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Setting the **Standards** for
Home Energy Efficiency

Interpretation: Single Flow Grid for Multiple Return Systems

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Reference: This request for interpretation refers to the requirements presented in Standard:

ANSI / RESNET / ACCA / ICC 310-2020

Page Number(s): page 24
Section(s): 6.6.2.5
Table(s): n/a
Relating to: Flow grid setup procedure

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Background: *Provided by the party requesting the interpretation.*

A question has arisen about whether a single flow grid is permitted to be used to measure blower fan airflow in HVAC systems with multiple returns.

Section 6.6.2.5 defines how to place the flow grid during setup for the procedure (emphasis added): "All filters shall be removed. Flow plate(s) shall be located so that all of the Blower Fan airflow will flow through them [a]. If multiple locations are required [b], multiple flow plates shall be used so that simultaneous measurements are taken, representing total system airflow. The flow plate(s) shall be temporarily sealed in place so that air must go through, rather than around, the plate(s). Flow Grid manufacturer instructions shall be followed to ensure proper setup.

a. (Informative Note) For example, a single flow plate at a filter slot located at the air handler, a single flow plate at a return grille for a Forced-Air HVAC System with a single return, or a flow plate at each return grille for a Forced-Air HVAC System with multiple returns.
b. (Informative Note) For example, a system with multiple return grilles, with a filter at each grille."

The normative language states that "flow plate(s) shall be located so that all of the Blower Fan airflow will flow through them". Secondarily, it states that if multiple locations are required, then multiple flow plates shall be used. Finally, it states that "flow grid manufacturer instructions shall be followed to ensure proper setup". For a system with multiple returns, it is ambiguous whether the airflow is permitted to be blocked (e.g., taped off) from all but one return to satisfy this requirement.

At the time the standard was first drafted, the available flow grid model directed users to install multiple flow grids for systems with multiple returns. Footnote a and b, which are informative but not normative, provide examples consistent with this setup.

However, since the initial publication of the standard, at least one device manufacturer has released a model that provides the option to install a single flow grid in systems with multiple returns: AHFG Manual Outline

> **Installing with Multiple Central Returns:**
>
> If you are installing the TrueFlow Grid at the filter grille of a multiple return duct system, when the TrueFlow app prompts the user to remove filter and install the Grid, the user should install the Grid in the most obvious main return and blank off the additional return(s), ensuring all system air flow passes through the Grid. Install the Grid so that the front side of the plate is facing into the air flow (front side has the wording "AIR IN" in the middle of the plate). The adapter plate gasket should provide an airtight seal around the filter grille housing - all the air flow should pass through the Grid and not around the plate. Keep the filter grille door open during the remainder of the test.
>
> **Note:** If the TrueFlow® app registers low flow, then the operator may need to use another method to obtain more system air flow through the plate.

For this particular device, installing a single flow grid in the main return and sealing the additional returns will:

- Satisfy the objective in Section 6.6.2.5 to locate the flow grid so that all of the blower fan airflow will flow through it, and,
- Satisfy the requirement to follow the flow grid manufacturer instructions to ensure proper setup, and,
- Not conflict with any normative language within the standard.

Interpretation: *Provided by the party requesting the interpretation.*

The standard permits a single flow grid to be used to measure blower fan airflow in HVAC systems with multiple returns, so long as the remaining returns are sealed to ensure all airflow flows through the flow grid and the manufacturer of the test equipment provides instructions consistent with this configuration.

Future editions of the standard could be revised to clarify this intent.

Question: Is this Interpretation correct?

SDC Answer: Yes

SDC Comments: