Sequence of Operations – PowerVent Spark Ignition

Tank is cold, full of water, gas supply is connected to gas control valve and heater is plugged in to a 120V circuit. Gas valve is set to the ON position.	NO	Fill tank Ensure gas connections are present and no leaks Ensure water heater is properly vented
YES		
Turn electric main power to ON; open control panel and turn ON/OFF switch to ON		
YES		
120V is extended from the switch to the electric thermostat and ECO. ***(First safety)***	NO	Check for 120V at thermostat terminal 1 Check ECO for 120V at thermostat terminal 2
120V is extended thru the thermostat to: 1.) the blower motor 2.) the 24V transformer	NO	Blower motor begins rotation. Check for 120V at blower motor plug Check for 24V at far side of transformer
YES		
Blower motor creates vacuum in tube and causes vacuum switch to operate	NO	Check tube for proper size, serviceability, kinks and blockages. Check vacuum switch
YES		
(Second Safety) Vacuum switch has now provided verification that the blower motor is operating. 24V is allowed to pass through the vacuum switch to the ignition control module	NO	Check ignition control module for 24V at the "24V" terminal lug. Check vacuum switch Check vacuum tubing Check blower motor
YES		
Ignition module extends 24V to energize the pilot gas valve operator.	NO	Check for 24V on the "PV" terminal lug of the GAS VALVE
YES		
Pilot valve opens allowing gas to flow to the pilot burner	NO	Check gas pressure Check pilot burner Check pilot supply tube for crimping Check for 24V on the "PV" terminal lug of the GAS VALVE
YES		
Electric spark generator in the ignition module produces a continuous 10,000V spark pulse through the ignitor cable		Visually check pilot electrode assembly for spark Check ignitor cable for continuity Check ignition control module
YES		
Gas flows through gas valve and pilot supply tube to pilot burner. Pilot lights and flame is rectified. ***(Third Safety)*** Safety shut off with continuous retry for 90 seconds. After a six minute wait, the ignition module re-starts the ignition sequence.	NO	Check gas pressure Check pilot burner for obstructions. No flame rectification with pilot burner (flame is not pointed in proper direction). Check spark ignitor for cracks.
YES		

Sequence of Operations – PowerVent Spark Ignition

Pilot ignites main burner. Spark generator shuts off.	NO	Check for 24V on the "MV" terminal lug of the GAS VALVE Check gas pressure Check main burner orifice for obstructions. Check main burner supply tube and venturi for obstructions.
YES		
Main burner remains lit. Heats water to thermostat setting	NO	Check for 24V on the "MV" terminal lug of the GAS VALVE Check gas pressure Check main burner orifice for obstructions. Check main burner supply tube for obstructions. Check main burner venturi and ports for obstructions.
YES		
Water is hot. Thermostat contacts open and shunts circuit to: 1). Blower motor 2). 24V transformer	NO	Check thermostat. Power is discontinued to the ignition control module. Power will be resupplied to the blower motor and 24V transformer when thermostat calls for heat.
YES		
Pilot and main valve operators on the gas control valve close.	NO	24V power is suspended to all terminal lugs on the ignition control module and gas valve.
YES		
Main burner and pilot shuts off. Water is hot		
YES		
Water heater is in stand by until the thermostat calls for heat		

Sequence of Operations – PowerVent Spark Ignition