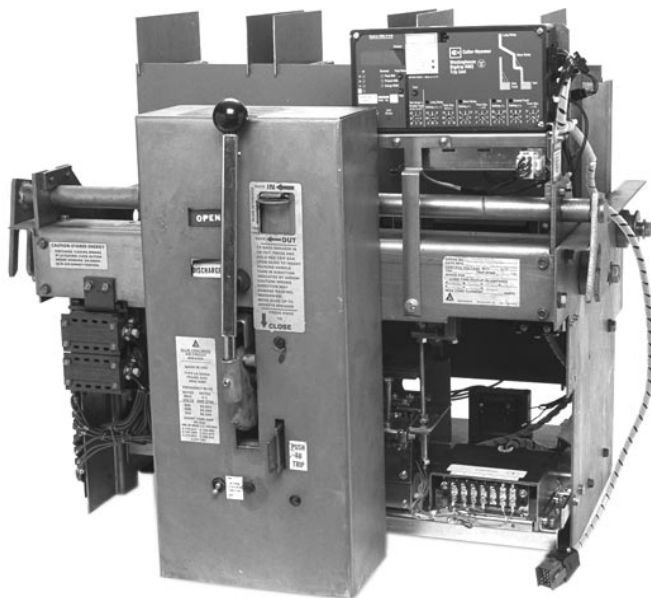




Digitrip Retrofit System for the Allis Chalmers LA-3000A / LA-3200A



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.**

Cutler-Hammer Digitrip Retrofit Kits are available in a number of configurations that provide a wide range of features. The Digitrip System starts with the 510 Basic Kit which offers true RMS sensing, overcurrent protection, and self-testing features. Advanced Digitrip Retrofit Kits feature zone interlocking, digital alphanumeric displays, remote alarm signals, IMPACC communications, energy monitoring capabilities, power factors, and harmonic content measurements.

The following table provides a quick reference of the components supplied with each level of Retrofit Kit. Before beginning the Retrofit process, take a minute to review the information contained in the table. It is important that the Retrofitter understand

which level of Retrofit Kit is to be installed and which components are included with the Kit.

The instructions contained in this manual cover the installation of all levels of Retrofit Kit. If the Kit you are installing does not contain a certain component, skip the instructions for that component and proceed to the next.

Throughout the Retrofit process, refer to the Torque Tables at the back of this manual for specific torque values.

If you have any questions concerning the Retrofit Kit and / or the Retrofit process, contact Cutler-Hammer at 1-800-937-5487.

Components	510 Basic	510 with Zone Interlock	610	810	910
Trip Unit					
Rating Plug					
Auxiliary Current Transformer (CT) Module					
Auxiliary CT Harness					
Sensors					
Sensor Harness					
Direct Trip Actuator (DTA)					
Mounting Brackets and Hardware					
External Harness	Plug	1 Connector Harness	2 Connector Harness	4 Connector Harness	4 Connector Harness
Cell Harness					
Breaker Mounted Control Power Transformer (CPT)					
Potential Transformer (PT) Module					
Auxiliary Switch					

Step 1: General Breaker Preparation

Before attempting to remove the Breaker, or perform any Retrofit operation, be sure to read and understand the Safety Precautions section of this manual. In addition, be sure to read and understand the *Instructions for the Application of Digitrip RMS Retrofit Kits on Power Circuit Breakers* (Retrofit Application Data - Publication AD 33-855-1), supplied with the Digitrip RMS/R Retrofit Kit.



WARNING

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 Retrofitter 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 Retrofit Kit, secure the necessary replacement parts *before* beginning the Retrofit process.

The force necessary to trip the Breaker must not exceed 12 pounds.

To begin the Retrofit process, refer to the components list at the rear of this manual. Lay out the components and hardware according to the steps outlined. The parts bags are labeled with the corresponding step number. The components and hardware will be used to complete each step of the Retrofit process.

Step 2: Removing the Original Components

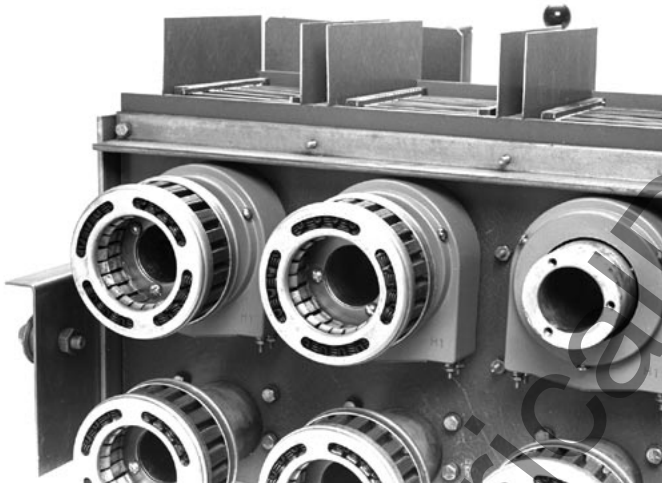
Follow the Allis Chalmers Instruction Manual, originally supplied with the Breaker, to perform the following procedures.

- A. Remove and scrap the existing Trip Unit and all associated hardware.
- B. Remove and scrap the original Direct Trip Actuator and all associated hardware.
- C. Remove and scrap the original Sensors and all associated hardware.



Step 3: Installing the Sensors

- A. Working from the back of the unit, remove the screws securing the top three (3) Finger Clusters to the Breaker Stabs. Remove the Finger Clusters.
- B. Position a Sensor on each Breaker Stab with the terminals facing downward. While holding the Sensor flush against the Breaker Back Plate, center each Sensor on the Stab and secure in place with the Sensor set screws.
- C. Using the original hardware, reinstall the Finger Clusters to their original positions.



For Kits Supplied with a PT Module Only.

Step 4: Installing the PT Module on the Trip Unit Platform

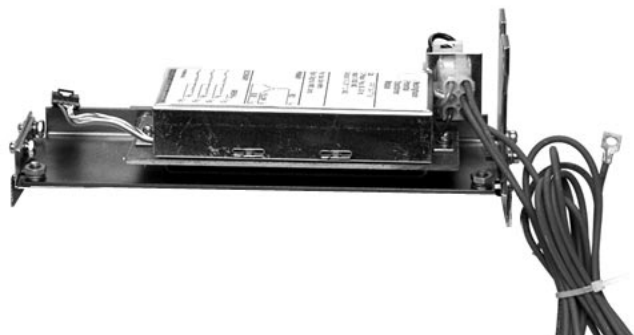
- A. Remove the PT Module Connector Mounting Bracket and Guard from the PT Module. Reattach the PT Module Connector Mounting Bracket to the side of the PT Module as shown.

