

HAZARD ALERT

Incorrectly Refurbished Circuit Breakers

Introduction

The Occupational Safety and Health Administration (OSHA) recently learned of a hazardous condition that may exist in certain molded-case circuit breakers modified by a third-party rebuilder. The breakers may have an actual rating of 600 volts AC (alternating current) (VAC) or less, but are labeled as 1,000 VAC and may contain incorrect parts that can cause the breaker to malfunction.

The third-party rebuilder has apparently refurbished the breakers incorrectly. These breakers were originally manufactured by Eaton/Cutler-Hammer, as part of its E² mining series breakers. All model numbers of this series begin with "E²". Only the E²KM model (see Figure 1) and E²K model of this series are known to be affected. The rating of these original breakers was 600 VAC (for the E²K model) and 1,000 VAC (for the E²KM model). Under certain conditions, the E²KM model may be rated at 250 volts DC (direct current) (VDC).

OSHA bases the details of this alert on an alert issued by the Mine Safety and Health Administration (MSHA) entitled, "Hazardous 3rd Party Modified Circuit Breakers." (See <http://www.msha.gov/Alerts/Equipment/3rdPartyCircuitBreakers042011.pdf>.)

How would I identify the affected circuit breakers?

The hazardous condition may affect circuit breakers of any frame size. The circuit breakers may appear to be new or properly rebuilt, but a third-party rebuilder changed them from the manufacturer's original design. The breakers were then sold for use in mining operations, which are regulated by MSHA. OSHA is not aware of any specific use of these breakers in workplaces under OSHA's jurisdiction. However, it is conceivable that these modified circuit breakers may have been purchased for use in tunneling operations, because such operations require machinery similar to that used in coal or other mining operations. It is also possible that the modified breakers may have been sold improperly for use as replacement components in any electrical cabinet where stand-



Figure 1 (Note: The arrow in Figure 1 points to an area on the frame of the suspected modified breakers that the MSHA alert notes is smooth. Originally, the E²K model had a grey cover and the E²KM model a red cover. Also, the breaker's label or frame apparently lacks the mark of a qualified Nationally Recognized Testing Laboratory (NRTL). OSHA knows of no other exterior means of identification.)

alone type (in general, surface-mounted) circuit breakers are used. Such uses are regulated by OSHA.

What are the hazards?

Defective circuit breakers present hazards that may include arc flash, shock, electrocution, fire, burns and explosions.

The third-party rebuilder sold these breakers either directly to users or indirectly through a mining supply company. Evidence suggests that these circuit breakers have incorrect 600 VAC or 1,000 VAC covers. These covers are of unknown construction and were not manufactured by Eaton. The third-party rebuilder reproduced and affixed a product label to the front of the breakers in an effort to make the circuit breakers look new and legitimate.

Because these covers do not meet manufacturer specifications, the breakers may lack safety features and specifications, such as phase-to-phase fault protection or proper grounding. In addition, the frames used for the covers that are labeled 1,000 VAC may only have a 600 VAC or less rating, and a 250 VDC rating, such as shown in Figure 1, may be invalid.

Also, the frames used for covers that are labeled 600 VAC or 1,000 VAC have been rebuilt and may contain parts, such as tips and springs, of unknown origin and specifications. Because of the potential for personal injury and equipment damage from the failure of these circuit breakers, employers must remove them from service and replace them with proper circuit breakers.

What do I do if I have an Eaton E²K or E²KM mining series breaker?

At this time, OSHA does not know the number of affected breakers or their locations. If your location uses an Eaton E²K or E²KM mining series breaker, do not reset it if you find that it has tripped. Whether tripped or not, a qualified person must shut off power to the breaker and follow proper lockout/tagout procedures. As part of these procedures, a qualified person must ensure there is no voltage in the area where any work on the breaker may be performed and must examine the breaker and determine if it works properly. All other personnel should avoid going near any of these breakers until a qualified person determines that it works properly.

A qualified person must remove any defective breaker from service. After removing a defective breaker from service, or if you find one of these breakers in your supply system or have questions about these breakers, please notify OSHA by e-mailing nrtlprogram@dol.gov, or calling 202-693-2300 and ask to speak to the staff of the NRTL Program. In addition, please contact Mr. Tom Grace of Eaton/Cutler-Hammer for instructions on how to dispose of the breaker. You may contact Mr. Grace at 412-418-2169 or by e-mail at tomagrace@eaton.com. If you cannot reach him, Eaton's Customer Support phone number is 877-386-2273.

What approval does OSHA require for circuit breakers used in the workplace?

A workplace under OSHA's jurisdiction generally must use circuit breakers approved (tested and certified) by a Nationally Recognized Testing Laboratory (NRTL) that OSHA recognizes to test the particular type of breaker. The NRTL's mark that appears on a breaker indicates that the NRTL properly approved the breaker. OSHA can cite employers if they use breakers not properly approved by an NRTL.

Eaton's mining series breakers have a molded-case construction, and the breakers are for use in locations where combustible gases are present. OSHA currently recognizes only four NRTLs that can approve such breakers: Canadian Standards Association, FM

Approvals, Intertek Testing Services NA, and Underwriters Laboratories. Go to OSHA's informational page at <http://www.osha.gov/dts/otpca/nrtl/index.html> to see the type of breakers each NRTL can approve. From this page, you also can access OSHA's web page for the marks that these NRTLs use. An NRTL's mark must be affixed to the breaker, typically on the label of the breaker. In the case of Intertek, it uses only its "ETL" mark when approving breakers. If the mark of any other NRTL or organization, or no mark, is affixed to a breaker, it is a violation of OSHA's requirements, and you must remove the breaker from service.

How can OSHA help?

If you have any questions about this alert or about OSHA's requirements for NRTL approval of breakers, e-mail nrtlprogram@dol.gov, or call 202-693-2300 and ask to speak to the staff of the NRTL Program. Contact your local OSHA office if you have any questions about circuit breakers that you are using. Call 1-800-321-OSHA (6742) or visit OSHA's website at <http://www.osha.gov/html/RAmap.html> to reach a local office. Small and medium-sized employers can contact OSHA's free and confidential consultation service to help determine if there are hazards at their workplace. On-site consultations do not result in penalties or citations. To contact OSHA's consultation service, visit <http://www.osha.gov/dcsp/smallbusiness/consult.html> or call 1-800-321-OSHA (6742).

What rights do workers have?

Workers have a right to a safe workplace. The purpose of the *Occupational Safety and Health Act of 1970* (OSH Act) is to prevent death or injury in the workplace. The *OSH Act* requires employers to provide their workers with a workplace that is free of serious hazards. The *OSH Act* established OSHA, which sets and enforces protective workplace safety and health standards. OSHA also provides information, training, and assistance to workers and employers. Workers may file a complaint to have OSHA inspect their workplace if they believe that their employer is not following OSHA standards, or that there are serious hazards in the workplace.

Contact us if you have questions or want to file a complaint. We will keep your information confidential. We are here to help you.

For other valuable worker protection information and other services OSHA offers, visit www.osha.gov.

Disclaimer

This Hazard Alert is not a standard or regulation, and it creates no new legal obligations. It contains recommendations as well as descriptions of mandatory safety and health standards. The recommendations are advisory in nature, informational in content, and are intended to assist employers in providing a safe and healthful workplace. The Occupational Safety and Health Act requires employers to comply with safety and health standards and regulations promulgated by OSHA or by a state with an OSHA-approved state plan. In addition, the Act's General Duty Clause, Section 5(a)(1), requires employers to provide their employees with a workplace free from recognized hazards likely to cause death or serious physical harm.



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