

## Faulty Power Venter Proof Switch

An OnWatch owner used his Model 51 for the first time recently. The technicians had been to this customer's house a few times and the service manager decided it was time to try out the new equipment.

The heating system was a boiler with a cold start control feeding into a conventional oil burner safety. Notably, the system had a power venter. There was nothing unusual about the installation and it had been running well for about five years. Lately, however, it had been locking out once or twice a day.

After an explanation of the OnWatch to the customer, it was installed and on Set #12 the system locked out. Below is the data from the faulty run.

**SET: 12 Start Date: 6/21/2003, Recording Mode: Oil**

Elapsed	TT	Volt	Cad	Temp	PSI	VAC	PV	Amps	Event
00:00:01	ON	118	9.6v	141	0	N/C	N		
00:00:03	ON	116	18.8v	140	136	N/C	Y		
00:00:05	ON	119	4.4v	140	135	N/C	Y		
00:00:07	ON	119	4.7v	139	135	N/C	Y		
00:00:09	ON	119	4.7v	139	135	N/C	Y		
00:00:14	ON	119	4.6v	138	136	N/C	Y		
00:00:19	ON	119	4.5v	138	135	N/C	Y		
00:00:23	ON	119	4.4v	139	136	N/C	Y		
00:00:29	ON	119	4.5v	140	136	N/C	Y		
00:00:34	ON	120	4.4v	141	135	N/C	Y		
00:00:39	ON	120	4.4v	143	135	N/C	Y		
00:00:44	ON	120	4.5v	145	135	N/C	Y		
00:00:49	ON	120	4.3v	148	135	N/C	Y		
00:00:54	ON	120	4.3v	150	135	N/C	Y		
00:00:55	ON	120	4.2v	151	135	N/C	Y		
00:01:02	ON	120	4.1v	155	135	N/C	Y		
00:01:12	ON	121	4.3v	160	135	N/C	Y		
00:01:14	ON	122	15.3v	162	1	N/C	Y		
00:01:15	ON	122	18.9v	163	0	N/C	N		
00:01:17	ON	122	20.4v	163	0	N/C	N		
00:01:19	ON	122	20.4v	165	0	N/C	N		
00:01:48	ON	OFF	21.1v	176	0	N/C	N		
00:06:48									<b>Fault Detected</b>

Let's analyze this run.

00:00:01 – The controller sends voltage to the power venter.

00:00:03 – The PV column goes to “Y”, indicating that the proving switch has closed and voltage has returned.

00:00:05 – The voltage “jump up” shows that the burner motor has started.

The drop in the CAD voltage indicates that the flame has established.

Everything is running fine until...

00:01:14 – The increase in CAD voltage indicates that the flame went out.

00:01:15 – The PV has switched to “N”, indicating that the proving switch has opened.

Why does this point towards the power venter proving switch as the problem?

The key indication is that the pressure had dropped to 1 psi on its way to 0 psi while the primary controller continued putting out voltage. If the flame had gone out for some other reason, there would probably still be pump pressure. (The fact that the PV went to “N” one second after the CAD voltage increased is simply that the OnWatch Model 51 detected the change on its next loop in the software.) And the controller actually locked out 33 seconds later at 1:48.

Ken Clarke (Hiller Fuels Inc., Marion, MA) replaced the power venter proving switch and there has not been another lock out.

Thanks for the interesting data, Ken.