

Is there a “fan board” on the furnace?

The Problem

Quite a few furnaces are being manufactured with a printed circuit board that acts to coordinate various functions of the heating system. These are often called ‘fan boards’. We have recently been made aware of how these can complicate diagnosing a problem using the OnWatch Model 51 burner monitor.

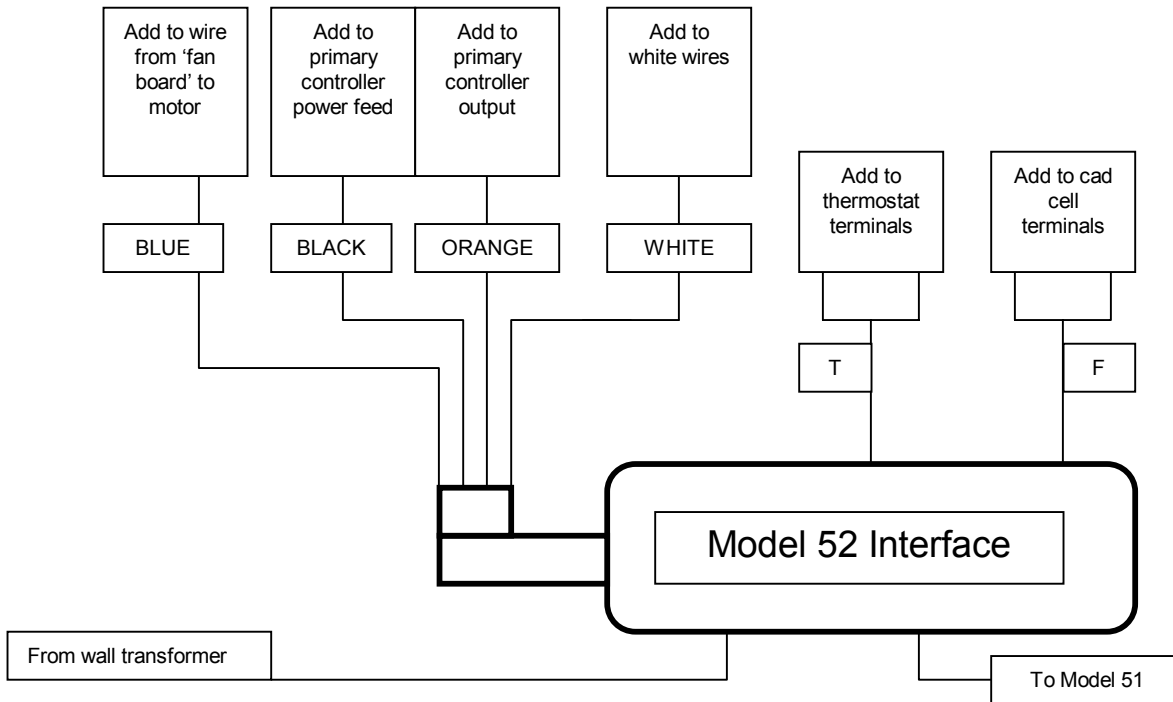
Specifically, on these systems the standard furnace wiring diagram sometimes shows the orange wire from the primary controller going directly to a terminal on this fan board. From there another wire goes to the motor. Attaching the OnWatch in the standard manner can result in a misdiagnosis if, in fact, the fan board is the faulty component. The data will look exactly like a motor with a faulty starting switch assembly (often called a dead spot) when actually it is the fan board that is misbehaving.

A motor with a dead spot will show data with voltage readings that are virtually constant right from the beginning and there will be zero pump pressure. (See other sample data on this web site.) However, if the orange wire of the OnWatch is connected directly to the output of the primary controller and the fan board does not send voltage to the motor, the collected data will resemble this type of motor failure.

The Solution

Connect the orange wire of the OnWatch to the output of the primary controller and connect the blue wire of the OnWatch to the wire going from the fan board to the motor. (NOTE: The blue wire will show **Y** or **N** depending if it detects voltage and these readings are shown in the **PV** column on the display.)

Now if the collected data shows a voltage reading in the **VOLTS** column but the **PV** column shows “**N**”, you know voltage went to the fan board but did not come out.



[NOTE: Print this page and insert in your manual.]

Sample Data

Recording Mode: Oil

Elapsed	TT	VOLT	CAD	TEMP	PSI	VAC	PV	AMPS	EVENT
00:00:00	ON	118	3.7v	96	0	0	N		
00:00:02	ON	118	3.8v	96	0	0	N		
00:00:04	ON	118	3.8v	96	0	0	N		
00:00:06	ON	119	3.8v	96	0	0	N		
00:00:08	ON	118	3.8v	96	0	0	N		
00:00:10	ON	119	3.7v	96	0	0	N		
00:00:15	ON	118	3.7v	96	0	0	N		
00:00:20	ON	119	3.7v	95	0	0	N		
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[and so on until lock out]

Analysis: This data shows that a good, steady voltage of about 118 volts came out of the primary controller and went to the fan board but voltage never came out of the fan board on the wire going to the motor. If under normal circumstances voltage should have gone to the motor, then the part to suspect is the fan board, not the motor.

Many thanks to Bill Tice for alerting us to this situation.