Before

After



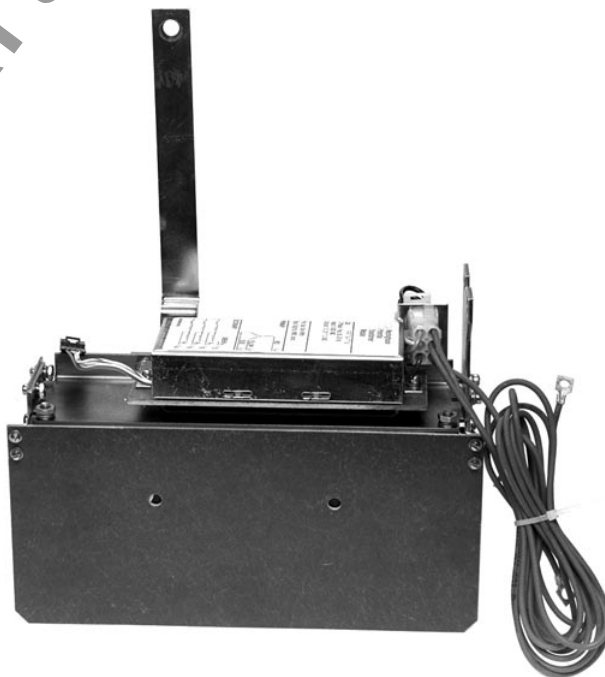
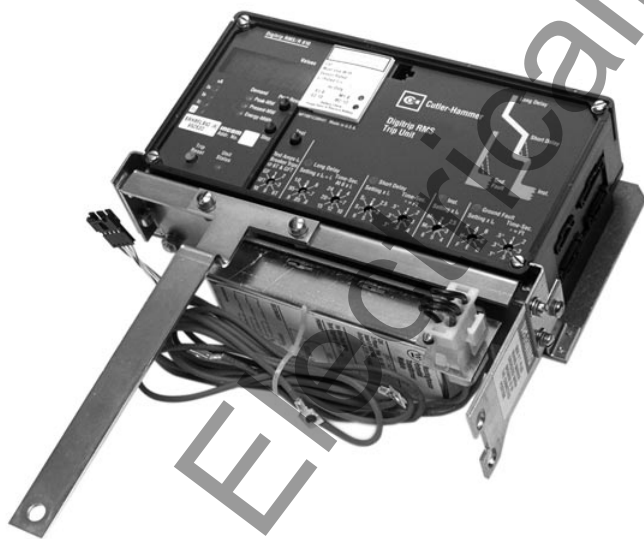
- B. Attach the Mounting Bracket for the PT Module to the bottom of the Trip Unit Platform using the .164-32 x .500" flat head screws, flat washers, lock washers, and nuts provided.
- C. Position the Glass Poly Insulator and PT Module on the mounting brackets and align the holes. Using the .138-32 x .500" screws, lock washers, and flat washers provided, mount the PT Module and insulation to the mounting brackets as shown.



- D. Attach the Warning Label provided to the right side of the Trip Unit Platform.

Step 5: Installing the Retrofit Components on the Trip Unit Platform

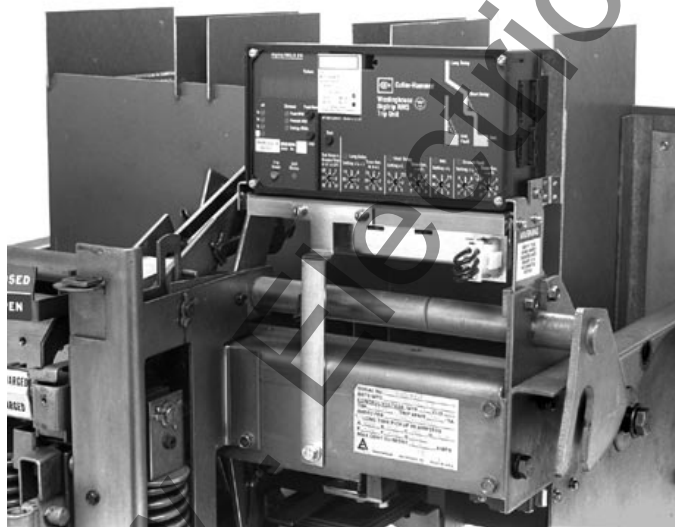
- A. Using the .190-32 \times .500" screws, flat washers, lock washers, and nuts provided, mount the "T" Bracket to the front of the platform as shown.
- B. Align the holes in the Trip Unit with the holes in the Trip Unit Platform. Insert the Brass Spacers provided in the notches at the rear of the Trip Unit. Using the .190-32 \times 4.00" screws, flat washers, lock washers, and hex nuts provided, mount the Trip Unit to the Platform. Note that the screws are inserted from the top of the Trip Unit.
- C. Using the .164-32 \times .375" screws, lock washers, and flat washers provided, mount the Trip Unit Support Clips to each side of the Trip Unit Platform as shown. The Support Clips must be installed so that they engage the slots in the sides of the Trip Unit.
- D. Using the .112-40 \times .250" screws, flat washers, and lock washers provided, mount the Insulation Barrier Mounting Clips to the Glass Poly Insulation Barrier as shown.
- E. Using the .164-32 \times .312" pan lock screws and flat washers provided, mount the Glass Poly Insulation Barrier Assembly to the Trip Unit Support Clips. Note that the Mounting Clips are positioned between the Support Clips and the Trip Unit.
- F. Remove the Trip Unit Cover and install the Rating Plug provided with the Retrofit Kit. Reinstall the Trip Unit Cover.
- G. Install the Digitrip Nameplate to the top of the Trip Unit.



Step 6: Installing the Trip Unit Assembly on the Breaker

The Trip Unit Assembly is mounted to the Breaker using existing holes. The right Trip Unit Assembly Mounting Bracket is sandwiched between the right Breaker Frame and the right Bearing Cap Retainer then secured using the original hardware. The Trip Unit "T" Bracket is mounted to the front of the Breaker using the existing hole and the hardware supplied.

- A. Remove the two (2) bolts from the bracket supporting the right side of the Bearing Cap Retainer.
- B. Insert the right side of the Trip Unit Assembly between the Bearing Cap Retainer bracket and the right Breaker Frame as shown. Align the holes and, using the original bolts, mount the Trip Unit Assembly to the right Breaker Frame.
- C. Align the hole in the "T" Bracket with the existing hole in the plate directly below the Trip Unit Assembly. Using the .250-20 x .750" bolt, flat washers, lock washer, and nut provided, secure the "T" Bracket to the plate as shown.

