The Excessively Expensive Heat Pump

BY JIM JOHNSON

Email your real-life troubleshooting problem—along with the ultimate solution you found—to jim@techtrainassoc.com. Be sure to include as much supporting documentation as possible—wiring diagrams, model/serial numbers, etc. If your problem is published, you will be rewarded with a free heat-pump training video, “Uncomplicating the Heat Pump: Refrigeration and Air Flow Systems.”

Your role in this month’s troubleshooting problem is a follow-up to visits by other technicians who responded to this customer’s complaint about the cost of operating their heat pump during the winter. Opinions offered so far range from a possibly failing reversing valve to improper use by the customer, who has been comparing electric bills from several previous years and has seen an increase in utility costs.

When your initial evaluation does not indicate any apparent refrigerant or air-flow problems, you decide to do an in-depth evaluation of the electrical system. The diagram in Figure 1 shows a schematic representation and the legend for this equipment.

After operating the equipment for an appropriate amount of time, you initiate the defrost mode, and note that the outdoor fan motor continues to run. Testing with a voltmeter at the appropriate test points, you get the following results:

1. At the coil of the DFR, 240 V;
2. At contacts 1 and 2 of the DFR, 240 V; and
3. At contacts 4 and 5 of the DFR, 0 V.

Your troubleshooting question is:

**What is the specific failure that is causing the higher-than-normal operating cost of this equipment?**

The answer to this month’s problem will be published in the November 2015 issue of RSES Journal.

If you have the answer to this question, submit your name, home address, a day and evening phone number, the month in which the question you are answering was published and...
And the winner is...

The answer to the July 2015 Troubleshooting problem, “A Package Unit That Is Not Cooling,” is: Since this motor mounts with the shaft facing down, allowing the blade to pull air through the condenser coil, up and out, viewing the motor rotation from the shaft end dictates that it be wired for CCW operation.

The winner of the July monthly drawing (from among 13 correct responses) is John Kelly of Mountainside, NJ. The winner should call 520-625-6847 or email Johnson to facilitate shipment of their prize. Drawing must be claimed by Nov. 30, 2015. [Correction: In the August 2015 issue, Peter Young of Conway, SC was listed as the May 2015 Troubleshooting winner when he should have been listed as the winner of the June 2015 problem.]

Jim Johnson, Director of Training, Technical Training Associates, develops technician training workshops, DVDs, audio books and e-books, many of which are available at the RSES online store. For information on Jim’s DVD training program, “Schematic Symbol Fundamentals and Translating What They Mean,” visit www.techtrainassoc.com, write PO Box 2259, Green Valley, AZ 85622-2259 or email jim@techtrainassoc.com.

WINNER

John Kelly
Mountainside, NJ
is the winner of the July 2015 Troubleshooting Challenge.