

## Damaged Low-Voltage Circuit Breakers and Switches

### Introduction

This document outlines the position of Schneider Electric™ concerning damaged Masterpact circuit breakers and other types of low voltage circuit breakers and switches.

**NOTE:** For the purposes of this Data Bulletin, the term “circuit breaker” means a circuit breaker and/or switch.

### Freight Damage to Masterpact Circuit Breakers

1. If it is apparent that a circuit breaker has been dropped or had something dropped on it, Schneider Electric Engineering considers the circuit breaker unsuitable for service. This includes circuit breakers received in crushed, or badly damaged shipping containers, as this indicates abnormal forces have affected the circuit breaker.
2. Visual inspection of the circuit breaker may not reveal obvious signs of damage; however internal damage may be present. Schneider Electric Engineering has no non-destructive test or means of inspection to determine if a dropped circuit breaker has been internally damaged.

The only way to inspect for internal damage is to open the circuit breaker, which, in and of itself, is destructive. Excessive forces can result in cracking of internal parts and insulating barriers which can result in dielectric breakdown. This type of damage is not likely to be detected by electrical testing. Use of a circuit breaker that has this type of internal physical damage can result in an arcing event that may lead to equipment damage, property damage and/or personal injury or unintended power outages. Depending on the application unintended shut downs can significantly impact the end user, especially if these circuit breakers are used in critical power applications.

### Exposure of LV Circuit Breakers to Water or Other Liquid Contaminants

1. When any low voltage circuit breaker is known to have been exposed to water or other liquid contaminants, they must be scrapped. All low voltage circuit breakers made by Schneider Electric. (Brands—Square D™, Merlin Gerin™, and Schneider Electric) are molded case construction. This includes Masterpact™ circuit breakers.
2. The only way to inspect for internal damage is to open the circuit breaker, which, in and of itself, is destructive. Electrical tests may not indicate that water contamination occurred internally. Attempts to dry out circuit breakers in order to obtain more favorable electrical test results will not eliminate long term damage effects.
3. Electrical components within the circuit breaker that could be affected by traces of liquid contaminants are bare copper and silver compounds. Silver is commonly used for electrical contacts found in circuit breakers. Liquid contamination can result in corrosion of these compounds over time. Electronic components are especially susceptible to damage. Liquid contaminants will also leave behind small particles after drying occurs. These particles can result in tracking on current carrying parts internal to the circuit breaker, leading to dielectric breakdown.
4. These conditions can lead to arcing or nuisance tripping and eventual shutdown of the circuit breaker. Use of a circuit breaker that has this type of contamination can result in an arcing event that may lead to equipment damage, property damage and/or personal injury or unintended power outages. Depending on the application unintended shut downs can significantly impact the end user, especially if these circuit breakers are used in critical power applications.

## Smoke/Soot Damage to LV Circuit Breakers

1. Low voltage circuit breakers that have been exposed to fire and smoke must be scrapped.
2. A major component of soot and smoke is carbon. Carbon can infiltrate the internal parts of the low voltage circuit breaker and collect on interior components and current carrying parts. While the external enclosure can be wiped clean, the internal damage is unseen and internal observations cannot be made unless you open the circuit breaker, which is destructive in and of itself.
3. The conductive property of carbon can lead to tracking inside the circuit breaker on the current carrying parts. This will result in the required dielectric characteristics of the circuit breaker being compromised and the potential for arcing to occur. An arcing event that may lead to equipment damage, property damage and/or personal injury or unintended power outages. Depending on the application unintended shut downs can significantly impact the end user, especially if these circuit breakers are used in critical power applications.

## General Statement Concerning Salvage Practices Arising out of all the Above Topics

It is important to the entire electrical system that all components of the distribution equipment function properly to ensure long term reliability.

If it is known that circuit breakers were physically damaged in transit, dropped, or were exposed to water, soot, or smoke; the circuit breakers are deemed to be damaged and unsuitable for use. Schneider Electric cannot warrant damaged circuit breakers and they are not suitable for resale. To prevent damaged circuit breakers from re-entering the marketplace, they should not be sold or offered to a salvage company in exchange for scrap value. Salvage companies may re-sell these damaged products after they assume possession, thereby exposing all parties in the chain of custody to liability.

Contact a Schneider Electric Claims Management representative for assistance in recovering circuit breakers destined to be salvaged by an insurance company. Schneider Electric will bid on the damaged circuit breakers and have them returned to one of its facilities for scrapping.

If the customer or their insurance representative is not cooperating, or if negotiations fail over the amount of salvage credit, Schneider can record the serial numbers<sup>1</sup> for the damaged circuit breaker(s) and note the names of the parties who are involved in the transaction to re-sell the circuit breakers. These circuit breakers have been deemed unwarrantable and if the customer decides to use or re-sell them, Schneider Electric will have the means for tracking such circuit breakers for future liability issues that may arise.

Questions related to this Data Bulletin should be directed to the Customer Care Center (CCC) at 1-888-778-2733.

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<sup>1</sup> All Masterpact and PowerPact circuit breakers (except Q2R/PowerPact Q-frame circuit breakers) have serial numbers.