

Arc-Fault Circuit Breaker, Two-Pole (Branch/Feeder)

Type THQL-AF and THHQL-AF

Installer Instructions

WARNING: Failure to follow these instructions could result in death, personal injury, or property damage.

- This two-pole circuit breaker is intended **ONLY** for use in the following configurations:
 1. Two pole 240V load application derived from 120/240Vac source.
 2. Two, one pole 120V neutral circuits utilizing a shared neutral (three-wire, 120V).
- This equipment must be installed and serviced only by a qualified electrician.

WARNING: Turn off power to main circuit breaker before beginning installation. Failure to do so will risk electrical shock and possible death, personal injury, or property damage.

Install the Arc-Fault Circuit Breaker using the following procedure:

1. Turn off the Arc-Fault Circuit Breaker by moving its handle firmly to the OFF position.
2. Wire the Arc-Fault Circuit Breaker (see connection diagram).
 - A. Connect the coiled white “pigtail” wire from the Arc-Fault Circuit Breaker to the panel or enclosure neutral bus terminal. Uncoil pigtail as necessary.
 - B. On 120/240Vac load applications, connect the white (neutral) load wire to the terminal side of the

circuit breaker, identified by a silver-colored terminal screw, labeled LOAD NEUTRAL (see diagrams A and B).

On 240Vac load applications where the neutral is not required, no connection is made to the circuit breaker terminal lug marked LOAD NEUTRAL (see diagram C).

- C. Connect the black (hot) load wire to one of the circuit breaker terminals, labeled LOAD and identified by a gold-colored terminal screw.
 - D. Connect the red (hot) load wire to the last remaining circuit breaker terminal, labeled LOAD and identified by a gold-colored terminal screw.
3. Plug the circuit breaker into the desired pole position in the load center.
 4. Check all electrical connections for proper torque and polarity to avoid personal injury or property damage. See torque ratings on circuit breaker.
 5. Turn on power to main circuit breaker before testing Arc-Fault Circuit Breaker.
 6. Test the Arc-Fault Circuit Breaker using the white rocker switch on the front of the circuit breaker, labeled TEST. Follow Test Procedures as indicated in next section.
 7. See Troubleshooting Guide for the troubleshooting method to be used for a tripped Arc-Fault Circuit Breaker.

CAUTION: Do not reverse-feed or back-wire. Do not subject to megger, high-voltage, or high-pot tests. Remove the circuit breaker before high-potting occurs on the circuit or the system. The circuit breaker may become defective.

