Power Break® Circuit Breakers

Power Management Upgrade

Application

These kits provide the wiring and switches required for a Power Break circuit breaker to use power management trip unit features. The kit catalog numbers are TPSP for 800–2000 A stationary breakers, TCSP for 800–2000 A draw-out breakers, TPLP for 2500–4000 A stationary breakers, and TCLP for 2500–4000 A draw-out breakers. The parts included in these kits are listed in Table 1, Table 2, Table 3, and Table 4.

The numbers in brackets in the following instructions and figures refer to the item numbers in these tables.

Item	Part No.	Description	Qty.
1	10086637G1	Terminal board assembly	1
2	N701P1708B6	Thread-forming screw, #10-16 x 1/2	2
3	286A8112P1	Barrier (not used)	1
4	567B262G36	Auxiliary switch	1
5	793A765P2	Wire tie, small	6
6	793A765P3	Wire tie, large	8

Table 1. List of parts in the power management upgrade kits for 800–2000 A stationary breakers, catalog number TPSP.

Item	Part No.	Description	Qty.
1	10086637G1	Terminal board assembly	1
2	N701P1708B6	Thread-forming screw, #10-16 x 1/2	2
3	286A8112P1	Barrier	1
4	567B262G42	Auxiliary switch	1
5	793A765P2	Wire tie, small	6
6	793A765P3	Wire tie, large	8

Table 2. List of parts in the power management upgrade kits for 2500–4000 A stationary breakers, catalog number TPLP.

Item	Part No.	Description	Qty.
1	10086523G1	Terminal board assembly	1
2	N701P1708B6	Thread-forming screw, #10-16 x 1/2	2
4	567B262G36	Auxiliary switch	1
5	793A765P2	Wire tie, small	6
6	793A765P3	Wire tie, large	8
7	N722P16006B6	Thread-forming screw, #10-32 x 3/8	2
8	TDOSVD907F	Trip unit disconnect, breaker	1
9	TDOSVD12	Trip unit disconnect, substructure	1
10	Incl. with [9]	Spring	1

Table 3. List of parts in the power management upgrade kit for 800–2000 A draw-out breakers, catalog number TCSP.

Item	Part No.	Description	Qty.
1	10086637G1	Terminal board assembly	1
2	N701P1708B6	Thread-forming screw, #10-16 x 1/2	4
3	286A8112P1	Barrier	1
4	567B262G42	Auxiliary Switch	1
5	793A765P2	Wire tie, small	6
6	793A765P3	Wire tie, large	8
7	N722P16006B6	Thread-forming screw, #10-32 x 3/8	2
8	TDOSVD907F	Trip unit disconnect, breaker	1
9	TDOSVD12	Trip unit disconnect, substructure	1
10	Incl. with [9]	Spring	1

Table 4. List of parts in the power management upgrade kit for 2500–4000 A draw-out breakers, catalog number TCLP.

Installation

WARNING: Before beginning this procedure, turn the breaker OFF, disconnect it from all voltage sources, and discharge the closing springs.

AVERTISSEMENT: Mettre le disjoncteur à OFF, le débrancher de toutes les sources de tension et déclencher les ressorts de fermeture avant d'entamer cette procédure.

Preparing the Breaker

1. Turn the breaker off and discharge the closing springs. Verify that the breaker indicator shows OFF.
2. Remove the breaker from its cubicle or substructure and place it on a suitable working surface.
3. Remove the cover from the breaker according to the instructions in GEH-4693 (800–2000 A applications) or GEH-4694 (2500–4000 A applications).
4. On draw-out breakers, remove the side plate on the side with the terminal board.

Installing the Kit

5. Disconnect the leads to the terminal board and bracket assembly, shown in Figure 1.
6. Remove the two screws securing the terminal board and bracket assembly to the breaker, then remove the old terminal board. On 2500–4000 A breakers, also remove the fiber insulation barrier.

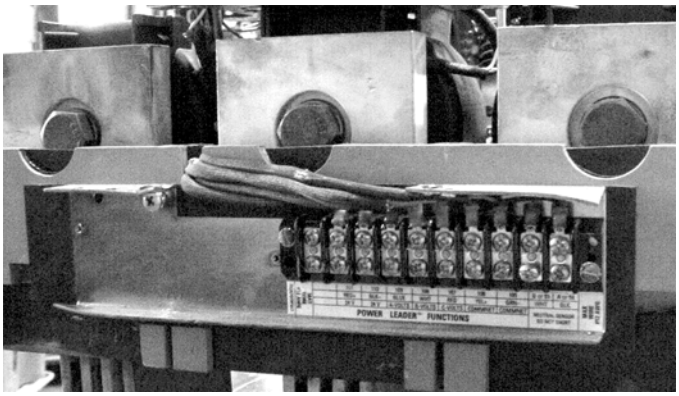

Figure 1. Old terminal board mounted on the breaker (2500–4000 A shown).

7. Push in the locking lever on the side of the trip unit mounting plate and carefully lift off the trip unit.
8. Remove the trip unit mounting plate as follows for the appropriate breaker frame size:
   - 800–2000 A: Remove the two mounting screws on the trip unit plate and loosen the 1/4-20 screw on the side of the assembly, as shown in Figure 2. Remove the trip unit mounting plate assembly.
   - 2500–4000 A: Remove the two screws securing the trip unit mounting plate to the center-phase sensor shell, as shown in Figure 3. Lift off the trip unit mounting plate. Take care that the two nuts in the slots in the top of the CT don't fall out.
9. Use pliers to bend the two locking tabs that secure the large plug to the trip unit mounting plate, as shown in Figure 4. Slide the plug off the mounting plate, then remove and save the plug mounting bracket.
10. Connect the leads from the new terminal board [1] to the large plug, as shown in Figure 5, according to the wiring diagram in Figure 6. Use AMP tool 455822-2 to remove incorrectly placed pins from the plug.