**Step 7: Installing the DTA Reset Assembly**

- A. Remove and scrap both "X" washers securing the pin in the Breaker Cross Bar. Remove the pin.
- B. Insert the Direct Trip Actuator (DTA) Reset Block into the Breaker Cross Bar so that the Reset Shaft is to the left and align it with the holes.
- C. Slide the original pin through the Breaker Cross Bar and the DTA Reset block.
- D. Using the new "X" washers provided, secure the pin.



For Kits Supplied with an Aux. Switch Only.

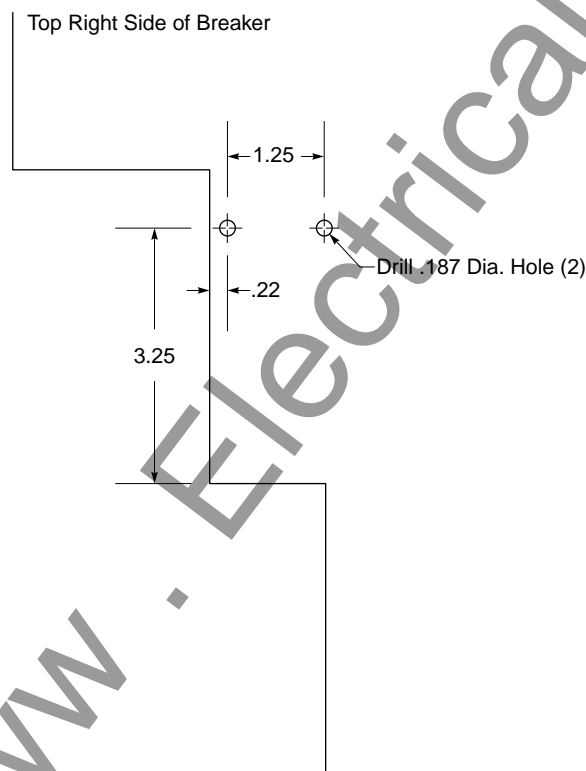
Step 8: Installing the Aux. Switch

- A. Using the .138-32 \times 1.00" screws, flat washers, lock washers, and nuts provided, secure the Microswitch to the Aux. Switch Mounting Bracket as shown.



- B. Using Drilling Plan A, drill two (2) .187" diameter holes in the right Breaker Frame.

Drilling Plan "A"



- C. Align the Aux. Switch Assembly with the holes just drilled in the Breaker Frame. The Microswitch Arm must ride on the Insulating Link as shown. Mark the Microswitch Arm, remove the Aux. Switch Assembly, and cut the necessary amount off the Arm.



- D. Using the .164-32 \times .500" screws, flat washers, lock washers, and nuts provided, mount the Aux. Switch Assembly to the right Breaker Frame.

For Kits Supplied with a Breaker Mounted CPT Only.

Step 9: Installing the Breaker Mounted CPT

The Breaker Mounted Control Power Transformer (CPT) can be mounted to the Breaker Base Plate where desired as long as it is clear of all moving parts and Breaker components. To install the CPT, complete the following steps.

- A. Place the CPT on the Breaker Base Plate where desired. Make sure that the X1 and X2 Terminals are facing the front of the Breaker. Mark the location, remove the CPT, and drill four (4) .219" holes in the Breaker Base Plate. (See photos on pages 9 and 10.)

- B. Position the fuses in an accessible location and mark and cut the Load Side of each High Voltage Fused Wire (HV Wire), strip .250", and attach a .138" ring terminal to each wire for attachment to the CPT. Attach the HV Wires to the CPT terminals to achieve the required voltage. (See the following Table.)

Voltage Required	CPT Terminals Used
480 Volt Circuit	H1 & H4
240 Volt Circuit	H1 & H3
208 Volt Circuit	H1 & H2

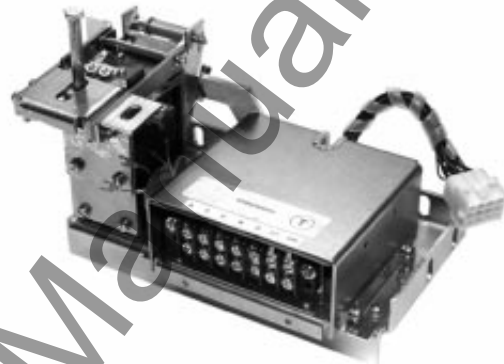
NOTE: The Line Side of the HV Wires are longer than necessary and will be cut to length during connection to the Breaker Stabs later in the Retrofit process.

- C. Using the bolts, flat washers, lock washers, and nuts provided with the CPT Kit, secure the CPT to the Breaker Base Plate.
- D. Temporarily position the HV Wires in the Breaker so that the fuses are located in a clear, accessible area and the wires exit the rear of the Breaker.

Step 10: Installing the Aux. CT Module and the DTA Assembly on the Aux. CT Module Platform

- A. Remove the four (4) self-tapping screws from the sides of the Auxiliary Current Transformer (Aux. CT) Module. Using the original hardware, mount the Aux. CT Module Mounting Clips to the Aux. CT Module as shown.

- B. Align the holes in the Aux. CT Module Assembly with the holes in the Aux. CT Module Platform. Using the .190-32 x .500" screws, flat washers, lock washers, and nuts provided, mount the Aux. CT Module Assembly to the Aux. CT Module Platform as shown.



- C. Align the holes in the Direct Trip Actuator (DTA) Assembly with the holes in the left front of the Auxiliary (Aux.) CT Module Platform. Using the .164-32 x .312" Pan / Lock screws and flat washers provided, apply Loc-Tite® 242 to the threads and mount the DTA Assembly to the Aux. CT Module Platform as shown.

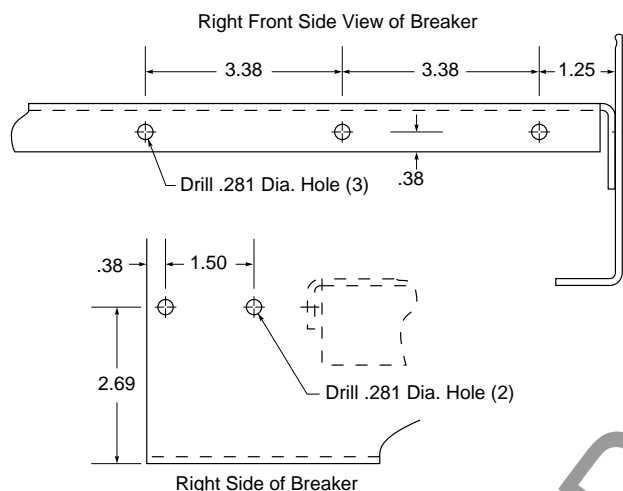


- D. Route the DTA Wires over to the Aux. CT Module. Connect the "+" DTA Wire to the "OP" terminal on the Aux. CT Module and the unmarked wire to the "ON" terminal. Fold any excess length of the DTA Wires and secure using the nylon wire tie provided. The excess should then be tucked in between the DTA Assembly and the Aux. CT Module. Make sure that the DTA Wires are clear of any moving parts within the Breaker.

