

# ELECTRICAL BULLETIN

## 2011-04

From: David MacLeod, C.E.I., P.Eng.  
Provincial Chief Electrical Inspector

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Date: February 2, 2011

Subject: Upgrade of tripping units on low voltage air circuit breakers

Many older air circuit breakers require their defective or obsolete trip units to be upgraded with newer styles of electronic trip units.

The upgrade of the tripping units on any air circuit breakers may be done by a recognized breaker manufacturer's technician **without** the requirement for a special inspection or wiring permit where the following procedures are followed.

The procedures are:

1. All work is performed by a recognized breaker manufacturer's technician
2. The manufacturer's technician will be able to produce a letter, if requested by the inspection department or the Provincial Chief Electrical Inspector, prior to or any time after the upgrades clearly indicating:
  - a) that the complete trip unit upgrade or retro fit kit installed is designed to be compatible and is tested for use on each individual breaker based on the breaker type and ampere frame rating and no additional parts are required or installed other than what is provided in the kit
  - b) the relay trip units have been installed in accordance with the relay manufacturer's instructions
  - c) no mechanical modifications have been made to the breaker, only to the trip unit and its associated required components and wiring
  - d) no modifications have been made to the breaker that will affect the original withstand, short circuit, interrupting capability, electrical rating characteristics or its safe operation

e) the breaker's new trip unit has been tested by means of primary current injection and the breaker and trip unit operates as per the manufacturer's published requirements

f) the breaker is completely meggered after the upgrade and found acceptable

g) no modifications have been done to the switchboard to accommodate the new relays

h) the trip units are approved or manufactured by an acceptable manufacturer of retrofit trip units

#### General Requirements:

It is the responsibility of the breaker manufacturer's technician to ensure the overall safety and proper operation of any breaker that is retrofitted.

Where additional electrical work or modifications to the switchboard or breaker are done beyond just a relay upgrade, as indicated above, a special inspection and/or an electrical permit may be required.

It is the responsibility of the breaker manufacturer's technician to confirm requirements prior to any work starting should there be any question as to what is required.

Where the upgrade of the tripping units is not performed by the breaker manufacturer's technician it may be performed by a qualified person ( i.e. an electrician, electrical technologist, technician or engineer with experience on retrofitting relays on air circuit breakers ).

The qualified person performing the work shall follow all of the steps indicated above 2 ( a- h ) **and** shall be required to obtain a special inspection from a recognized Inspection Body ( IB ) and upon request by the IB produce a letter or documentation indicating that all the steps (a-h) have been complied with. No wiring permit is required.

It is recommended that where a special inspection is required the person performing the work contact the IB prior to starting any work to discuss what ,if any, additional requirements may be required by the IB in order to accept any test reports and to coordinate timing of the inspection.

#### **Notes:**

1. This bulletin applies to air circuit breakers with a maximum voltage rating of 600 V AC (P-P).
2. Any installation or installer that does not comply with all of the requirements of this bulletin may have the installation ordered to be disconnected or de-energized.

3. Upgrades ( retrofits ) of trip units can be performed by any breaker manufacturer's technician on any type of air circuit breaker not just their own breakers.'

4. Where a trip unit upgrade is performed and a special inspection is required, the breaker can not be energized until the IB has performed their special inspection and, where applicable, any deficiencies corrected.

Where the IB is not available to perform a special inspection at the time the work is being performed ,the requirements of Electrical Bulletin 2011-03 shall be followed to ensure the work is inspected by the electrical inspection department prior to energization.

5. This bulletin is not intended to conflict with Electrical Bulletin 2001-01 which is the installation of electrical components in the field where no electrical components existed before.

6. Testing of air circuit breakers by a manufacturer's technician or a qualified person is permitted without a special inspection or wiring permit.

7. Where a disconnection of power is required from the utility to perform the upgrade of the tripping units, it should be scheduled in advance and it is the responsibility of the person performing the work to ensure they discuss with the utility all the necessary steps required to have the power re-connected.

8. Coordination of an inspection by an IB or an electrical inspection department ,where required, is the responsibility of the person performing the work and should be made well in advance.

\*The Provincial Chief Electrical Inspector may amend, revise or delete any of the above requirements at any time in the future.

\*\*Any questions or request for a deviation or clarification regarding this bulletin may be forwarded to the Provincial Chief Electrical Inspector David MacLeod, P.Eng. at 902-424-8018 or email: [macleodd@gov.ns.ca](mailto:macleodd@gov.ns.ca)