Johnson Controls Unitary Products
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DATE: February 18, 2016 **YS-SP01-16**

TO:
Virginia Air Distributors

SUBJECT: Defrost Thermistor Placement

UNITS: Predator Package Heat Pump Units Generation 7 through serial N1A6281752 (Jan 15th, 2016)

Recent inspection of subject packaged heat pump units indicated that defrost thermistors on the condenser coil had been placed on the hot gas discharge header leg, rather than the hairpin (u-bend) near the bottom liquid feeder tube (3/16" tube) as design requires. Placement on the hot gas line during the defrost cycle will cause the control to observe a termination temperature very quickly, causing the SSE control board to terminate defrost, leaving the coil partially defrosted. In certain environmental conditions, this repeated partial defrost event can lead excessive ice build-up.

CORRECTIVE ACTION: The outdoor coil of the unit must be thoroughly defrosted. If the outdoor coil is ice bound, power the unit off. Follow Lock-out Tag-out procedures as needed. The existing position of the defrost sensors may not allow a forced defrost through the SSE control. The following steps will manipulate the process by placing the unit into cooling mode allowing you to control defrost of the unit.

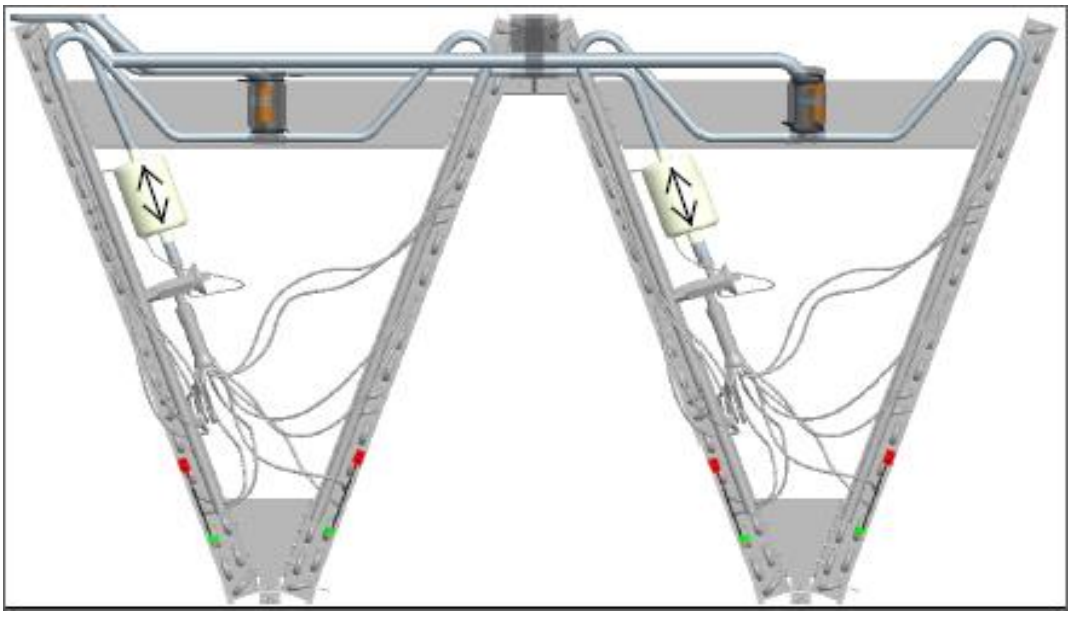
1) Remove the W1 and W2 inputs from the SSE control.
2) Place a jumper from R>Y1 & Y2 to force the cooling function.
3) Remove the 24v wire from the coil of the condenser fan contactor to prevent condenser fan operation during this exercise. Protect that wire and terminal from making contact with any other surface or power source.
4) Restore power to the unit. The SSE control will go through a several minute boot-up process. Once the re-boot is complete, disable the ClgOATCutout-En. SSE menu path Details>Control>Heat Pump>Setup>ClgOATCutout-En>toggle left to "NO", press "Enter"

5) Observe unit in air conditioning mode with Condenser fans disabled, until the condenser coil is completely defrosted and clear of ice.
6) Power off the unit. Remove the R>Y1 &Y2 jumper(s). Replace the W1 &W2 stat wires to the SSE control board.
7) Replace the 24v control wire to the condenser fan contactor.
8) Leave the power to the unit OFF. Follow Lock-out Tag-out procedures as needed.

