TECHNICAL INFORMATION COMMUNICATION

Quality and Continuous Improvement

Number: TIC2020-0013 **Updated:** 05/21/2021

Title: Downflow Fan Coil Condensate Management Troubleshooting

Product Category: Residential Fan Coils

Products Affected:

Residential Fan Coils

Situation:

Incorrect installation, incorrect equipment applications and lack of proper system maintenance can cause issues with managing condensate water.

Solution:

The following steps will help eliminate condensate water management issues:

- Unit needs to be level or slightly sloped towards drain. Secure fan coil so unit stays in this orientation.

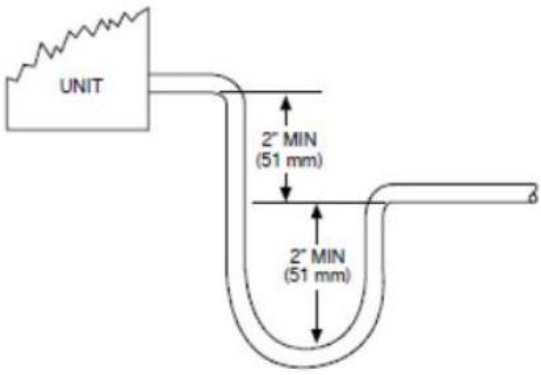


Only trained and qualified personnel should design, install, repair and service HVAC systems and equipment. All national standards and safety codes must be followed when designing, installing, repairing and servicing HVAC systems and equipment. It is the responsibility of the Dealer to ensure local codes, standards, and ordinances are met.

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- Drain Connection – Fan Coils require a 4” deep P-trap.

Do not use a shallow straight running trap.
Use a 4” deep trap with at least a 2” difference.





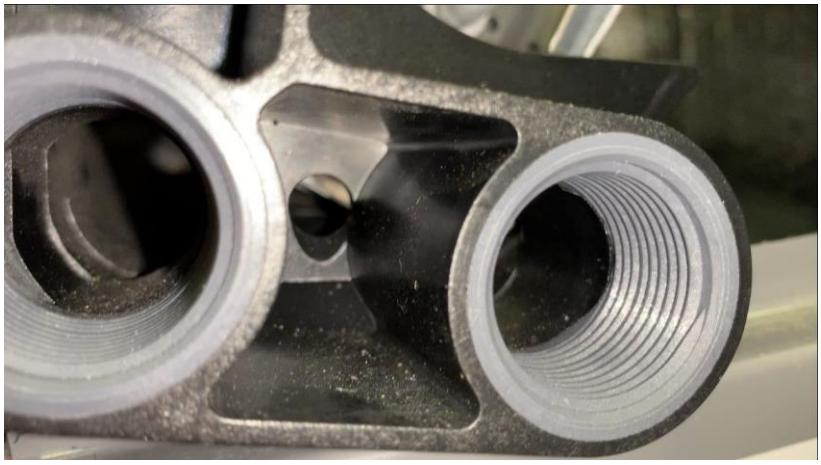
- Do not use the knockouts in the door dust cap to access the condensate drains. In downflow applications it is necessary to remove the protective dust cap from the door where the condensate drains exit. This is required so that the weep hole can function properly.



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- The center weep hole will let water out of the pan if the float switch fails to turn the system / outdoor unit off in an overflow situation. This is necessary to prevent water from coming in contact with the electrical components below the evaporator coil.



- For downflow applications utilizing float switch overflow protection, it is recommended to plug the secondary drain pan connector and add the float switch to primary drain connection.

- In the image below, the primary drain connection is on the right. The secondary drain connection is on the left.



- If a clean out tee is required, it must be caped closed when the unit is operating. The cap is needed to prevent air from being pulled into the condensate line by the negative pressure which will prevent condensate water from flowing out the drain.
  Note: The use of small sections of clear PVC can be helpful to visually identify a dirty/plugged condensate drain.

