



Rev. 6-24-22

Knox County Fire Prevention Bureau Duct Detector Shut Down

Controls Operation:

Upon activation, the smoke detectors shall shut down all operational capabilities of the air distribution system in accordance with the listing and labeling of appliances used in the system. Air distribution systems that are part of a smoke control system shall switch to the smoke control mode upon activation of a detector. Smoke detectors are required within the air distribution system to prevent the air distribution system from contributing to the spread of smoke within a building by stopping (shutting down) the air handlers (blowers and fans) upon detection of smoke. Smoke is spread through an air distribution system when smoke enters the duct system and is transported to other areas of the building through the ducts. Therefore, upon activation of a smoke detector in the duct, the air distribution system must be shut down or, if the air distribution system is part of a smoke control system, it must switch to the smoke control mode of operation. The smoke detectors are relied on to automatically initiate air distribution system shutdown or smoke control system operation.

Shut Down Intent:

This section has been open to interpretation as to how to shut down the air distribution system. Many inspectors, contractors and system designers require rewiring an appliance to only shut down the blower. This practice can nullify the listing of the appliance as well as promote unsafe operation in cases where the appliance is being fired at the time the blower is shut down. Another practice has been to break the 24-volt wire to the thermostat, which may not in some cases shut down the appliance. An example of this would be if the high-limit switch were to trip, the fan would still run. The only way of ensuring that the air distribution system is shut down is to interrupt the power supply to the appliance. However, there is still the potential of shutting down the appliance in the middle of a firing cycle, creating the potential for overheating in the appliance.