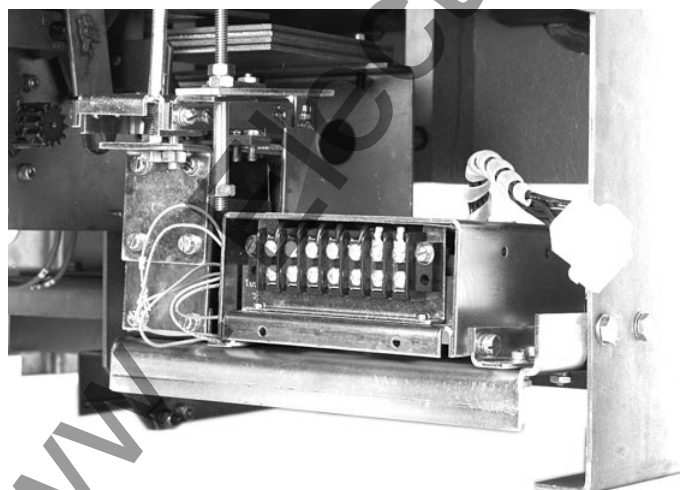
Step 11: Installing the Aux. CT Module / DTA Platform Assembly

- A. Using Drilling Plan B, mark and drill three (3) .281" diameter holes in the Breaker Base Plate and two (2) .281" diameter holes in the right Breaker Frame.

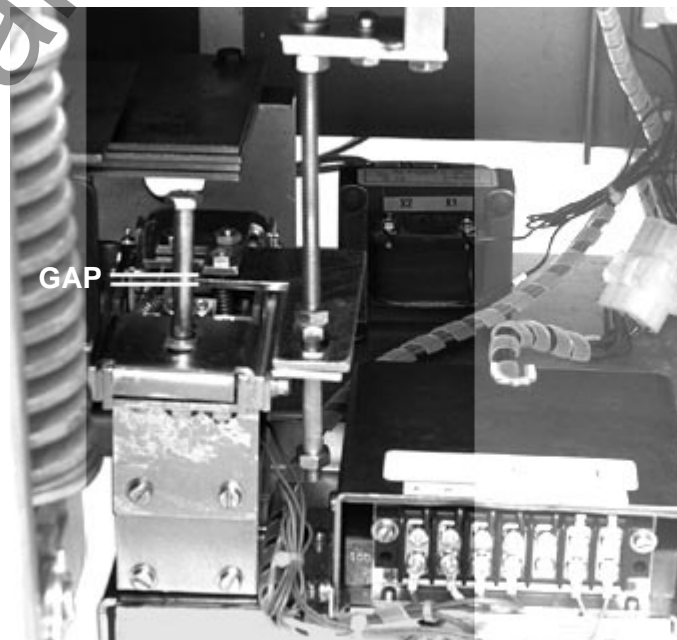
Drilling Plan "B"



- B. While holding the spring loaded Reset Arm in place, insert the Reset Shaft through the slots in the Reset Arm and Latch Assembly. Still holding the Reset Shaft in place, position the Aux. CT Module / DTA Platform Assembly in the Breaker.



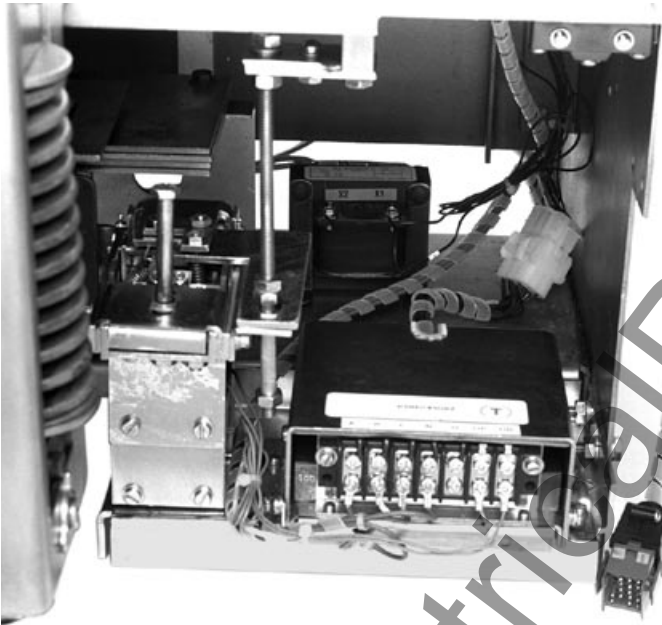
- C. Using the .250-20 x .750" bolts, flat washers, lock washers, and nuts provided and the holes drilled in Step A, mount the Aux. CT Module / DTA Platform Assembly to the Breaker Base Plate and right Breaker Frame as shown.
- D. Slide the Brass Sleeve and lock nut provided on to the bottom of the Reset Shaft. Tighten the lock nut finger tight.
- E. The gap between the Reset Arm and the Spring Pivot Plate must be adjusted to .06". To adjust the gap, apply Loc-Tite® 242 to the threads of the Reset Shaft, then wind the bottom of the two (2) top nuts down against the Reset Arm. Wind the other top nut down to lock the first nut in position. To finish the process, wind the lock nut up the Reset Shaft until it is tight against the the bottom of the Brass Sleeve.



- F. The gap between the adjusting screw on the left side of the DTA Assembly and the rear of the Breaker Trip Bar should also be .06". Adjust the gap by loosening the lock nut and turning the adjusting screw until the gap is achieved. Apply Loc-Tite® 242 to the threads of the adjusting screw then retighten the lock nut.