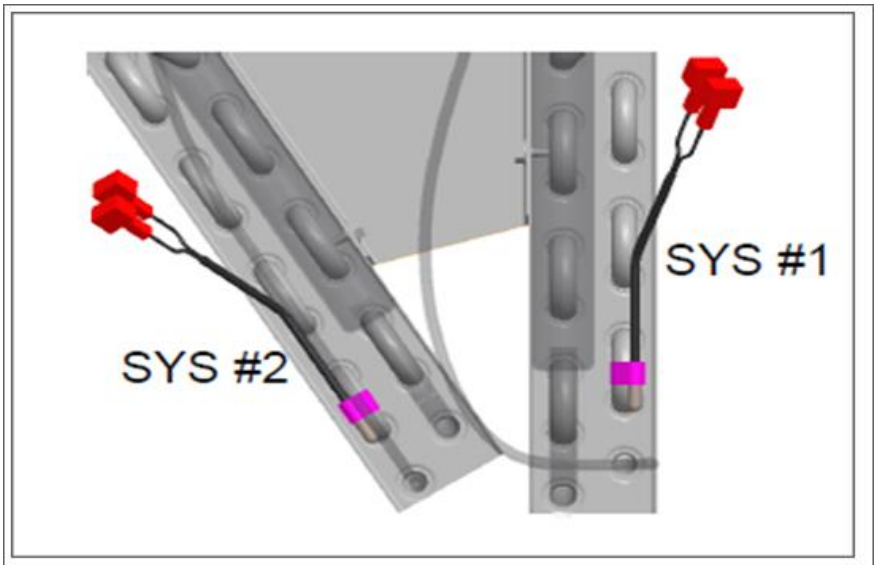
There are two types of coil configurations where panels must be loosened or removed. Larger tonnage “W” Coil and smaller tonnage single “V” coil configurations. On “W” coil configuration models, completely remove the coil covers from the “front” side, header end only. The condenser fans will support themselves on this model. On single “V” style coil models, remove all the screws from the panel. Again, this is the header end of the coil. There will be screws that have limited access and are concealed where the panel attaches to the main cabinet on the top/left of the panel. Leave only these screws in place, removing all other screws. This will allow the loosened panel to be pulled out at the bottom. Use caution where some of the weight of the condenser fans will cause the panel to slump downward as it swings out and downward with limited range of motion due to the remaining screws still attached. Do not force the panel to move any further than is required to access the sensors. Carefully remove the sensor clip holding the thermistor using caution not to damage the sensor. Do not re-use this clip. Use 2 small black zip ties (do not smash the sensor) to secure the original sensor, or a new sensor, to the optimized sensor location as follows...

On “V” coil models, move the sensor to the first U-bend above the small feeder tube from the bottom of the coil on the entering air side of the coil. On “W” coil models place the sensor on the second end bell up from the bottom, on the entering air side of the coil. The sensor should have the tip half in contact with the copper U-bend. This sensor should now be located on the entering air side row of the coil. (Opposite row from original position) For units with multiple sensors, move each sensor in this same manner. Some units with 4 coils may have 4 sensors. Move all 4 sensors even though only 2 sensors are in use. The other sensors may be used in alternative conditions as technical services may advise if defrost deficiencies continue after this procedure.

SYS#2 SYS#1



“W” coil models



"V" coil models

After the sensors are re-positioned, inspect the spade terminal connectors to be sure they are not loose at the sensor wires. Use a terminal crimp tool to secure any suspect connections. Then verify the integrity of the sensors by viewing their values through the harness by removing the P2 plug connector from the SSE control board. Using an ohm meter, take readings of the CC1/CC2 sensors, after re-positioning is complete. The ohm reading values follow the standard 10k Negative Temperature Coefficient (NTC) thermistor chart. A reading at 35 deg. reflects approximately 30, 000 ohms. Both sensors should read close to the same value. Replace both sensors if either are faulty. Sensor part # S1-03103026-000. Re-test as needed. Place the sensor harness plug back on the P2 position of the SSE control board. Replace and secure the coil panels.

Inspect the unit to be sure condenser fan blades are free moving and un-damaged.
Restore power to the unit. The control will go through a several minute re-boot process. Be sure the thermostat is calling for heat pump. The unit will not engage a defrost cycle unless the certain defrost conditions are present for the required time within the selected defrost curve. It should not be required to wait for this event as long as the sensors were verified "good" before completing this task. Be sure to set the ClgOATCutout-En back to "Yes" (see menu path above).

This YS-SP letter allows 2 hours labor allowance per single unit, and 1 hour per additional unit at the same address. Claims filed must include this Service letter number. Claimed work beyond the scope of this letter requires a SI# from Technical Services, Norman, OK. We apologize for any inconvenience caused.

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