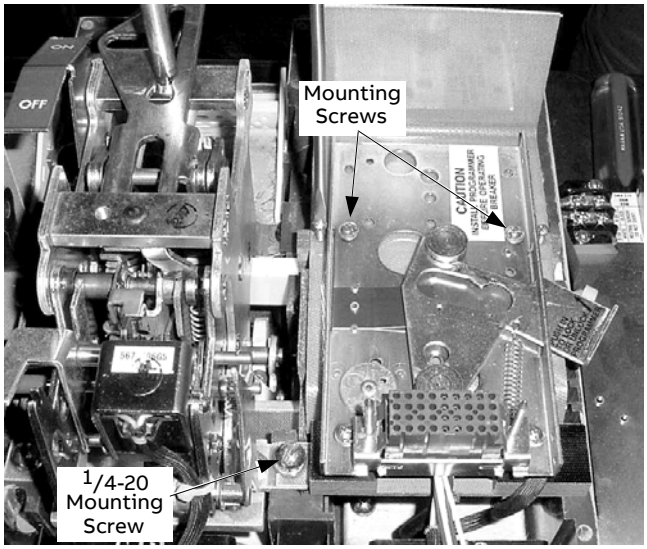

Figure 2. Trip unit mounting plate on an 800–2000 A breaker.

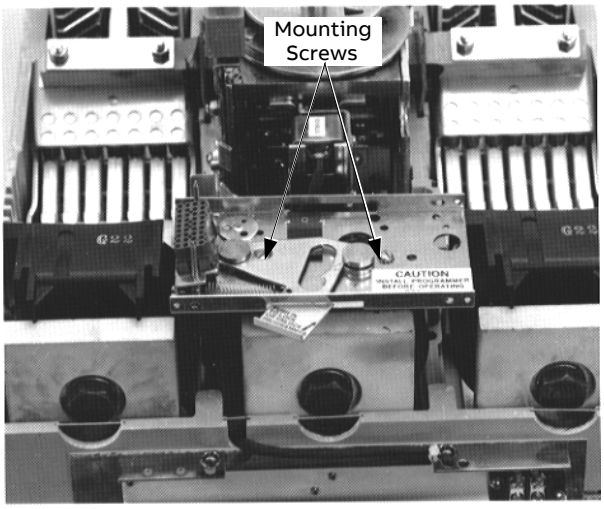

Figure 3. Trip unit mounting plate on a 2500–4000 A breaker.

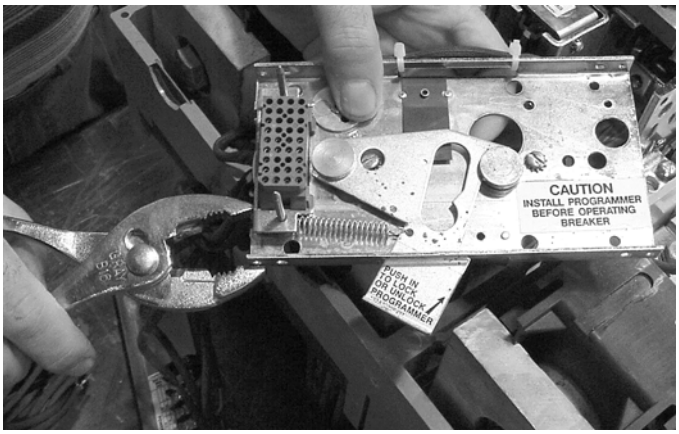

Figure 4. Bending the locking tabs to remove the large plug from the trip unit mounting plate.

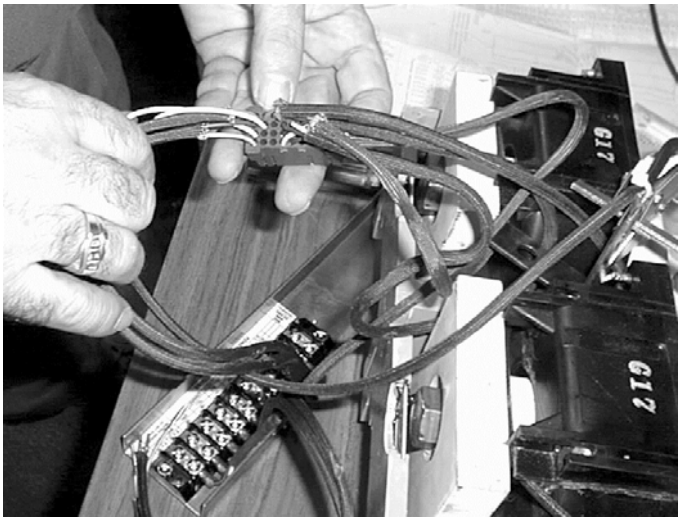

Figure 5. Connecting the leads from the new terminal board to the trip unit plug.

11. If an auxiliary switch is present, remove it as follows:

- 800–2000 A breaker, Figure 7: Remove the two mounting screws.
- 2500–4000 A breaker, Figure 8: Remove the bolt, lock washer, and flat washer securing it to the C phase contact assembly.

If no auxiliary switch is present in a 2500–4000 A breaker, remove and save the inner bolt, lock washer, and flat washer on the C phase contact assembly, as shown in Figure 9.

