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## How do Floods Effect Loops?

### BD Loops Takes a Closer Look at Flooding and Air Pockets

The recent flooding of the Mississippi River has caused us to pause and look at the design of our preformed loops. "How would our loops hold up in these floods?" we asked ourselves. Water is the enemy of inductance loops, so flooding like what we are seeing now is one of the worse case scenarios for a preformed loop.

We tested a popular 4'x 8' 18 Gauge PVC Preformed loop with 50' twisted Lead-in as shown below against a BD Loop:



*Preformed Loop with an Air Pocket*

The above loop has an air pocket in its design. We submerged the loop under water and heated the water slightly. The air in the air pocket expanded, causing air bubbles to escape from the yoke. When the loop cooled down the air inside the air pocket compressed and **sucked water back into the yoke** causing the loop to short to ground or fail. The air pocket in this loop's design has the potential to compromise a gate system in wet conditions. The results would be the same for a

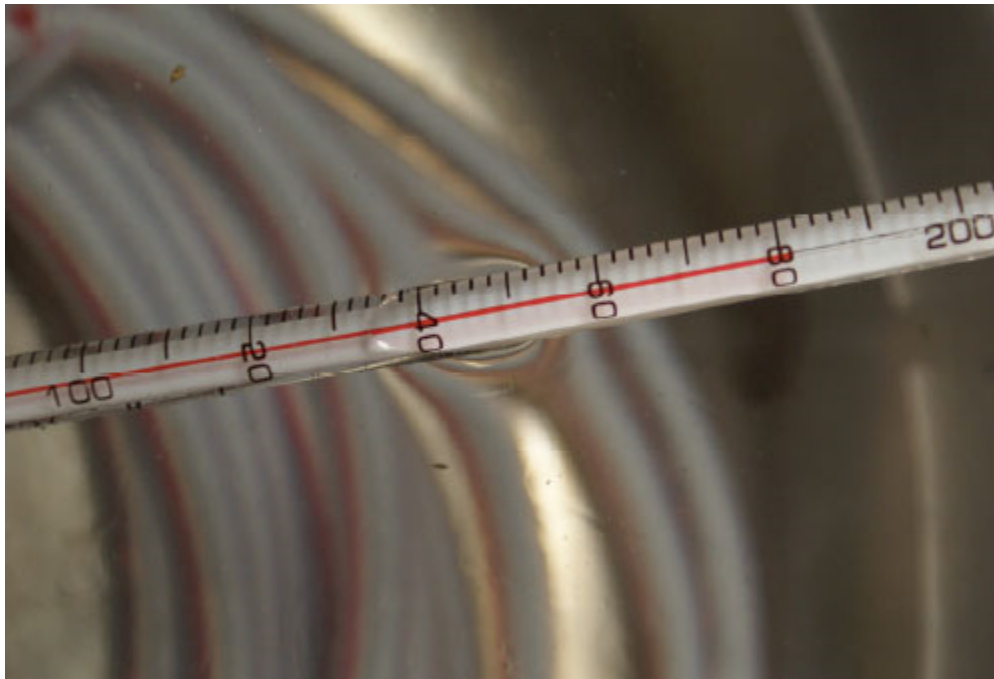
shallow 2" flood during a heavy rain or a deep 2-3' flood.



*The loop shorts to ground and air escapes through the yoke.*

Much of the flooding along the Mississippi has been devastating, and a lot of work is going to need to be done on air pocket design loop systems after the water clears. Gate Operators and Detectors are going to have to be repaired or (more likely) replaced. Unfortunately many loops with air pockets are going to need to be ripped out and replaced.

We like to think that we hold ourselves and our product to the highest standard, so we repeated the experiment with our Saw-Cut Loop, and increased the temperature of the water substantially to 180° F.



*Our Loop in 180° water, there is no air pocket in our design so no air escapes our loop.*

Our Preformed Saw-Cut and Direct Burial Loops do not have an air pocket, as I mentioned above water is the enemy of inductance loops and we have done our best to make sure water stays out of our loops. Loops are subject to flooding, especially in locations where rain is common (think of all the times you've driven through a flooded intersection). We took this into account when designing our preformed loops, loops must be waterproof to withstand wet conditions.



*Our loop reading over 2000 MΩ , even under such extreme conditions.*

We're happy to know that our loops are more likely to survive flooding, and can prevent installers from having to replace the most time and labor intensive component of a loop system.

**Sincerely,**

Brian Dickson, CAGOI  
General Manager  
BD Loops

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