Example Arc-Fault Circuit Breaker Connection Diagrams

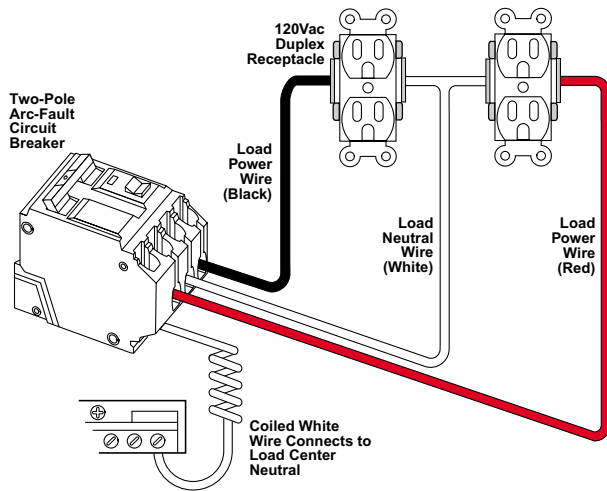


Diagram A: One-pole shared neutral with multi-duplex receptacle application

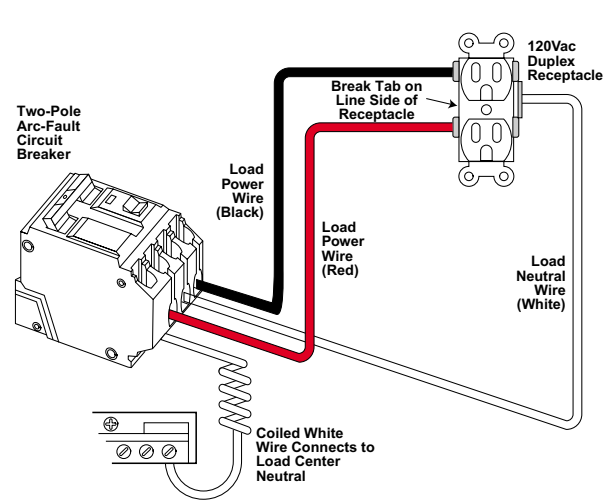


Diagram B: Two-pole shared neutral with duplex receptacle application

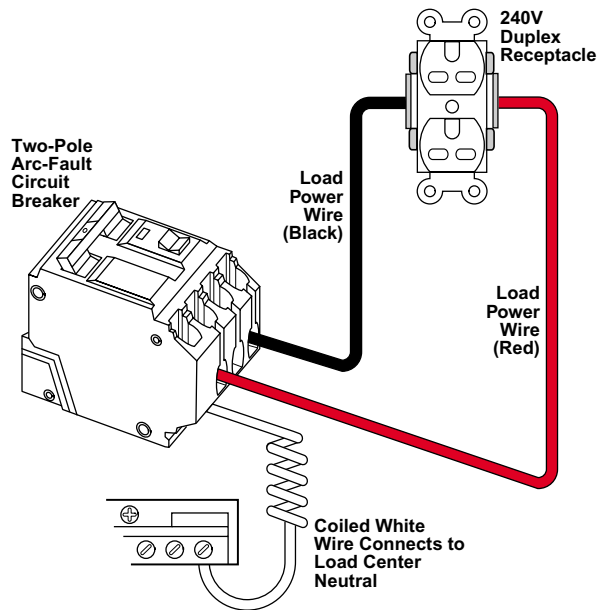


Diagram C: Two-pole 240V load application derived from 120/240Vac

Test Procedures (Circuit breaker should be tested regularly, at least once per month.)

The Arc-Fault Circuit Breaker senses arcs in two different ways: arcing from phase to neutral and arcing from phase to ground. The test feature allows the homeowner to test all modes by depressing a rocker switch. The circuit breaker has passed the test if the TRIP flag appears in the window and circuit breaker handle has moved to the TRIP position.

- Test 1. Rotate the test switch in the Test 1 direction to check the ability of the Arc-Fault Circuit Breaker to detect arcing from phase to neutral (above normal levels needed to run appliances) on first pole and low level arcs to ground.
- Test 2. Rotate the test switch in the Test 2 direction to check the ability of the Arc-Fault Circuit Breaker to detect arcing from phase to neutral on second pole and low level arcs to ground.

CAUTION: The Arc-Fault Circuit Breaker must be supplied with power from the load center in order for the tests to function properly. If the power is on and either of these test fail to trip, the Arc-Fault Circuit Breaker may be unable to detect arcs. *The circuit breaker is defective and should be replaced.*

Troubleshooting Guidelines

Caution: Only qualified electricians should troubleshoot fixed wiring.

Condition	Potential Cause	Solution/Action
One or both arc tests fail to trip circuit breaker.	<ol style="list-style-type: none"> 1. Circuit breaker is OFF. 2. Circuit breaker is tripped. 3. Load center is not energized. 4. Load center neutral (pigtail) is not connected to the neutral bus bar. 5. Circuit breaker is damaged. 	<ol style="list-style-type: none"> 1. Turn circuit breaker ON. 2. Reset the breaker by switching it OFF and then ON. 3. Check to be sure load center is energized. 4. Check neutral (pigtail) connection. 5. Replace circuit breaker.
Circuit breaker trips (handle in center position and trip flag appears).	<ol style="list-style-type: none"> 1. Circuit breaker is not installed correctly. 2. An arc-fault condition exists on the branch circuit, or circuit breaker is damaged. 3. An overload condition exists on the branch circuit (circuit breaker ON with loads in service). 	<ol style="list-style-type: none"> 1. See installation instructions on reverse side. 2. Test for arc-fault by completing instructions below. 3. Assess the current on the circuit drawn by all the loads by summing all branch amperages (divide the rated wattage of each load by 120). If this total is greater than the circuit breaker rating, the circuit is overloaded and some of the load should be removed.

To test for arc-fault:

Unplug all items from the receptacles in branch circuit. Reset circuit breaker by pushing its handle to the OFF position and then to the ON position:

1. If circuit breaker trips with all loads OFF: Check permanent electrical circuit wiring, arcing, poor insulation, shorted wires, wet connections, wet conduit, a neutral lead pinched to a grounded metal box, receptacle leakage, or other faults that could cause safety features in the circuit breaker to open the circuit.
2. Switch ON one of the original loads. Reset the circuit breaker. If circuit breaker does not trip with this load ON, switch on an additional load. Repeat until circuit breaker trips. Examine last additional load for possible faults.
3. Take note that when a two-pole circuit breaker trips, it will switch service OFF to both poles. In some cases, each pole may be wired to different loads and both load paths will need to be inspected to determine the cause of the trip.

Loads and/or wiring suspected of having faults should not be restored to source.

INSTALLING ELECTRICIAN'S INFORMATION

Installing electrician should add the following information:

Installer's Name

Installer's Address

Installer's Phone #

NOTICE: 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 GE Company.



GE Industrial Systems

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