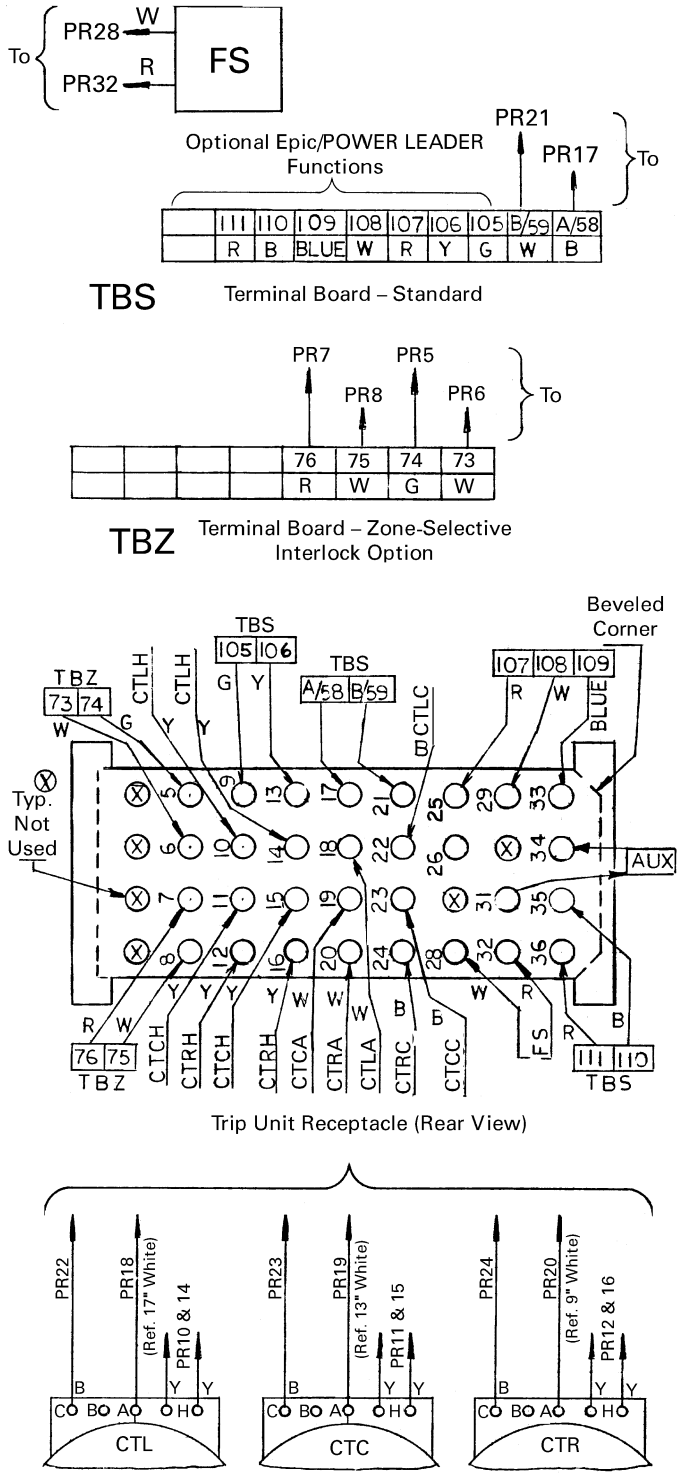

Figure 6. Wiring diagram for terminal board and trip unit plug.

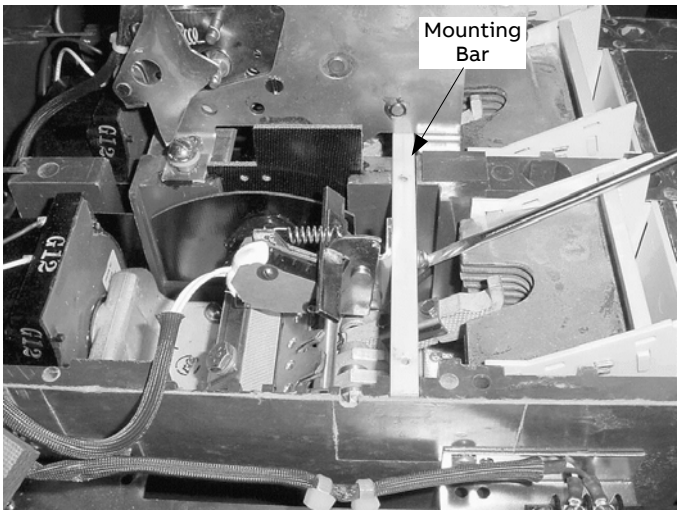

Figure 7. Old auxiliary switch in an 800–2000 A breaker.

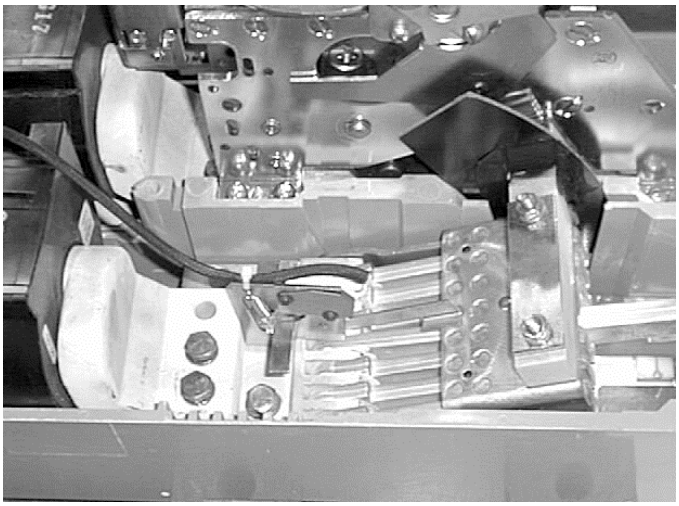

Figure 8. Old auxiliary switch in a 2500–4000 A breaker.

