

Pump Troubleshooting Tips

Troubleshooting Pumps That Don't Run

When one of your customers returns a pump to you for a warranty evaluation, is that pump really warrantable? Our years of experience with returned pumps show that 95% of pumps returned to us for a warranty evaluation because they “failed at start-up” or “wouldn't run” actually have no problems at all and work just fine.

To save yourself the time, expense, and hassle of cleaning, packaging, and shipping a pump back to Oreco for a warranty evaluation, it's important to troubleshoot the pump first. Especially since, once a pump has been wired and submerged, it can't simply be restocked and resold as a new pump. If the pump evaluation shows that it tests out okay, the pump will be returned to you.

So what should you do? Ideally, it's best to troubleshoot the pump in the field with the installer. We frequently find that the pump isn't getting adequate power. If you didn't get the opportunity to troubleshoot the pump in the field, **at a minimum, you can test the motor by wiring it to a pigtail and plugging it into a working outlet before bothering with a warranty return.**

Some common causes of pumps not operating at start up are listed below.

Pump Problem

The first step in diagnosing a pump problem is to test the panel in manual mode. In general, a pump that does not operate in manual mode will not operate in automatic mode.

- Check the pump in manual by switching the panel's MOA toggle switch to the “Manual” position.
 - ~ If the pump will not run and the panel includes a redundant off and low level alarm, be sure that the alarm is not activated, as indicated by the illuminated push button on the face of the panel.
 - ~ If the panel has a motor contactor, but it does not engage when the MOA switch is placed in manual, there may not be power to the controls.
 - ~ If the pump is an Oreco 4" submersible high-head pump, you will need to wait approximately five seconds between switching the pump off and back on again to allow the motor to shift from the run winding back to the start winding.

Power Problem

All Oreco control panels have individual circuits for the pump power and controls/alarm power. The loss of the controls/alarm power will result in loss of the alarm system and possibly the pump controls.

- Check the circuit breakers.
 - ~ The control panel includes a circuit breaker that passes power on to the pump. The control panel is usually fed power from the service panel in the home. Check the breakers in the control panel

and the service panel to make sure that power has not been cut off to the pump. A tripped pump circuit breaker can be caused by water infiltration into the splice box, loose connections, a failing pump, temporary power fluctuations, or the use of inadequately sized wire.

- Check the incoming power. A voltmeter or multimeter is required to perform these tests. Inexpensive multimeters can be purchased for under \$20.
 - ~ To check for power to the panel, use a voltmeter. In 120VAC systems, one lead of the meter should contact the top screw of the pump circuit breaker, and the other lead should contact any terminal labeled “N” (do not use the back plate). In 240VAC systems, the leads of the meter should be placed across the two poles of the pump circuit breaker. The meter should read 120VAC $\pm 3\%$ or 240VAC $\pm 3\%$ respectively.
 - ~ To check for power to the pump, use a voltmeter. The leads of the meter should be placed across the two pump terminals. (Refer to the appropriate panel wiring diagram to determine pump connections.) Depending on the panel, the meter should read 120VAC $\pm 3\%$ or 240VAC $\pm 3\%$. Low voltage can be caused by loose wiring connections, excessive voltage drop due to using too small a field wire, or temporary power fluctuations. Some pumps may start with a low voltage condition; however, a motor running at low voltage may not produce the expected output, resulting in lower head and flow capabilities.

Generator Use

Using a generator for startup testing. Generators must be sized appropriately to overcome the pump motor’s starting torque. Most generators are externally regulated so that the regulator increases the output voltage of the generator as the voltage dips at motor startup. We frequently find that the generator being used will not satisfy the motor requirements. This is especially important when using an Orenco 4" submersible high-head pump, which has higher starting torque. The following generator requirements are also included in the pump’s installation instruction manual.

Motor Rating *		Minimum Rating of Generator			
HP	KW	Externally Regulated		Internally Regulated	
		KW	KVA	KW	KVA
0.50	0.37	3.0	3.75	2.25	2.85
0.75	0.55	4.5	5.70	3.00	3.75
1.00	0.75	6.0	7.50	3.75	4.69
1.50	1.10	7.5	9.38	4.50	5.70

* These ratings are for Orenco pumps utilizing Franklin Electric 2-wire motors.

If, after troubleshooting, your pump still doesn’t run properly, Orenco’s Technical Sales Reps are here for you. Give us a call. We can offer additional suggestions or get the warranty evaluation process started for you.