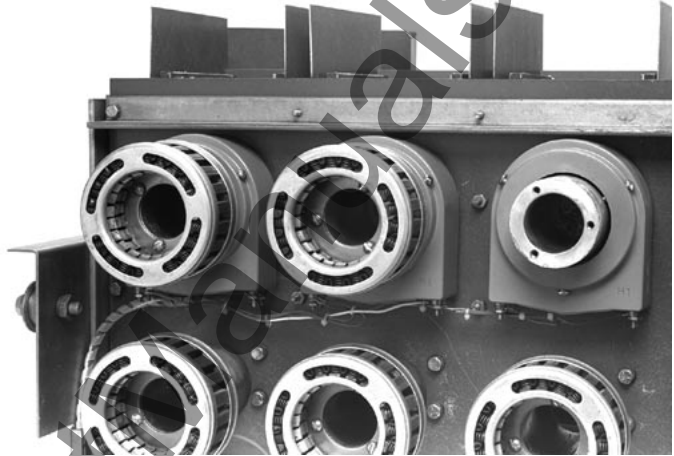
Step 12: Installing the Sensor Harness

- A. Connect the Sensor Harness to the proper terminals on the Aux. CT Module. Refer to Section 12 of the Retrofit Application Data, supplied with the Retrofit Kit, for detailed wiring specifications.
- B. Using one of the metal screws that secure the Aux. CT Module Mounting Brackets to the Aux. CT Module, connect the green ground wire from the Sensor Harness (with the ring terminal) to the case of the Aux. CT Module.



- C. Route the Sensor Harness between the Aux. CT Module and the DTA Assembly, out the back of the Breaker, then up to the Sensors.

- D. Connect the ring terminals of the Sensor Harness to the Sensors. Refer to Section 12 of the Retrofit Application Data, supplied with the Retrofit Kit, for detailed wiring specifications.



When wiring the Sensors supplied with the Retrofit Kit, the following convention applies.

LA-3000A**Sensor Style No. 8257A68H01**

X1 - X4 = 3,000 A

X1 - X3 = 2,500 A

X1 - X2 = 2,000 A

LA-3200A**Sensor Style No. 4A35809H01**

X1 - X4 = 3,200 A

X1 - X3 = 2,400 A

X1 - X2 = 2,000 A

For detailed information, refer to Section 12 of the Retrofit Application Data.

For Kits Supplied with a PT Module Only.
Refer to Section 7-3, Power Flow Convention of the Retrofit Application Data, for additional wiring information and to verify the Phase Convention used on this Breaker Application.

For Kits Supplied with a PT Module Only.

Step 13: Connecting the PT Wires

- A. Route the PT Wires along the Breaker Back Plate to the bottom of the Breaker then up to the bottom Breaker Stabs.

NOTE: Before cutting the PT Wires verify the Phase Convention used on this Breaker Application.

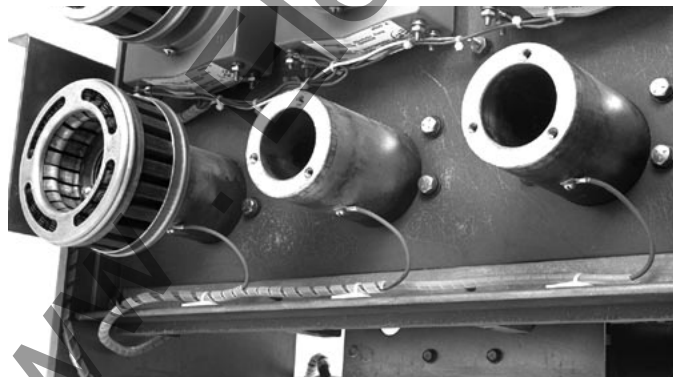
- B. The PT Wires are marked for connection to Phases 1, 2, and 3 with corresponding numbers.

Route the PT Wires to a position suitable for attachment to the bottom Breaker Stabs. Move the wire markers to a position where they will still be attached to the wire after cutting. Cut the wires to length, strip each wire .250", and install a .190" ring terminal.

- C. Drill and tap a .190-32 hole in each bottom Breaker Stab. The hole must be drilled in a position where it is accessible and does not interfere with the bottom Finger Clusters.

NOTE: After choosing the location for the holes, it may be necessary to remove the bottom Finger Clusters to provide proper access.

- D. Using the .190-32 x .750" screws and lock washers provided, attach each PT Wire to its corresponding phase.



- E. Using the self-adhesive wire clamps provided, secure the Sensor Harness to the Breaker Rear Bottom Channel.

For Kits Supplied with a Breaker Mounted CPT Only.

Step 14: Connecting the Breaker Mounted CPT Line Side HV Wires

NOTE: The HV Wires are longer than necessary and are to be cut during the following steps. Before cutting the wires, be sure sufficient length is left so that the HV Wire Fuses are accessible and that the connections can be made to the correct Breaker Stabs.

- A. Assuring that the HV Wire Fuses are still located in an easily accessible position, route the HV Wires to the top or bottom Breaker Stabs.

NOTE: The power convention of LA-3000A / LA-3200A Breakers is normally *Top to Bottom* meaning the top stabs are on the *Line* side of the Breaker and the bottom stabs are on the *Load* side.

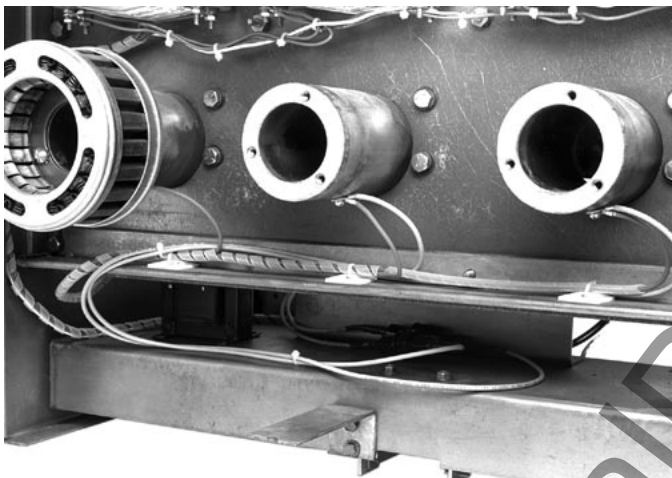
The HV Wires from the CPT *must be attached to the Line side* of the Breaker. If it is determined that the power flow for the Breaker application is opposite the normal convention, the HV Wires must be attached to the bottom stabs.

- B. Cut each HV Wire to the appropriate length, strip .250", and attach a .190" ring terminal.

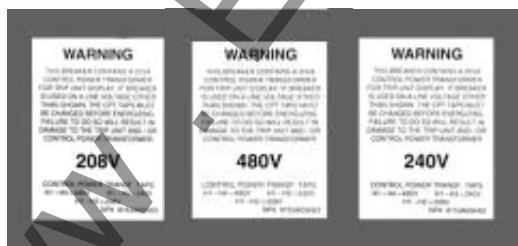
- C. *For Kits with PT Module and Line Side on the Bottom.* If the Line Side of the Breaker is determined to be the bottom use the holes drilled to attach the PT Wires and the same hardware, connect the HV Wires to the Phase 1 & 2, or Phase 2 & 3 bottom Breaker Stabs.

