



BY JOHNSON CONTROLS

Service Information

File In/With:

SI0279

New

813

Equipment Affected: CENTRIFUGAL CHILLERS

Evaporator Refrigerant Temperature Sensor

GENERAL

The evaporator refrigerant temperature sensor extends vertically under the center of the evaporator. An electrical plug with four prongs is housed in the threaded end of the sensor, and is secured to the sensor with a black plastic nut.

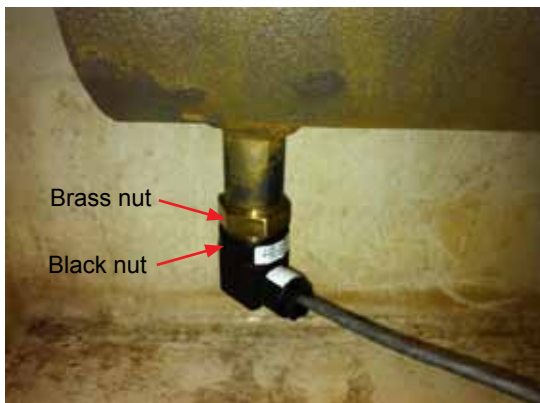


FIGURE 1 - REFRIGERANT TEMPERATURE SENSOR

PROBLEM

Condensation can build up on the sensor brass nut and run down the brass threads of the sensor stem (See Figure 1). If the black nut at the face of the electrical end of the brass probe is loose, moisture can enter the square DIN receptacle causing corrosion. This can cause erroneous Evaporator Refrigerant Temperature readings and/or a Safety shutdown.

Safety Shutdown Overview with Smart Freeze enabled

The Optiview control center converts the evaporator pressure to a Saturated Temperature value and compares this value to the Evaporator Refrigerant Temperature sensor value. If the difference between these two temperatures is greater than 3.0°F, continuously for 1 minute, a Safety Shutdown is initiated and the Optiview displays the error message Evaporator – Transducer or Temperature sensor. This temperature comparison check is only performed under the following conditions:

- Chiller has been running for at least 10 minutes.
- Evaporator Refrigerant temperature (RT7) has been enabled by a Service technician.
- The unit is NOT in Brine cooling mode.
- Smart Freeze must be enabled.
- Evaporator Temperature Sensor (RT7) or Evaporator Saturation Temperature is indicating a temperature of less than 32.0°F (0°).

The chiller can be started after the evaporator saturation temperature and the refrigerant temperatures are within 3.0°F (1.77°C) of each other and the CLEAR FAULT key is pressed.

Work on this equipment should only be done by properly trained personnel who are qualified to work on this type of equipment. Failure to comply with this requirement could expose the worker, the equipment and the building and its inhabitants to the risk of injury or property damage.

The instructions on this service bulletin are written assuming the individual who will perform this work is a fully trained HVAC & R journeyman or equivalent, certified in refrigerant handling and recovery techniques, and knowledgeable with regard to electrical lock out/tag out procedures. The individual performing this work should be aware of and comply with all Johnson Controls, national, state and local safety and environmental regulations while carrying out this work. Before attempting to work on any equipment, the individual should be thoroughly familiar with the equipment by reading and understanding the associated service literature applicable to the equipment. If you do not have this literature, you may obtain it by contacting a Johnson Controls Service Office.

Should there be any question concerning any aspect of the tasks outlined in this bulletin, please consult a Johnson Controls Service Office prior to attempting the work. Please be aware that this information may be time sensitive and that Johnson Controls reserves the right to revise this information at any time. Be certain you are working with the latest information.

SOLUTION

1. Check the sensor for condensation and check the tightness of the black nut.

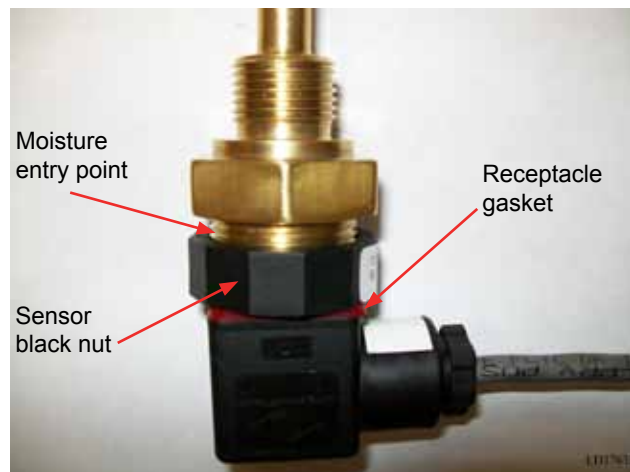


FIGURE 2 - MOSITURE ENTRY POINT

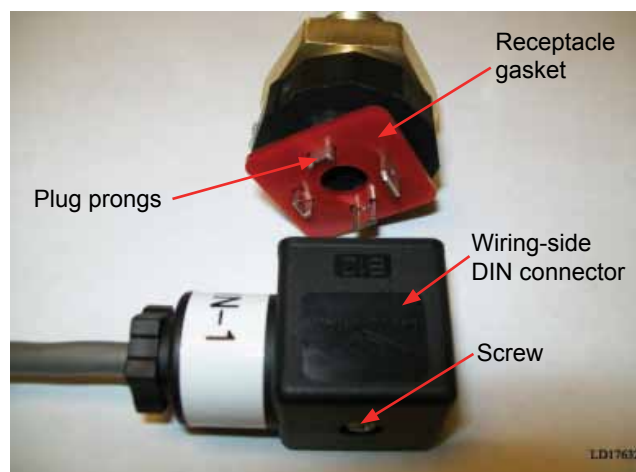


FIGURE 3 - RECEPTACLE AND SENSOR PLUG

2. If no moisture is present:
 - a. Loosen the receptacle screw.
 - b. Disconnect the wiring-side connector.
 - c. Leave the sensor installed in the evaporator. Do not turn the brass nut.
 - d. Remove the sensor black nut and apply Loctite 425 on the probe brass threads.
 - e. Reinstall the black nut and tighten against the sensor electrical plug.
 - f. Insure the gasket is between the receptacle and sensor plug and reconnect the wiring side DIN receptacle.
 - g. Tighten the receptacle screw.
3. If moisture is present or if the nut is loose:
 - a. Remove power from the receptacle.
 - b. Loosen the receptacle screw.
 - c. Disconnect the wiring-side connector and inspect the square DIN receptacle prongs for corrosion.
 - d. Leave the sensor installed in the evaporator. Do not turn the brass nut.
 - e. Clean and dry the connector, prongs and sensor brass threads. If corrosion is present, replace the DIN receptacle (p/n 025-37805-000).
 - f. Remove the black nut and apply Loctite 425 on the probe brass threads.
 - g. Reinstall the black nut and tighten against the sensor electrical plug.
 - h. Insure the gasket is between the receptacle and sensor plug and reconnect the wiring side DIN receptacle.
 - i. Tighten the receptacle screw.
 - j. Reapply power to the receptacle.