

MECHANICAL CODE DISCUSSION

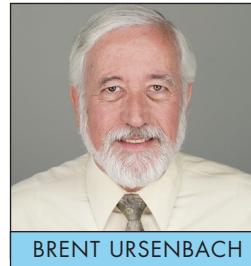
ACCA Manual T – Air Distribution Basics

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THIS PAST WEEK I RECEIVED a request for my consulting service from the owner of a new large custom home in Summit County. He claims he paid more than \$100,000 for the HVAC systems. Yes, you probably guessed it, they have comfort problems with all three systems including:

- System will not cool down house below 76°F during the day.
- System kicks on at 8am and will not stop until 11pm.
- Electric bill is over \$1000 a month.
- System does not cool evenly.
- Return air is loud and systems are loud in general. The HVAC contractor cut hole in return duct in basement to quiet down. Compounded the temperature imbalance.
- The basement is always cold, and vent is blowing all day, due to upstairs always being on.
- None of the duct joints are sealed. I went back and forth with HVAC installer. He claimed that it is all in the same envelope, so it doesn't matter.

These appear to be typical of

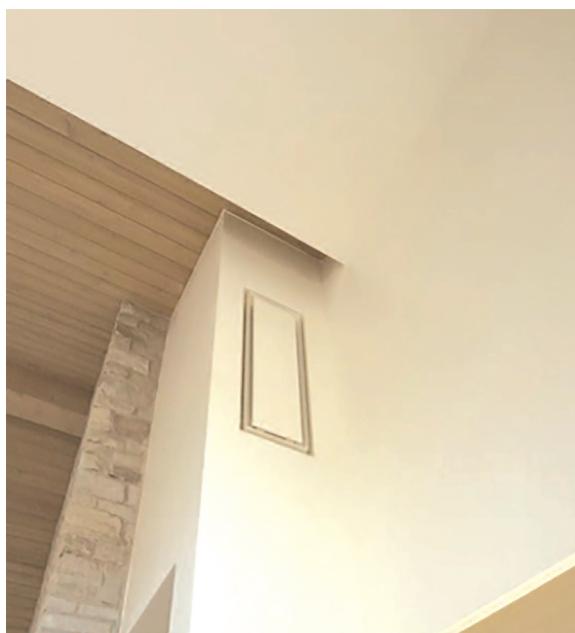
what I hear often. Obviously, some of the issues including uneven cooling, loud return, and duct sealing are duct systems. At my request, the owner provided the Manual JDS package and some photos, including this photo of the one of the two 30" X 10" high sidewall return air grills serving a 3-ton system.

Hopefully you have some experience in sizing return air duct and grills and know a 30" X 10" standard metal grill will flow somewhere around 600 - 700 CFM with a 0.02" pressure drop. Unfortunately, the HVAC contractor on this home failed to recognize the free area for this style grill will be considerably lower than a standard grill. A quick check of the manufacturers airflow specification for this grill is 118 CFM at a 0.02" pressure drop. With two of these grills on 1200

CFM system, they are short 964 CFM.

Compounding the issues, they used a similar style 4" X 12" sidewall supply register in several location, and wood floor registers in the hardwood floor, never sizing per the manufacturer's engineering data.

I'll report on actual airflow testing in a future discussion.



(Story continues top of next page)

The introduction to ACCA Manual T opens with:

The selection and sizing of supply air outlets and return air inlets is just as important to a successful design as making load calculations, selecting equipment or ducts. Supply air outlets must mix raw supply air with the room air without creating drafts or stagnant zones. Return air inlets must provide an unrestricted return path from every area of the house or building without short circuiting the supply air pattern.

If you are not familiar with Manual T, or if you feel you would like to learn more about selecting

registers and grills, please sign up for the next RMGA sponsored ACCA Manual J, D, & S class, September 16-18, 2025, presented by Ed Janowiak. The class includes all four ACCA Standards: J, D, S, and T.



Please reach out with your comments or questions. Thank you — Brent ■

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