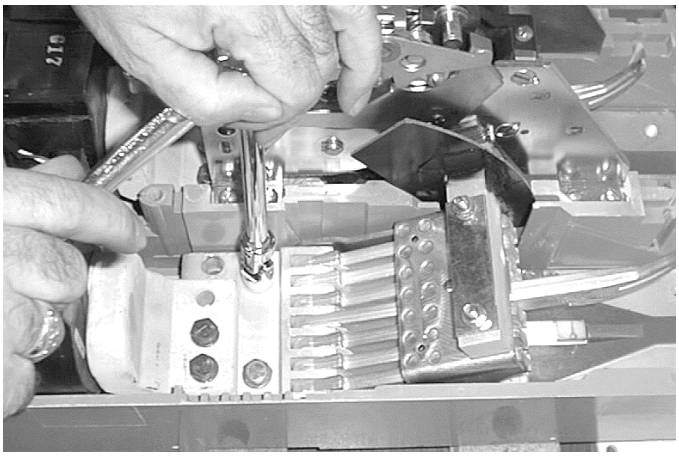

Figure 9. Removing the inner bolt on the C phase contact assembly to install the auxiliary switch in a 2500–4000 A breaker.

12. Install the new auxiliary switch [4] as follows:

- 800–2000 A breaker: Insert the new switch into the breaker base and secure with the two screws [2] supplied, as shown in Figure 10.
- 2500–4000 A breaker: Place the new switch over the C phase contact assembly and secure with the bolt, lock washer, and flat washer removed in the previous step, as shown in Figure 11. Tighten the bolt to 180–250 in.-lb.

In both cases, use small wire ties [5] to dress the wire bundles.

13. Insert the two white wires in the small auxiliary switch cable into the trip unit plug in positions 31 and 34 (see the wiring diagram in Figure 6), as shown in Figure 12.

14. File three slots in the breaker base, as shown in Figure 13, to accommodate the auxiliary switch wires.

15. Run the five remaining auxiliary switch cables out through the slots in the breaker base. Secure the cables in position with large wire ties [6] for strain relief, as shown in Figure 14.

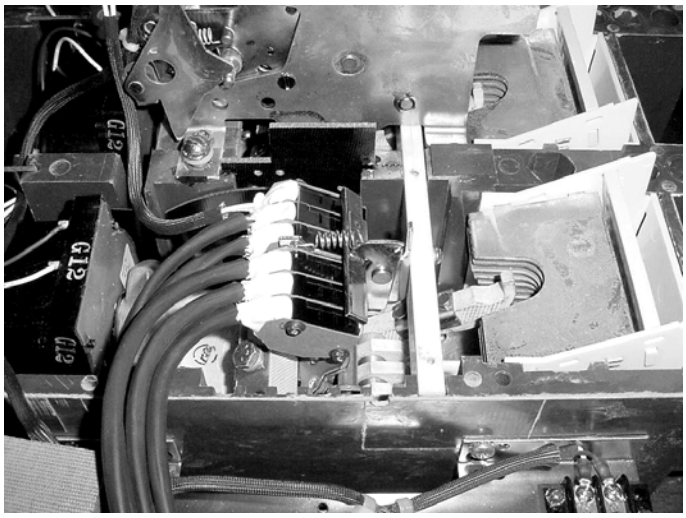

Figure 10. New auxiliary switch [4] installed in an 800–2000 A breaker.

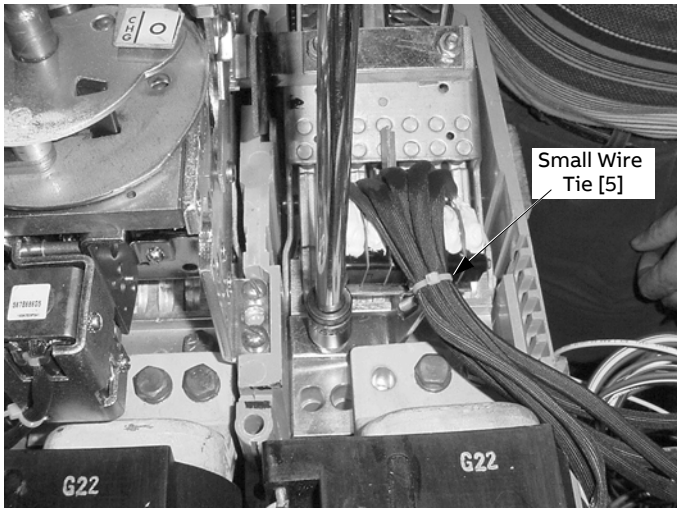

Figure 11. New auxiliary switch [4] installed in a 2500–4000 A breaker.