NOTE: After choosing the location for the holes, it may be necessary to remove the Finger Clusters to provide proper access.

- D. *All Other Kits.* Drill and tap a .190-32 hole in the Phase 1 & 2, or Phase 2 & 3 of the Line Side Breaker Stabs. The holes must be drilled in a position where they are accessible and do not interfere with the Finger Clusters. Using the .190-32 x .750" screws and lock washers provided, connect each CPT Wire to the corresponding Phase.

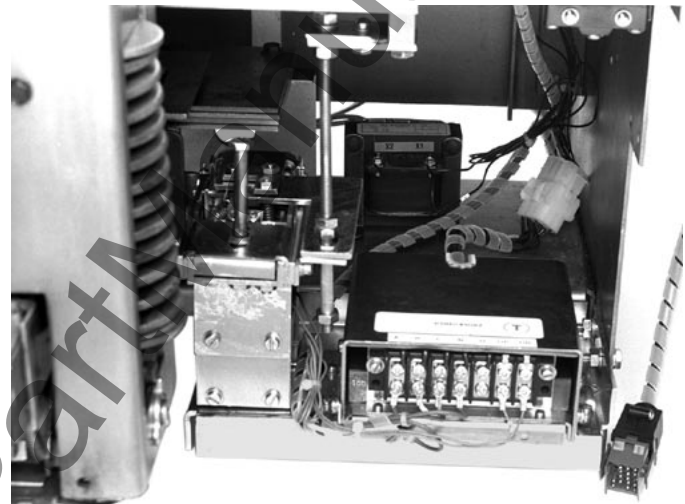


- E. Using the nylon wire ties provided, attach the CPT Wires to the Sensor Harness to keep them away from any moving parts within the Breaker.
- F. Attach the appropriate label for the Breaker in a clearly visible position. Three (3) labels are included with the CPT, one (1) for 480 Volt, one (1) for 240 Volt, and one (1) for 208 Volt systems.



Step 15: Connecting the Aux. CT, PT Extension, and External Harnesses

- A. Connect the Aux. CT Harness to the Aux. CT Module plug. Route the harness up along the right side of the Breaker to the Trip Unit Assembly. Plug the other end of the Aux. CT Harness into its receptacle on the right side of the Trip Unit.

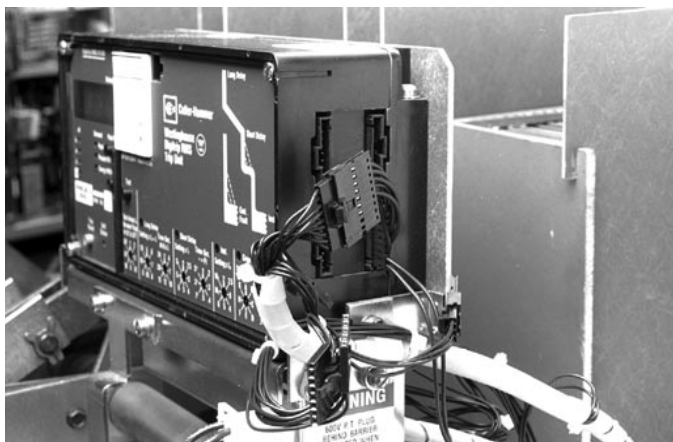


- B. *For Kits with a PT Module Only.* Plug the connector of the PT Extension Harness into the receptacle on the PT Harness. Route the PT Extension Harness down behind then to the right side of the Trip Unit. PT Extension Harness final connection will be made later in the Retrofit process.
- C. *For 510 Basic Kits Only.* Connect the External Harness to the Trip Unit.



NOTE: For RMS/R 510 Basic Kits, the External Harness is the plug pictured above. It is to be plugged into the right side of the Trip Unit.

- D. *For Kits Supplied with a Breaker Mounted CPT Only.* Insert the black plug of the Trip Unit Harness into the bottom rear socket on the right side of the Trip Unit. Route the two (2) wires down through the Breaker to the X1 and X2 terminals of the CPT. Assure that the wires are clear of any moving parts within the Breaker.



Cut the wires to length. Strip .250" of insulation and attach a .138" ring terminal to each wire. Connect the wires to the X1 and X2 terminals of the CPT.

- E. *For All Kits Except 510 Basic.* Connect the External Harness to the Trip Unit using the nylon wire clamps provided and the hardware used to mount the right Trip Unit Support Clip, secure the External Harness to the Trip Unit Assembly.



- F. *For Kits Supplied with a PT Module Only.* Connect the PT Extension Harness to the External Harness.
- G. *For Kits Supplied with an Aux. Switch Only.* Route the two (2) black wires (with ring terminals) from the External Harness behind the Trip Unit to the Aux. Switch Assembly. Connect one (1) wire to the normally "Open" terminal and the other wire to the "Common" terminal of the Microswitch.



- H. Use the nylon wire ties provided to dress all wiring to keep it away from any moving parts within the Breaker.

Step 16: Testing the Breaker

- A. Measure the force necessary to trip the Breaker at the point where the DTA flange nut contacts the Trip Finger. The force necessary to trip the Breaker **MUST NOT EXCEED** 3 lbs.
- B. The Retrofit must be tested using primary injection. Refer to Section 8 of the *Instructions for the Application of Digitrip RMS Retrofit Kits on Power Circuit Breakers* (Publication AD 33-855-1, June, 1997), supplied with the Retrofit kit, for detailed testing procedures and specifications. For test information specific to the Trip Unit, refer to the IL publication supplied with the Retrofit kit (see the Pick List for the IL number).
- C. While Section 8 of the *Instructions for the Application of Digitrip RMS Retrofit Kits on Power Circuit Breakers* provides the information necessary for testing the Breaker, please keep the following notes in mind when reviewing other sections of the publication.

CAUTION: When all testing is complete, the Trip Unit must be reset. Failure to do so may cause the Battery in the Rating Plug to run down.

Notes:

1. Publication AD 33-855-1 was created specifically for the “hundred” series (500, 600, 700, etc.) Retrofit Kits. Therefore certain sections and figures do not apply to the “ten” series (510, 610, 810, etc.) Retrofit Kits. Specifically, these are Sections 13 and 14, as well as Figures 3-2, 3-3, and 3-4.
2. **For All Kits Other Than 510 Basic.** If testing the Breaker with Short Delay or Ground Fault functions, be sure to either plug in the Cell Harness Assembly or use the Zone Interlock Shorting Plug. Failure to

do so may result in shorter than expected trip times.

