Diagnostic LED Fault Code Explanation

Fault sequence

When a fault condition occurs, the compressor will stop, if running, but the fan and/or water pump will usually continue to operate. Approximately every 60-90 seconds thereafter, the fan and/or water pump stop and the compressor attempts to re-start. The diagnostic LED will flash a code of one, two, three, four, or five flashes every 5 seconds.

One Flash – Low Voltage

This indicates that the voltage at the power terminals on the controller has fallen below 10.4v (22.8v). The voltage must rise above 11.7v (24.2v) for system to re-start. Check the voltage at the "+" and "-" terminals on the controller *while the compressor tries to start.* If the voltage sags significantly, check the system wiring. This alarm can also be caused by a momentary disturbance on the main DC circuit. A one-flash error code can be initiated by an engine start or the operation of a pump, electric winch or windless, if a high resistance ground connection exists somewhere. It can also be caused by inverter/charger power "blips".

NOTE: If the system is powered up with voltage greater than 10.4v but lower than 11.7, the compressor will not attempt to start and there will be no fault code flashing on the Fault LED.

Two Flashes – Fan overload/Excessive start attempts

This indicates that the fan circuit output (small "+" and "F") is overloaded. This output is always 12v, even with a 24v power supply to the system. The load on this output must not exceed 0.5 amps continuous. If a water pump is used, a relay must be incorporated in the circuit to power the pump.

A two-flash error code may also signal too many start attempts in a short space of time. This will be triggered after 10 start attempts, and will stay active for 60 seconds. Normal operation resumes after the 60 second delay.

Three Flashes – Compressor non-start

A three-flash error indicates that the compressor is overloaded and unable to start. This is most commonly triggered when a system shutdown is then followed by an immediate re-start attempt. In this situation, the head pressure in the compressor is too high and the motor cannot start against it. Typically, the system will eventually re-start unaided after a number of start attempts. This alarm is also often associated with a re-start attempt after a low voltage failure, and this may cause confusion as to the root cause of the alarm. The three-flash error can also be due to a warm start-up in hot conditions, especially with air-cooled systems. Pre-cooling the box with ice, and setting the compressor to run at the slowest speed, if possible, may prove to be beneficial. If the compressor never starts but gives the three-flash error, the controller should be considered to be suspect.

Four Flashes – Compressor unable to reach minimum speed

There is no real guidance available for this code, but if displayed, the controller should be considered to be suspect.

Five Flashes – Electronics overload

There is a temperature sensor on the electronics that will trigger a five-flash alarm if it exceeds 212°F. This indicates that the compressor and/or electronics are working too hard. The compressor will be stopped, and a re-start will be attempted once the temperature of the electronics has dropped below 176°F. High ambient temperatures in the vicinity of the compressor can increase the possibility of a five-flash alarm, especially on a warm start-up. The five-flash code is most often associated with high condensing temperatures (dirty or clogged air or water condenser, a heavily fouled Keel Cooler), or non-compressible liquids in the compressor; i.e. liquid refrigerant from a colossal overcharge, water, excess oil, leak locating fluid, etc).

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