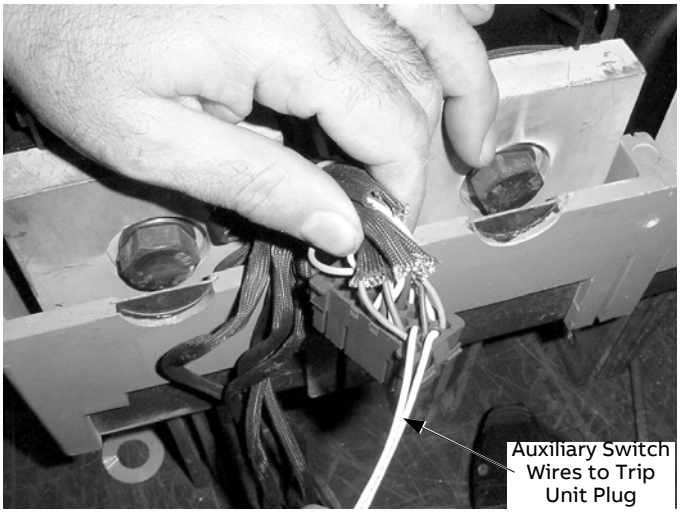

Figure 12. Auxiliary switch wires inserted into the trip unit plug.

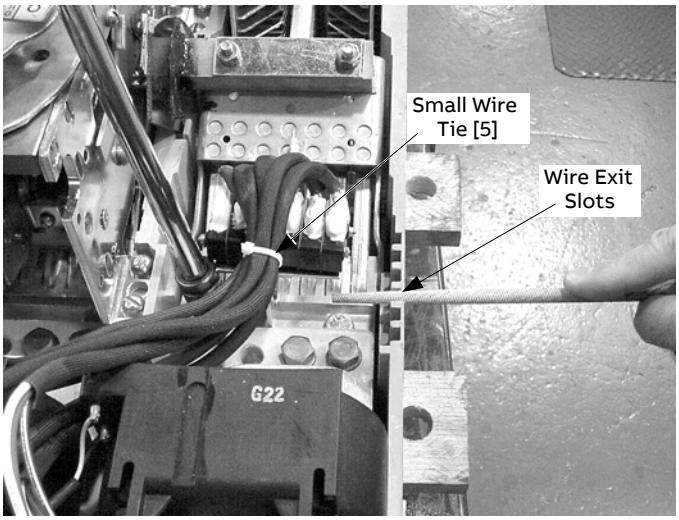

Figure 13. Filing slots in the breaker base for exit of the auxiliary switch wires (2500–4000 A shown).

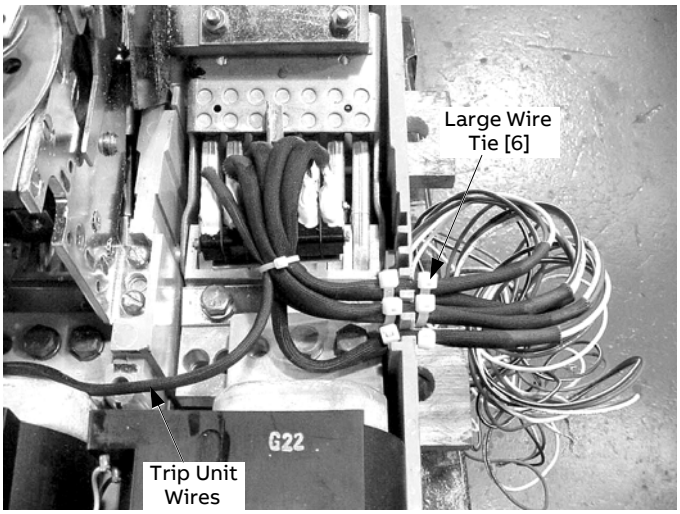

Figure 14. Auxiliary switch wires exiting the breaker (2500–4000 A shown).

16. Attach the new terminal board and bracket assembly [1] to the breaker as follows:

- 800–2000 A breaker: Secure the bracket with the two #10-16 screws [2] supplied, as shown in Figure 15 for a stationary breaker and in Figure 16 for a draw-out installation. File two additional slots in the side of the breaker base for wires to pass through to the terminal board.
- 2500–4000 A breaker: Install the bracket with the two #10-16 screws [2] and barrier [3] supplied, as shown in Figure 17.

17. Connect the wires to the new terminal board according to the wiring diagram in Figure 6.

18. Arrange the wires neatly into the slot in the breaker case, between the CTs, as shown in Figure 18. Use small wire ties [5] as shown to dress the wire bundles.

19. Slide the mounting bracket onto the large trip unit plug and slide the bracket over the two pins on the trip unit mounting plate, as shown in Figure 19.

20. Use a thin screwdriver to bend the two locking tabs on the trip unit mounting plate into the slots on the plug bracket to hold the plug in position, as shown in Figure 20.

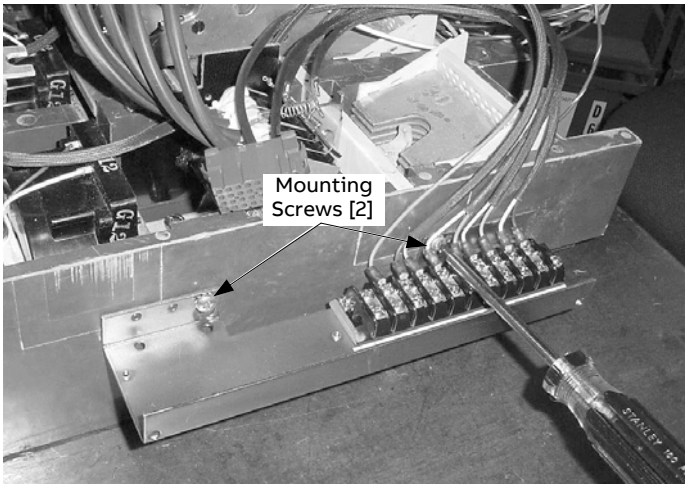

Figure 15. New terminal board [1] installed on an 800–2000 A stationary breaker.

