	
	.190-32 X .38 LNG SCREW FIL		6	
	.190 FLAT WASHER STL		8	
	.190 LOCK WASHER STL		8	
STEP 9	TRIP UNIT MTG BRKT PARTS	8189A29G08	1	
	TRIP UNIT MTG BRKT LH		1	
	TRIP UNIT MTG BRKT RH		1	
	TRIP UNIT MTG BRKT CENTER		1	
	.190-32 X 1.0 LNG SCREW FLAT		4	
	.190 FLAT WASHER STL		4	
	.190 LOCK WASHER STL		4	
	.190-32 NUT HEX STL		4	
	TRIP UNIT SPACER		6	
	.250-20 X .75 LNG HEX BOLT		4	
	.250 FLAT WASHER STL		8	
	.250 LOCK WASHER STL		4	
	.250-20 NUT HEX STL		4	
STEP 10	TRIP UNIT ASSY PARTS	8189A29G09	1	
	.250 FLAT WASHER STL		4	
	.250 LOCK WASHER STL		4	
	.250-20 X .50 LNG SCREW		4	
STEP 11	SENSOR 3000 MR	2817C83G26	3	
	SENSOR MOUNTING HDWARE	8189A29G10	1	
	SENSOR MOUNTING ASSY.		1	
	.250-20 X 1.0 LNG HEX BOLT		4	
	.250 FLAT WASHER STL		14	
	.250 LOCK WASHER STL		4	
	.250-20 NUT HEX STL		2	
STEP 12	SENSOR HARNESS PARTS	8189A29G11	1	
	SENSOR HARNESS		1	
	DTA HARNESS		1	
	WIRE TIES		12	
	WIRE CLAMP		2	
	.164-32 X .75 LNG SCREW FIL		2	
	.164 FLAT WASHER STL		4	
	.164 LOCK WASHER STL		2	
	.164-32 NUT HEX STL		2	
STEP 13	EXTERNAL HARNESS	6502C83G__	1	
	EXTERNAL HARNESS PARTS	8189A29G12	1	
	WIRE CLAMP		2	ALL EXCEPT 500 BASIC
	.138 X .38 TC SCREW		2	ALL EXCEPT 500 BASIC
STEP 14	CELL HARNESS	6503C57G__	1	ALL EXCEPT 500 BASIC

Westinghouse wishes 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.

Westinghouse Electric Corp.
ILS
Commercial Operations Division
Distribution & Control Business Unit
Five Parkway Center
Pittsburgh, PA 15220

Fax: (412) 937-6770
WIN 227-6770
Phone: (412) 937-6721
(412) 937-6741
(412) 937-6708
(412) 937-6725