

Troubleshooting Tips

#2 – Fluorescent Tubes and Pump Logic Lock Up Problems

Many problems that are deemed to be the fault of the Logic or Processor board, are really caused by fluorescent lights.

This can apply to any piece of electronic equipment but it is especially prevalent in Gasoline Pumps and Dispensers.

To explain what happens; when a fluorescent tube is started a very high voltage is fired down the tube to create a current flow through the Mercury gas in the tube. Once the flow is established the voltage drops. The current passing through the Mercury gas causes it to give off a strong ultraviolet emission which excites the phosphor coating on the inside of the tube causing it to fluoresce and give off visible light.

The initial high voltage current surge through the tube as it starts creates a strong electro-magnetic field. On a single start of the tube this magnetic field has little effect, except to cause some radio interference to any radio device close to it.

Gilbarco on their pumps install a ground strip down the length of their fluorescent tubes to try and prevent this magnetic field from inducing voltage on the tracks of the logic circuit boards in the pump. *Only grounded fluorescent tubes should be used* (see Fig 1).

If however the Fluorescent Tubes or the Ballast starting them are faulty, they will be trying to start continually and will continue to fire the high voltage current down the tube. This not only wastes power, but will create a strong enough magnetic field to even overcome the ground strips and induce a voltage on the tracks of nearby boards. If these boards happen to be Logic or Processor boards a "bad or non-existent" memory location could be created causing "Logic Lock Up" or memory loss or both. The Micro is looking for the bad address and can not find it.

Caution! When removing tubes that are suspected faulty in a pump with ground strips, turn off power to the ballast first. If you do not the magnetic field is inducing an extremely high voltage in the ground strip, and when you turn the tube to remove it, that strip is no longer grounded and you will get a large voltage discharge.

It should be noted that any light driven by a ballast such as fluorescent's, mercury vapour, etc. can cause this problem, and any such light within 20 to 30 feet of the pump can still cause problems. Any light that is flickering or has darkened ends, or especially any that are out, can cause the problem.

So when you have a pump problem look to the lights before start changing boards (unless it is an obvious board problem). Station personnel may give you strange looks when you wander around looking at lights instead of the pump that is giving them problems, however they will be your friend for life when after fixing the lights the problem goes away.

Usually you can tell this problem exists because powering the pump down and back up will cause it to operate again for a while. *However we have seen extreme case where you actually have to remove the board from the site to get it going again.* This is why the work fine when you send them to us for testing.

If you do not fix the lighting the problem will keep recurring no matter how many boards you change. It will re-occur on a fixed timetable, determined by the severity of the lighting problem, varying from every 2 or 3 minutes to as long as once a month.

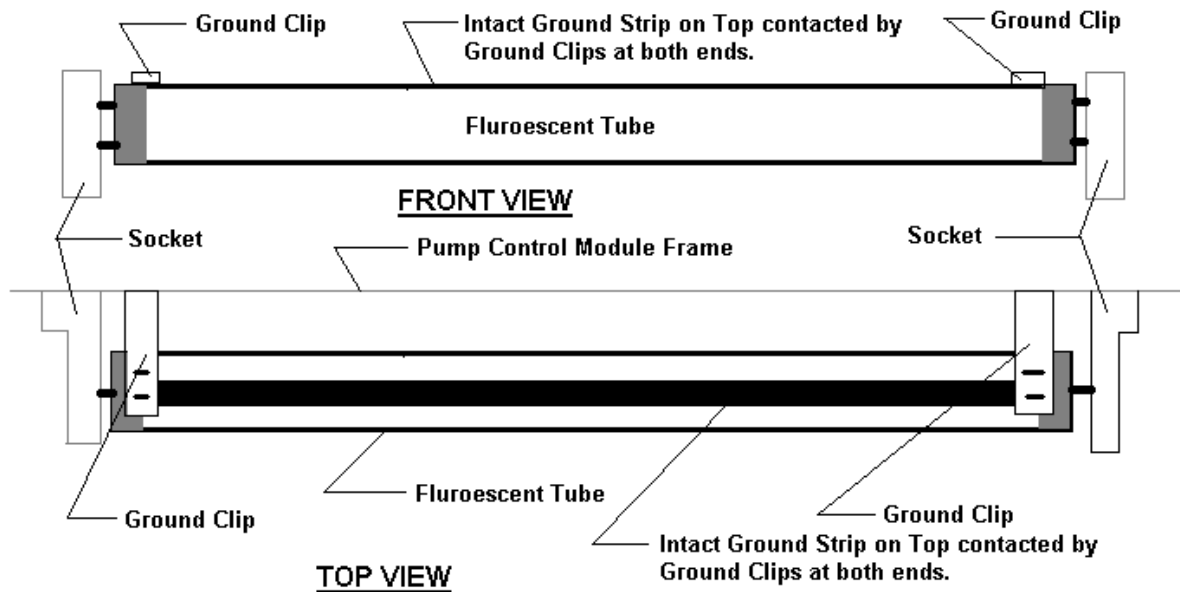


Fig 1