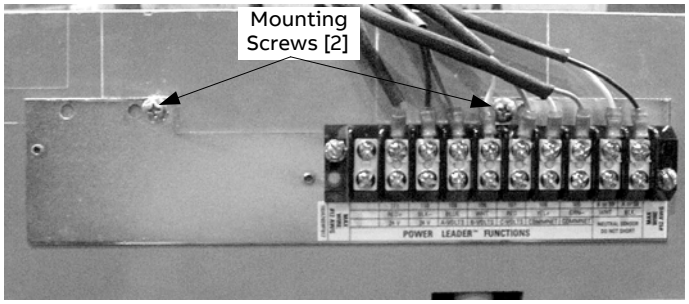

Figure 16. New terminal board [1] installed on an 800–2000 A draw-out breaker.

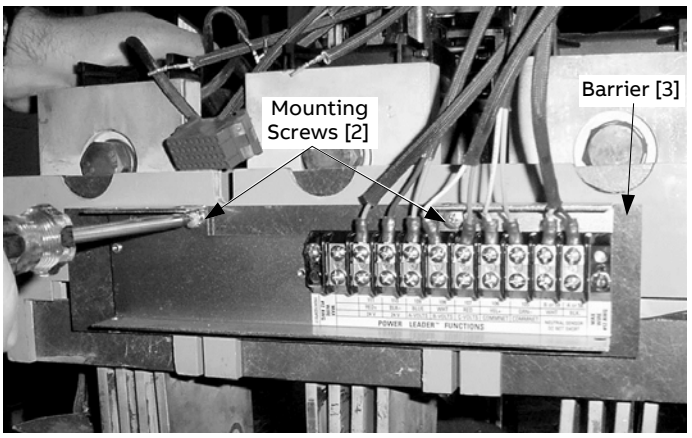

Figure 17. New terminal board [1] installed on a 2500–4000 A breaker.

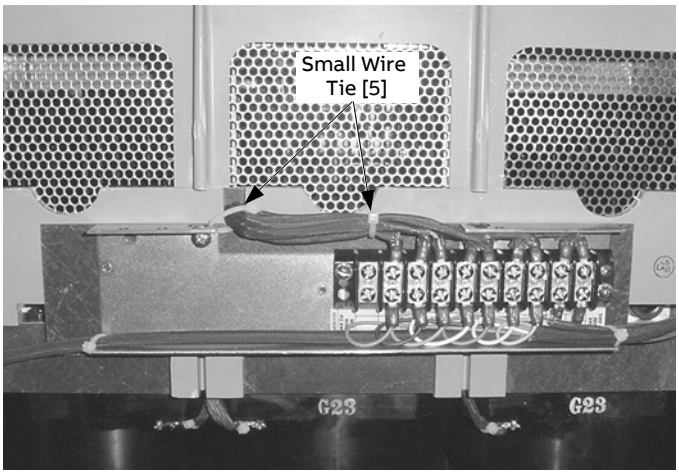

Figure 18. Completed terminal board installation (shown with breaker cover in place).

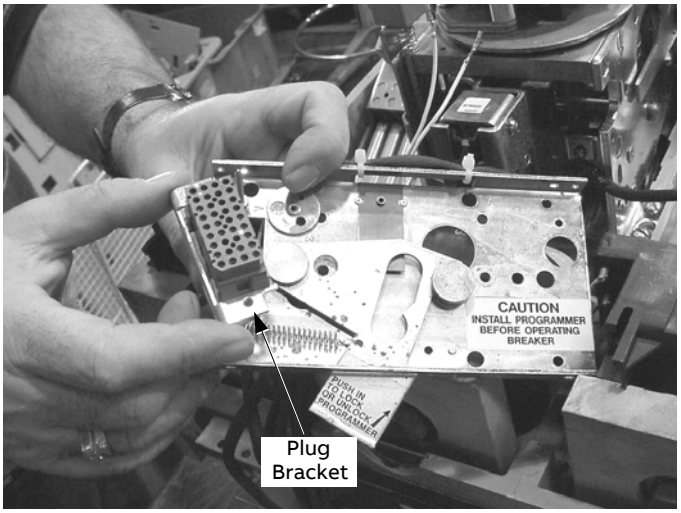

Figure 19. Reinstalling the large plug on the trip unit mounting plate.

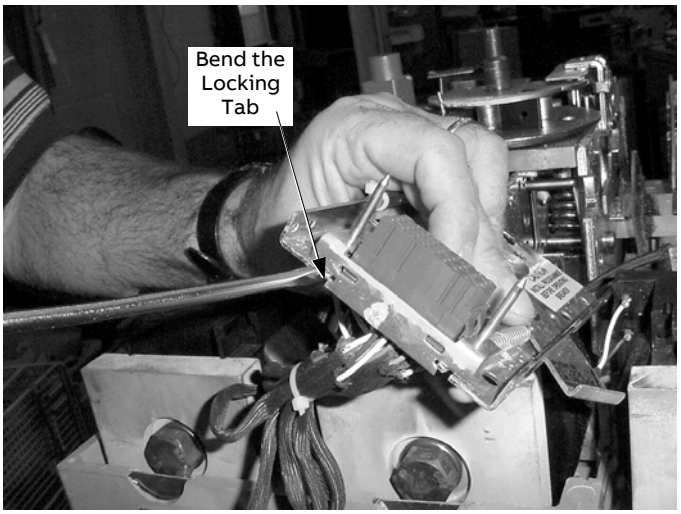

Figure 20. Bending the locking tabs to secure the trip unit plug to the mounting plate.

