



## **Renewables for Artists Team**

### **Ground-Fault Circuit Interrupter**

### **Performance in Wet Conditions**

**September 8, 2025**

**QUESTION: Will a Ground-Fault Circuit Interrupter trip if extension cord or cable connections get wet on the ground?**

**ANSWER: Yes.**

A Ground-Fault Circuit Interrupter (GFCI) will trip if the extension cord or cable connections come into contact with water on the ground. GFCIs are designed to detect when electrical current escapes its intended path, such as through water or a person, and quickly shut off the power to prevent severe electrical shock.

#### **How water triggers a GFCI**

- ☐ Creating a new path to ground: Water, mainly when it contains minerals, is a conductor of electricity. If water seeps into an extension cord connection, it can create a path for current to flow from the hot wire to the ground.
- ☐ Detecting an imbalance: A GFCI constantly monitors the flow of electricity, comparing the current traveling from the power source on the "hot" wire with the current returning on the "neutral" wire. In a properly functioning circuit, these currents are balanced.
- ☐ Interpreting a ground fault: When water allows some current to "leak" to the ground, the GFCI detects an imbalance, because less current is returning on the neutral wire than is leaving on the hot wire.
- ☐ Fast shutoff: This imbalance, even a small one of just 4–5 milliamps, immediately trips the GFCI, which cuts the power in a fraction of a second.

## **Scenarios where wet connections trip a GFCI**

- Rain or sprinklers: Outdoor GFCIs are required in many areas, specifically due to the risk of water exposure from rain or sprinklers. Moisture can enter an unprotected extension cord connection, triggering the safety device.
- Puddles on the ground: If cord connections are lying on the ground in a puddle, the conductive water can provide an escape path for electricity, causing a ground fault.
- Faulty connections: Damaged or loose connections on an extension cord, especially older ones, are more susceptible to water intrusion and are likely to cause a GFCI to trip.

## **What to do if your GFCI trips from a wet connection**

1. Cut the power: Do not touch the wet cords or connections. Make sure the GFCI is tripped and the power is off.
2. Dry everything out: Move the connections to a dry location, such as a covered porch or garage. Give the connections plenty of time to dry completely.
3. Inspect the cords: Once dry, check the cables and connectors for any signs of damage or corrosion. If the cord is damaged, it should be replaced.
4. Consider weather protection: For outdoor use, consider using waterproof covers for your outlets and weather-resistant connections to prevent moisture from reaching the electrical components.

(Source: Google AI Search, 9/6/2025)