Grille Performance Data

QUESTION:
How do I get performance data for grille sizes that are not published in the Titus catalog?

ANSWER:
The Titus selection software program, TEAMS, which is available as a free download from the Titus website, contains many grille sizes not published in the catalog, and allows the user to input air volume (CFM) in increments other than those published.

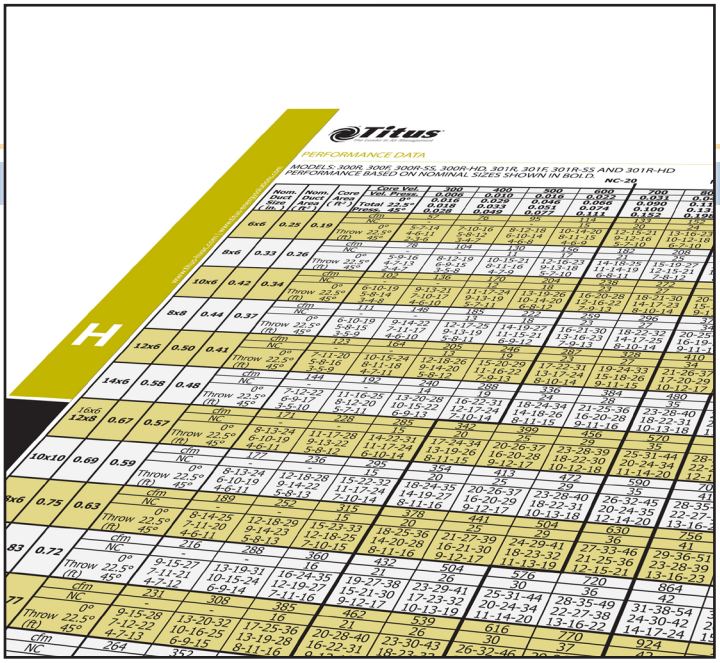
Should TEAMS not be available, the following method should be used.

1. Determine the nominal duct area in square inches by multiplying the nominal length and width of the desired grille size in inches.
E.g. 64 x 10 = 640 square inches

2. Convert the duct area from square inches to square feet by dividing the total square inches by 144 and rounding to a 2-place decimal.
E.g. 640 square inches / 144 = 4.44 square feet

3. Locate a published grille size in the catalog for which the nominal duct size is approximately the same. The nominal duct area in square feet is the column directly to the right of the listed nominal duct sizes.
E.g. 4.44 square feet approximates to the 4.50 square feet shown for a 36 x 18 supply grille, and is less than is less than a difference of 2%. Duct leakage often accounts for more of a discrepancy than 2% in terms of performance.

4. Locate the nearest approximate desired volume listed for the approximated grille size.
E.g. A desired volume of 2300 CFM falls approximately midway between the listed volumes of 2110 and 2532, therefore the median throw and NC values between the values for 2110 and 2532 should be used.
The median value of NC 23 and 28 is 25 after rounding to an integer value.



The median values of the 0 degree deflection values 39-59-84 and 47-65-93, are 43-62-88.

QUESTION:
I need performance for an oversize grille and I can't find a duct area that matches, so how do I get performance for that?

1. Divide the duct area by two or more until you find a comparable duct area, and then multiply the throw by 1.4, this is a common constant for the adjustment in total air mass that is used for extrapolating throw performance. This conversion factor is also used in all of the linear diffuser conversion charts.

2. A good rule of thumb on sound is to increase the sound data by 3 NC to obtain a cumulative value.

QUESTION:
The catalog has horizontal throw values, but I need to determine vertical throw for a diffuser set to throw vertically and there is no vertical throw data in the catalog data, how can I determine vertical throw?

Vertical throw for supply grilles is not usually required since grilles mounted in a ceiling are not a normal application.

FREQUENTLY ASKED QUESTIONS

application engineering corner

But it sometimes happens and diffusers can be set to throw vertically. The method of obtaining throw data is as follows.

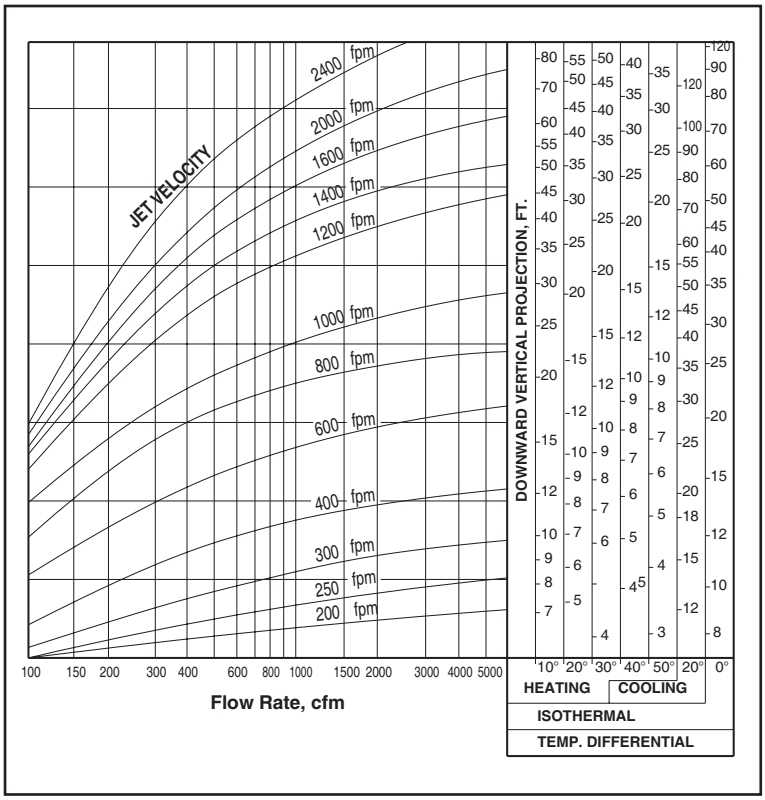
1. Determine the flow rate in CFM and the jet velocity from the published horizontal throw data pages.
2. Refer to the engineering section of the Titus catalog; page B24. Find the sections entitled Estimating Downward Vertical Projection.
3. Using the table in Fig. 24, find the vertical line representing your flow rate in CFM.
4. Follow the vertical line to the jet velocity curve that corresponds to core velocity listed in the published data.
5. Project a horizontal line from where the vertical flow rate line intersects the velocity curve to the column on the right hand side of the figure.
6. Select the appropriate temperature differential (delta T) column and read that vertical distance.

Example: Using the published data from the data page above, determine a vertical projection of a 36 x 18 grille supplied with 2500 cfm at a delta T of 20 degrees.
The core velocity at the top of the data page for that grille size and volume is 600fpm.

Using the procedure described above and Figure 24, we can estimate vertical projection for a grille supplied with 2500cfm and a core velocity of 600 fpm to be nearly 12 feet with a 20 degree delta T.

Additionally, the table is also useful for comparing isothermal throw to differential throw when only the isothermal data is available, by simply reading across the vertical projection columns on the right.

For example, when an isothermal vertical throw of 25 feet is known, simply read across the column to determine a vertical throw of 15 feet for vertical throw when the delta T is 20 degrees.



Downward Vertical Projection

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