

METROPOLITAN NY CHAPTER Refrigeration Service Engineers Society

Continuing Education for the HVAC/R Industry

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Solid State Hall Effect Sensors

Heating systems with an induced draft fan will use some type of method to prove the operation of the inducer motor before allowing the ignition process to begin. A pressure switch measuring the draft created by the inducer motor is commonly used. Some manufacturers may also use a centrifugal switch within the motor to prove the motor is operating.

There is also another method that can be used to prove the operation of the induced draft motor. A Hall Effect Sensor mounted directly onto the motor can be used to detect the rotation of the motor's shaft proving its operation. This sensor is connected to the system's integrated control board and will provide a signal to the board to prove the operation of the motor. A ring magnet is mounted on the motor's shaft and with each revolution will cause the output of the Hall Effect Sensor to change its output state. These pulses are then sent to the safety logic on the integrated control board. By determining the number of pulses and the time needed for one revolution of the fan shaft, the integrated control board can monitor the motor's RPM.

If the fan is running above the minimum speed to induce a draft, the safety logic will initiate the ignition sequence of the system.

Below is a procedure from one manufacturer to troubleshoot these Hall Effect Sensors. Before using this method, check

with the manufacturer for their proper procedure to troubleshoot these sensors used on their system. The method shown below may not be applicable to all systems.

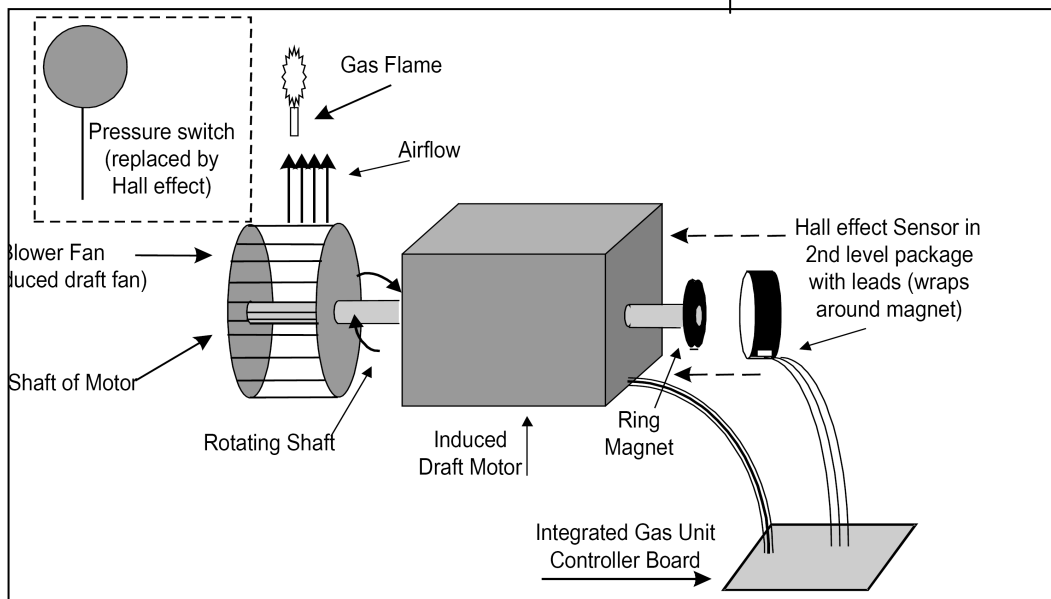
With the Three Wire Plug Unplugged from the Circuit Board
Apply voltage to the unit and measure the pins as follows.

- Connect the negative or black lead of the meter to Pin 3 on the circuit board.
- Then connect the positive or red lead of the meter to Pin 1. It should read between 7.5 and 10 volts DC.
- Then move the red or positive lead to Pin 2. It should read between 21 and 24 volts DC.

Replace the circuit board if measured voltages are outside these values.

With the Three Wire Plug Plugged into the Circuit Board
Apply voltage to the unit and measure the pins as follows.

- Connect the negative or black lead of the meter to Pin 3 on the circuit board.
- Then connect the positive or red lead of the meter to Pin 1. Slowly rotate the induced draft motor. On one half turn the reading should be less than 1 volt DC, and on the other half turn the reading should be between 6.5 and 9 volts DC. If it is not less than 1 volt DC on one half turn and not between 6.5 and 9 volts DC on the other half turn, replace the Hall Effect Sensor.
- Next move the red or positive lead to Pin 2, it should read between 16.5 and 21 volts DC, if not replace the Hall Effect Sensor.





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For Information Call: Stan Hollander, CMS (718) 232-6679

Testing the Accuracy of a HVAC Thermostat:

- Make sure the sub-base is level, if the thermostat has a mercury switch.
- Check to make sure the thermostat is not affected by unusual conditions (such as heat due to nearby appliances, hot or cold water pipes, registers, direct sunlight or drafts).
- Move temperature setting indicator all the way to the low or high end of the thermostat and wait five minutes.
- Remove cover and move temperature setting indicator until the thermostat contacts close.
- Replace cover and wait five minutes.
- If the thermostat pointer and the setting indicator read about the same temperature the thermostat control temperature is accurate.
- If not, the thermostat needs to be calibrated or replaced.

Wednesday January 11th, 2017 at 7:30 pm

at
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By

Vinnie Ventura—Venco Sales

PRESIDENT'S MESSAGE

On behalf of the Board of Directors and myself I would like to wish everyone a Very Happy New Year.

Stan Hollander, CMS did a great job last year in arranging educational presentations for our chapter meetings. He is well on his way in planning speakers for this year. We want to present topics of interest to you. Have you heard of a new technology, a great speaker or topic? Email Stan with meeting or seminar suggestions at EducationalDirector@metronyrses.org and as much information as you may have. Our chapter is focused on educating our members. The best topics come from technicians who are in the field.—That's you!

Feel free to forward this email to anyone you think might be interested in RSES. Non-members are always welcomed at our meetings and there is never a charge.—we'll even give you coffee and cake, after the program. Parking is always available and free.