



TURBINE TIPS

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January 2005

Subject: Part 2- Looking for Grounds in a Speedtronic Mark V Panel
Applies to: General Electric Gas and Steam Turbines Equipped with GE Speedtronic Mark V Control Panels

Part 2- Looking for Grounds in a Speedtronic Mark V Panel

This is the second tip in a three-part series explaining the nebulous art of control system ground troubleshooting.

Let's explain in more detail what we are doing here. If you already know everything about grounds, then just skip this part--you are fortunate.

The electronics in any computer has certain circuits that need to be connected to ground in order to work properly. For instance, differential amplifiers have one side connected to ground, so they will have a zero voltage reference point. Those circuits must be grounded to work correctly.

But sometimes, other circuits in the cards or in the wires touch some part of the control panel frame by getting pinched in the core door or by some foreign object (like a paper clip) touching the board that could create an unwanted path to ground. This causes a ground in a part of the circuit that should be isolated.

Circuit board designers, instead of connecting all necessary circuits to ground individually, typically tie them all together and connect them to a common bar which is isolated from ground. From this bar, which in the Mark V is called CCOM, a single braided wire is connected to ground.



Photo of Ground Strap

If you lift this wire, all circuits become isolated from ground. If you now measure the resistance between any part of the electronic circuitry and ground, the VOM should read infinity. In practice, however, it will likely read a couple of megohms. If the meter reads a low resistance value, like a short or a couple of hundred ohms, it means that some part of the circuitry is touching ground through an undesirable path.

If that happens, you'll need to find the incorrect ground. This is done by isolating each circuit one at a time; thus reducing the part of the total where the ground resides. You do this until you localize the ground in a certain sub-part of a component that can be replaced or fixed. Tracing grounds takes patience and a plan.

Locating grounds in a computer is a slow and methodical job, and if you do not have experience in doing it, you should seek assistance. The thing is, if you think there is an incorrect ground, do not ignore it. It may show up sporadically and give you much undesired trouble later on.



Robin Ashley at Mark V Board

Stay tuned for next month's "Tip of the Month":

"Part 3- Connecting the Speedtronic Mark V Panel Ground Cable"

For more information or for assistance in troubleshooting controls problems, please contact Pond And Lucier, LLC.