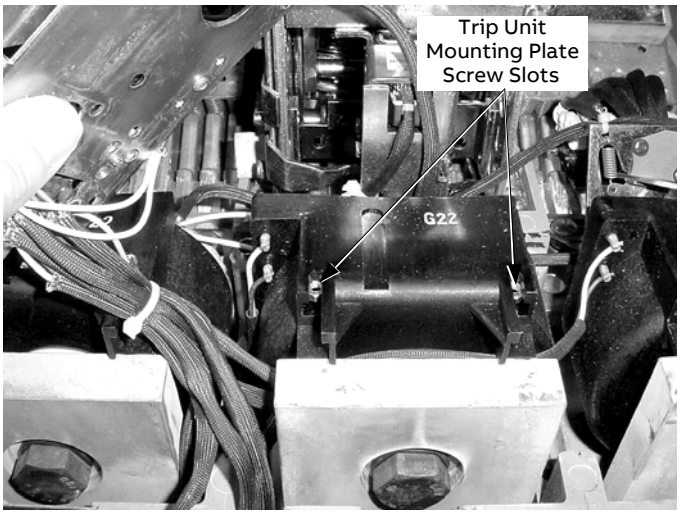

Figure 21. Trip unit mounting slots in the B phase CT on 2500–4000 A breakers.

21. Attach the trip unit mounting plates to the breaker as follows:

- 800–2000 A breaker: Slide the tab of the mounting plate under the 1/4-20 screw shown in Figure 2. Insert the two mounting screws removed in step 8 into the holes in the plate and secure to the mounting bar shown in Figure 7. Tighten all the screws.
- 2500–4000 A breaker: Insert the two #8-32 x 3/8 screws removed in step 8 into the holes in the mounting plate, as shown in Figure 3. Tighten the screws into the nuts installed in the slots in the top of the B phase CT, shown in Figure 21.

22. Reinstall the trip unit as follows:

a. Push in and hold the locking lever on the side of the trip unit mounting plate.

b. Carefully line up the guide pins on the mounting plate with the holes in the rear of the trip unit, as shown in Figure 22. Align the pins in the connector on the rear of the trip unit with the plug on the mounting plate. The alignment pin on the rear of the trip unit must fit in the hole in the locking lever.

c. Push the trip unit against the mounting plate until it is securely in position. Release the locking lever.

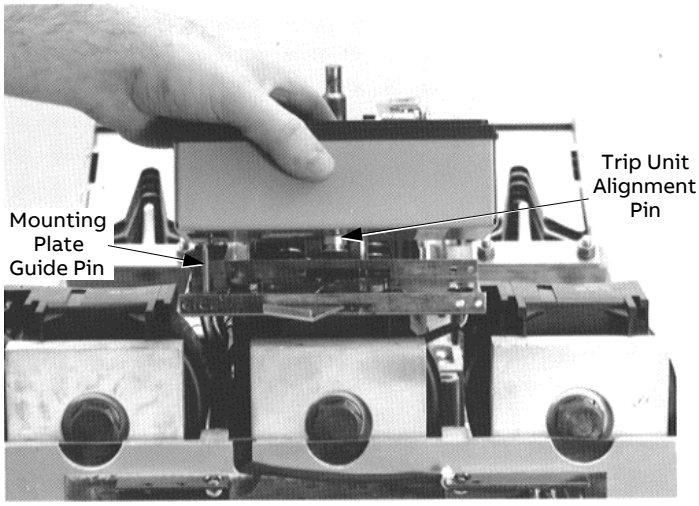

Figure 22. Installing the trip unit (800–2000 A breaker shown).

Draw-Out Breakers Only

23. Install the new trip unit disconnect plug [8] on the breaker side plate with the two thread-forming screws[7] supplied, as shown Figure 23. Run the wires through the hole in the plate to the terminal board.

24. Connect the wires from the breaker-mounted trip unit disconnect [8] to the terminal board according to the chart on the terminal board mounting bracket. The pin arrangement of the trip unit disconnect plug is shown in Figure 24. The wires from the trip unit disconnect are grouped in sleeves as listed in Table 5. If zone-select interlocking is not installed on the breaker, those four wires (in two sleeves) may be cut off or tucked out of the way.

25. Run the wires from the substructure-mounted trip unit disconnect [9] through the slot in the side of the substructure. Place the enlarged portions of the slots in the disconnect slide over the two shoulder studs in the side panel, as shown in Figure 26.

26. Slide the trip unit disconnect forward in the slot, then connect the spring [10] between the hole in the slide and the anchor tab on the substructure, as shown in Figure 26.

27. Connect the wires from the substructure-mounted trip unit disconnect [9] to the appropriate external sources. The wire colors and groupings are the same as those listed in Table 5. The pin arrangement of the trip unit disconnect plug is shown in Figure 27.