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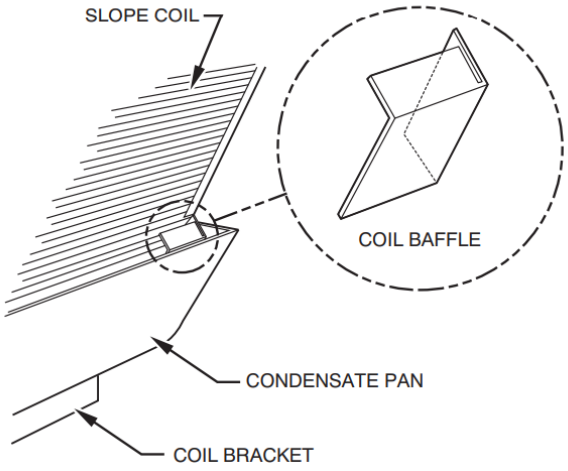
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Visually inspect the condensate pan and condensate drains for any debris. Clear any debris using a vacuum, brush, compressed air or compressed nitrogen. Never use bleach or drain cleaners in the pan, condensate drain or anywhere near the evaporator coil. Many drain cleaners contain acids that can dissolve the aluminum of an evaporator coil and cause leaks.

Reference Technical Information Bulletin (TIC2021-0006) “Slime Accumulation in Condensate Management Systems” (link to documents below)

https://www.shareddocs.com/hvac/docs/1011/Public/0A/TIC2021-0006.pdf

- Ensure that the Condensate baffle is installed at the back of the pan on slope coils. This baffle is required to block turbulent air from potentially blowing water out of the drain pan.



- High airflow (Airflow above 400 cfm/ton) can cause condensate to blow off the coil. Inspect motor tap setting and measure airflow to determine if the fan is providing the proper amount of airflow.

- High external static pressure can cause water blow off from the coil. Return static pressure must be less than 0.40 in. w.c. and the total static pressure needs to be below the maximum static pressure shown in the product literature. Measure the return and supply static pressures to determine the total static pressure.

- Excessive pressure drop across the evaporator coil can cause condensate to blow off the coil or out of the condensate pan. Measure the differential static pressure across the evaporator coil to determine the total static pressure. If the pressure drop across the coil exceeds 0.35 in. w.c. the coil is dirty and needs to be cleaned.

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- When a dirty evaporator coil is identified it must be cleaned. A dirty evaporator coil will prevent the normal water flow down the fins into the drain pan. **The restricted air flow through the evaporator coil fins can result in air bypassing the dirty coil and flowing under the coil resulting in air blowing water out of the drain pan.** Evaporator coils can be evacuated and removed from the unit or washed in place with clean water or evaporator coil cleaners. When using cleaners, use only coil cleaners that are listed as for use on all aluminum evaporator coils. These evaporator coil cleaners are available through FAST Parts (Part Number FPC2101). Follow the instructions listed on the bottle. DO NOT USE condenser coil cleaners. They can destroy evaporator coils and the vapors are generally not healthy for use indoors. Once cleaned flush the coil, pan and drain line with clear clean water.

For manufactured housing applications with fresh air duct

- Confirm (or adjust to match image below) the duct position so that it is not interfering or restricting airflow to the return air filter.



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- Following the steps previously listed will resolve most condensate water management problems. There is an accessory kit, **NAEA00101DP** available for the models listed in this bulletin that provides an additional level of condensate water management control. Install the Accessory Kit using the instructions provided with the kit.
    - NOTE: The parts in this kit will be included with the slope coil from the factory beginning in June 2021

Additional Mitigation Options

- Coils are washed at the factory; however some installers choose to clean the coil at installation. Ensure factory supplied filter is clean and free of construction debris at time of installation.
- Inspect the coil for fin damage and comb out any damaged fins to avoid water dripping from those locations.
- Replace/Upgrade the air filter with a MERV 8 Pleated filter to avoid excessive dirt buildup on cooling coil.
- Another mitigation option is to install a field-supplied spacer between the top of the coil and cabinet to increase the slope of the coil as shown in the figure below.

Material Needed: 1" square aluminum pipe

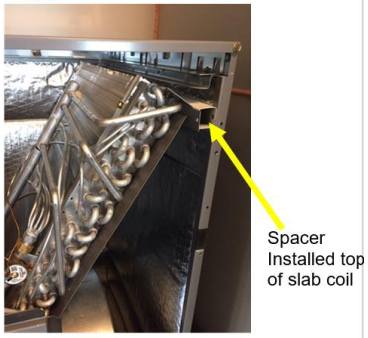
Spacer 1"



Spacer 21" long



Install spacer top of coil



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