Solar Water Pumping Float Switch Guideline

Understanding Float Switch Terminology

Why have a guide just for float switches?
Across the industry the terminology used in describing float switch types is counterintuitive to the float switch function. For this reason, float switches are one of the most commonly returned items when Customers purchase them from a list (online or from a catalog) without the benefit of a professional to ask pertinent questions to get to the right switch. This guide exists to help Customers choose the right switch the first time.

Word Spaghetti Unraveled –normally open vs normally closed and ignoring pump up vs pump down
It is most helpful to always think of a float switch as it moves in only one direction - downwards. In most instances 'downwards' would equate to a tank emptying or the water level lowering, and now it's time for the float switch to 'act'. By simply returning to the question – "What do I want the float switch to do when it gets to the bottom of its travel?" most of the confusion can be eliminated. The converse, of course, is to think of the float switch ascending, but that is not how this guide will explain float switch function and terminology.

Once lowered to the bottom, a float switch can only 'act' in one of two ways – it either

1. opens the circuit (breaks a connection), or
2. closes the circuit (makes a connection)

From there, it is simply a matter of determining what the controller/pump expects from the float switch once it reaches the bottom:

1. If the controller/pump expects the signal to open (*break* contact), then the switch is open when it is at the bottom of its travel. The 'act' is to open the circuit as it travels downward. This is a 'normally open' float switch.
2. If the controller/pump expects the signal to close (*make* contact), then the switch is closed when it is at the bottom of its travel. The 'act' is to close the circuit as it travels downward. This is a 'normally closed' float switch.

It is with these terms that we describe a float switch as:

1. normally open, or
2. normally closed

But always with an eye towards what we want the switch to do once it lowers to the bottom and acts.

Ignore any discussion about pump up or pump down terminology. Simply use normally open or normally closed to describe switch function and select your float switch from there.

Dankoff Solar Products Common Switch Selection
Often, Dankoff Solar pumps use float switches to drain a tank for water distribution rather than fill a tank up to the top for livestock drinking. For this reason there can be confusion in float switch selection, since the function runs counterintuitive to common water pumping practice.

In Dankoff applications it is acceptable to wire the float switch directly to the pump, making the float switch a part of the power circuit that runs the pump. Since we want the pump to run while we drain the tank (the float switch descending during operation), we choose a switch that will keep the circuit closed until the switch reaches the bottom of the travel.

At the bottom, we want to stop the pump by opening the power circuit with the float switch. As referenced above, a switch that 'opens' at the bottom is a 'normally open' float switch. This is what should be ordered approximately 99% of the time, so please keep this in mind before ordering your float switch.