3. **For 810 and 910 Kits Only.** Without any power applied to the system (neither the 120 volt power supply nor the Aux. Power Module connected), plug the External Harness into the Cell Harness and check the impedance between COM 1 and COM 2. The impedance should be between 1 and 3 ohms. If the impedance is not within this range, trace the wiring and examine each connection to assure its integrity.

Confirm that the IMPACC communicating wiring is correct by following the procedures detailed in Section 7.4 of the *Instructions for the Application of Digitrip RMS Retrofit Kits on Power Circuit Breakers*. Note that for 810 and 910 Kits, the impedance between COM 1 and COM 2 should be between 1 and 3 ohms.

When the test is complete, disconnect the External Harness from the Cell Harness. Final External Harness Connection will be performed in Section 17.

For Kits Supplied with a Cell Harness Only.

Step 17: Mounting the Cell Harness

- A. The Cell Harness is to be mounted in the Breaker Cell. The connector end is to be mounted on the right front side of the Cell, in a location suitable for connection with the External Harness. The Terminal Blocks can be mounted anywhere space is available in the Cell as long as connection to the External Harness can be made.
- B. Route the Cell Harness wiring to keep it away from any moveable parts within the Cell Housing.

Step 18: Installing the Retrofitted 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 Retrofitter to insure proper Breaker / Cell fit. When racking the Breaker into the connected position, the Retrofitter **MUST FOLLOW BOTH** the manufacturer's instructions and the customer's safety standards and procedures for racking a Breaker into the connected position.

- 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 Retrofitter 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 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.

Digitrip Retrofit Kit Installation Components For the Allis Chalmers LA-3000A / LA-3200A Breaker

Step	Description	Style No.	Qty.	Comment
Step 3	Sensor 3000/5 MR	8257A68H01	3	LA-3000A
	Sensor 3200/ 5MR	4A35809H01	3	LA-3200A
Step 4	Trip Unit Mounting Bracket	From Step 5	1	
	PT Module	6502C82G01	1	
	.138-32 x .500 Lng. Screw Stl.		2	
	.138 Flat Washer Stl.		2	
	.138 Lock Washer Stl.		2	
	.138-32 Nut Hex Stl.		2	
	PT Module Mounting Parts	4A35658G12	1	
	Mounting Bracket		1	Comm. Only
	Barrier		1	
	.164-32 x .500 Lng Screw Flat		2	
	.164 Flat Washer Stl.		2	
	.164 Lock Washer Stl.		2	
	.164-32 Nut Hex Stl.		2	
	Warning Nameplate		1	

Digitrip Retrofit Kit Installation Components
For the Allis Chalmers LA-3000A / LA-3200A Breaker (continued)

Step	Description	Style No.	Qty.	Comment ♦
Step 5	Trip Unit		1	See Pick List
	Rating Plug		1	See Pick List
	Trip Unit Assembly Parts	4A35658G08	1	
	“T” Bracket		1	
	Support Bracket		1	
	Barrier		1	
	Support Clip L. H.		1	
	Support Clip R. H.		1	
	Mounting Clip		2	
	Digitrip Nameplate		1	
	Spacer Brass		2	
	.190-32 × 4.00 Lng. Screw Fil.		2	
	.190-32 × .500 Lng. Screw Fil.		2	
	.190 Flat Washer Stl.		8	
	.190 Lock Washer Stl.		4	
	.190-32 Nut Hex Stl.		4	
	.164-32 × .500 Lng. Screw Fil.		2	
	.164-32 × .375 Lng. Screw Fil.		2	
	.164-32 × .312 Lng. Screw Pan / Lock		2	
	.164 Flat Washer Stl.		10	
	.164 Lock Washer Stl.		4	
	.164-32 Nut Hex Stl.		4	
	.112-40 × .250 Lng. Screw Fil.		4	
	.112 Flat Washer Stl.		4	
	.112 Lock Washer Stl.		4	
Step 6	Trip Unit Assembly	From Step 5	1	
	Trip Unit Mounting Parts	4A35658G09	1	
	.250-20 × .750 Lng. Hex Bolt		1	
	.250 Flat Washer Stl.		2	
	.250 Lock Washer Stl.		1	
	.250-20 Nut Hex Stl.		1	
Step 7	DTA Reset Parts	4A35658G07	1	
	X-Washer .375		2	
	DTA Reset Assembly	697B775G01	1	
Step 8	Aux. Switch Kit	4A35658G02	1	
	Microswitch		1	
	Mounting Bracket		1	
	.164-32 × .500 Lng. Screw Fil.		2	Comm. Only
	.164 Flat Washer Stl.		4	
	.164 Lock Washer Stl.		2	
	.164-32 Nut Hex Stl.		2	

Digitrip Retrofit Kit Installation Components
For the Allis Chalmers LA-3000A / LA-3200A Breaker (continued)

Step	Description	Style No.	Qty.	Comment
Step 8	.138-32 × 1.00 Lng. Screw Fil.		2	Comm. Only
Cont.	.138 Flat Washer Stl.		4	
	.138 Lock Washer Stl.		2	
	.138-32 Nut Hex Stl.		2	
Step 9	Breaker Mounted CPT Kit	8259A91G05	1	CPT Only
	CPT Mounting Parts	4A35658G20	1	
	.190-32 × .625 Lng. Screw Fil.		4	
	.190-32 × .500 Lng. Screw Fil.		2	
	.190 Flat Washer		10	
	.190 Lock Washer		6	
	.190-32 Nut Hex Stl.		4	
Step 10	Aux. CT Module	6506C45G	1	
	Aux. CT Mounting Assembly Parts	4A35658G04	1	
	Mounting Platform		1	
	Mounting Bracket		2	
	.190-32 × .500 Lng. Screw Fil.		4	
	.190 Flat Washer Stl.		8	
	.190 Lock Washer Stl.		4	
	.190-32 Nut Hex Stl.		4	
	DTA Assembly	4A35658G33	1	
	DTA Mounting Parts	4A35658G05	1	
	.164-32 × .312 Lng. Screw Pan / Lock		4	
	.164 Flat Washer Stl.		4	
	Loc-Tite® 242		1	
	Wire Tie Nylon	From Step 12	1	
Step 11	Aux. CT Module Mounting Hardware	4A35658G06	1	
	.250-20 × .750 Lng. Hex Bolt Stl.		5	
	.250 Flat Washer Stl.		10	
	.250 Lock Washer Stl.		5	
	.250-20 Nut Hex Stl.		5	
	DTA Reset Parts	4A35658G14	1	
	.250-20 Elastic Lock Nut		1	
	Brass Sleeve		1	
	Loc-Tite® 242		1	
Step 12	Sensor Harness Parts	4A35658G10	1	
	Sensor Harness		1	
	Wire Clamp		7	
	Wire Clamp Stick On		3	
	Wire Tie Nylon		10	
	.190-16 × .500 Lng. Screw Pan T.C.		4	
	.190 Flat Washer Stl.		4	