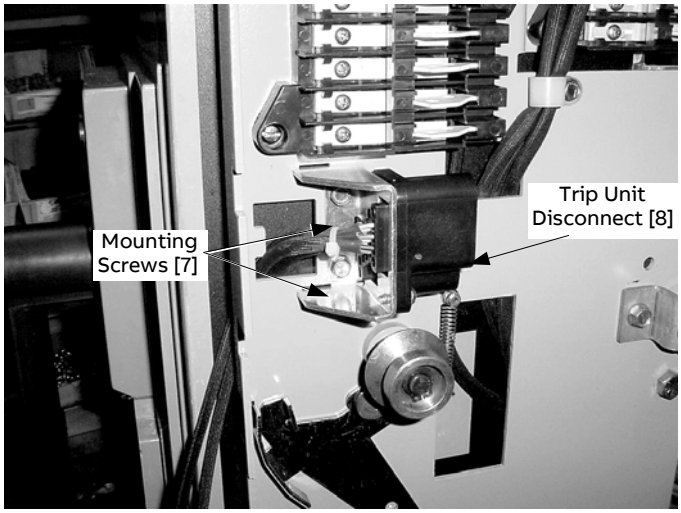

Figure 23. New trip unit disconnect [8] installed on the side plate of a 2500–4000 A breaker.

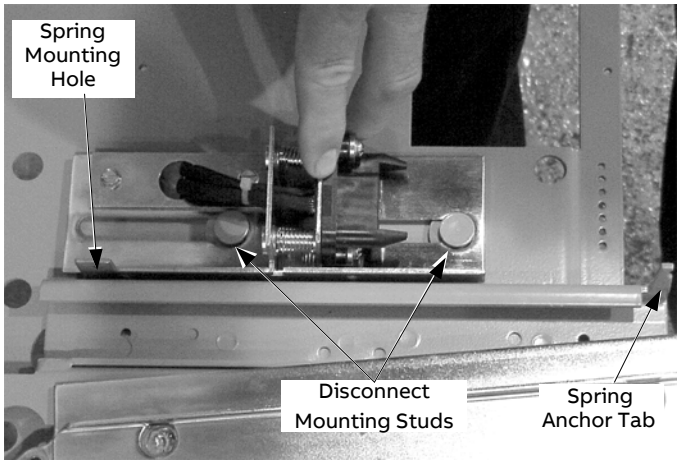

Figure 25. Placing the trip unit disconnect [9] on the mounting studs on the substructure side panel.

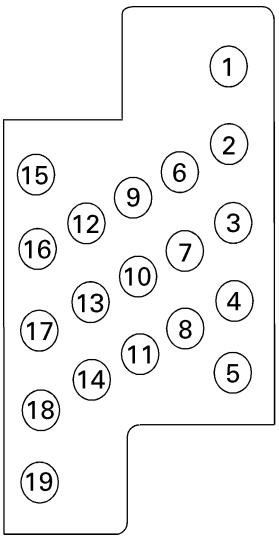

Figure 24. Pin layout of the breaker-mounted trip unit disconnect, as seen from the rear.

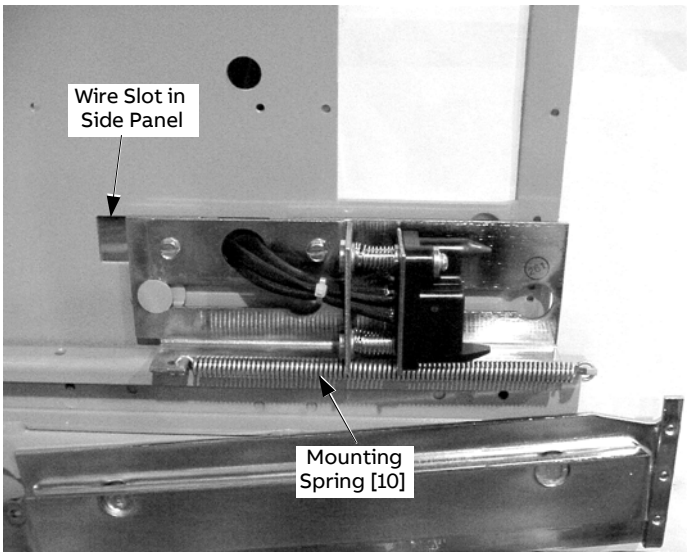

Figure 26. Trip unit disconnect [9] installed on the draw-out substructure.

Wire Color	Function	Sec. Disc. Pin No.	Terminal Board Point
green white	zone-select interlock	11 12	74 73
red white	zone-select interlock	13 14	76 75
green yellow	power management	2 6	105 106
red white blue	power management	3 7 10	107 108 109
black red	power management	4 8	110 111

Table 5. Wire groupings from the trip unit disconnect.

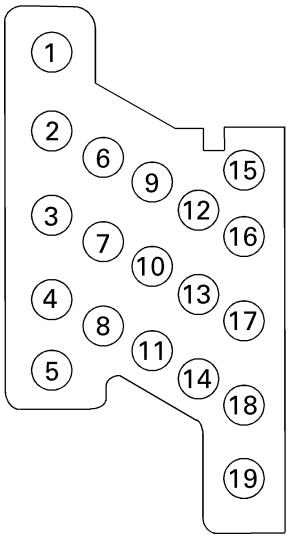

Figure 27. Pin layout of the substructure-mounted trip unit disconnect, as seen from the rear.

Returning the Breaker to Service

28. Replace the cover on the breaker according to the instructions in GEH-4693 (800–2000 A) or GEH-4694 (2500–4000 A).

29. For a draw-out installation, reinstall the side plate on the breaker.

30. Test the breaker at high current with primary current injection before returning it to service.

31. Reinstall the breaker into its cubicle or substructure.

These instructions do not cover all details or variations in equipment nor do they provide for every possible contingency that may be met in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise that are not covered sufficiently for the purchaser's purposes, the matter should be referred to the ABB Inc.

ABB Inc.
305 Gregson Drive
Cary, NC 27511.
electrification.us.abb.com

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