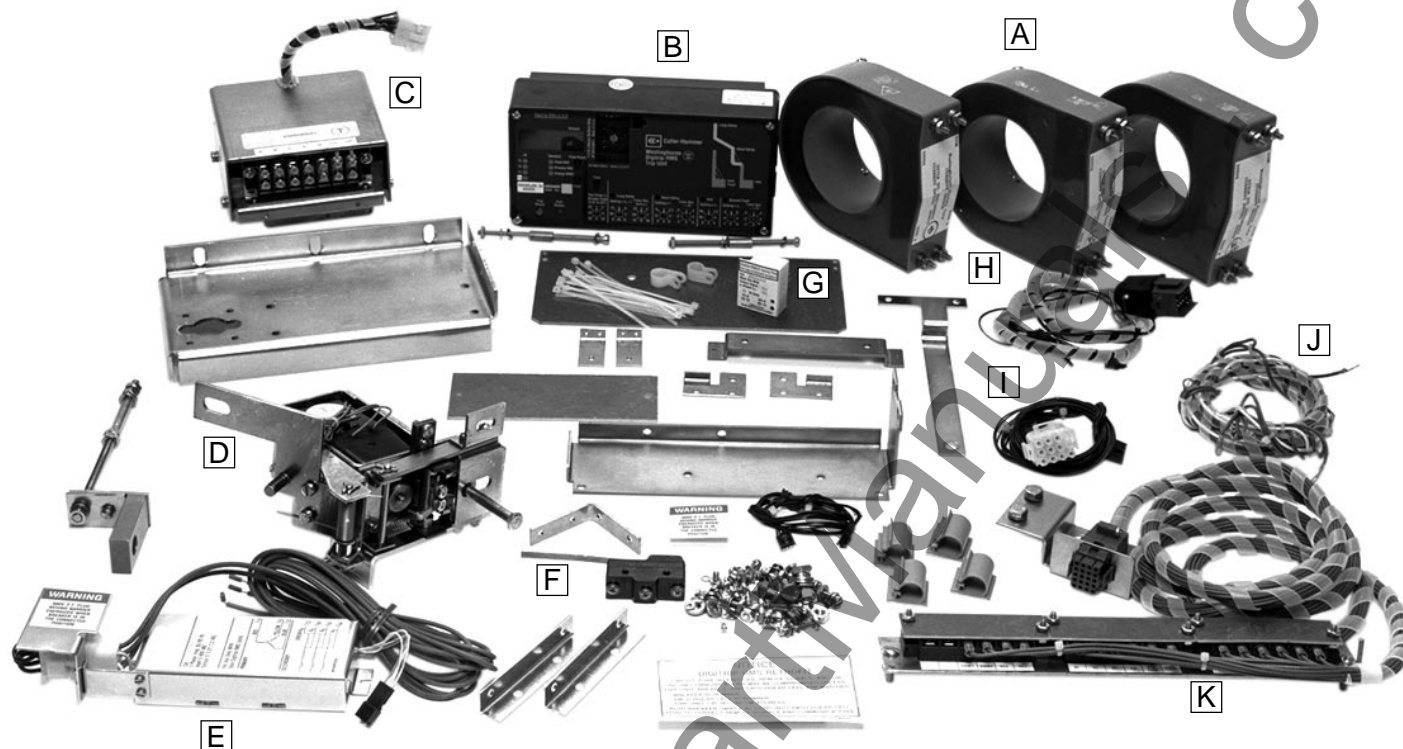
Digitrip Retrofit Kit Installation Components
For the Allis Chalmers LA-3000A / LA-3200A Breaker (continued)

Step	Description	Style No.	Qty.	Comment
Step 12	.190 Lock Washer Stl.		4	
(cont.)	.164-32 × .500 Lng. Screw Fil.		3	
	.164 Flat Washer Stl.		6	
	.164 Lock Washer Stl.		3	
	.164-32 Nut Hex Stl.		3	
Step 13	PT Connection Hardware	4A35658G13	1	
	.190-32 × .750 Lng. Screw Fil.		3	Comm. Only
	.190 Flat Washer Stl.		6	
	.190 Lock Washer Stl.		3	
	Ring Terminals (.190, .250, .312, .375, .500) Included in Box From Step 4		3	Each Size
	Wire Clamp Stick On	From Step 12	3	
Step 14	CPT Connection Hardware	Included in Box From Step 9	1	
	.190-32 × .750 Lng. Screw Fil.		3	
	.190 Flat Washer Stl.		6	CPT Only
	.190 Lock Washer Stl.		3	
	Ring Terminals (.138, .190, .250, .312, .375, .500)		2	Each Size
	Wire Tie Nylon	From Step 12	3	
Step 15	External Harness	6502C83G__	1	
	Aux. CT Harness	6502C84G02	1	
	PT Extension Harness	6502C85G01	1	Comm. Only
	Harness Mounting Parts	4A35658G11	1	
	Wire Clamp		2	
	Wire Clamp		2	
	Wire Ties Nylon		6	
Step 17	Cell Harness	6503C57G__	1	Except 510 Basic

NOTE: Due to the wide variety of Breakers and multiple components, some excess hardware may be left when the Retrofit is complete.

Torque Values for Copper BUS Connectors

Decimal Size (in)	Standard Size	Torque (in-lbs)	Torque (ft-lbs)
.250	1/4-20	60	5
.312	5/16-18	144	12
.375	3/8-16	240	20
.500	1/2-13	600	50



- | | | | |
|----|-----------------------------------|----|------------------------------|
| A. | Sensors | G. | Rating Plug |
| B. | Trip Unit Assembly | H. | External Harness |
| C. | Auxiliary CT Module and Mountings | I. | Auxiliary CT Harness |
| D. | DTA Assembly | J. | Sensor Harness |
| E. | PT Module | K. | Cell Terminal Block Assembly |
| F. | Auxiliary Switch | | |

Torque Values for General Mounting

Decimal Size (in)	Standard Size	Torque (in-lbs)	Torque (ft-lbs)
.112	4-40	10	0.8
.138	6-32	18	1.5
.164	8-32	36	3.0
.190	10-32	46	3.8
.250	1/4-20	100	8.3
.312	5/16-18	206	17.2
.375	3/8-16	356	29.7
.438	7/16-14	572	47.7
.500	1/2-13	856	71.3

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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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 nuclear applications. 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.

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