

Technical Bulletin

Common Mistake with Duct Size Calculator Use Duct Sizing Calculators Are Not Created Equal

Many duct sizing calculators don't clearly explain how they're to be used. A common methodology is to assume a 0.1" friction loss for determining residential duct sizing. The mistake is assuming the duct calculator being used can be applied to both metal and flex duct. A metal duct calculator does not account for the additional resistance that is common with flex duct.

As an example, the following tables show estimated airflow/cfm with a metal duct calculator set to a friction loss of 0.1" and a flex duct specific calculator using the same friction loss.

Metal Duct Calculator 0.1" Friction Loss

Duct Size	Airflow CFM
5"	70
6"	115
7"	170
8"	240
9"	320
10"	420
12"	680
14"	1050
16"	1450
18"	2000
20"	2600

Flexible Duct Calculator 0.1" Friction Loss

Duct Size	Airflow CFM
5"	50
6"	80
7"	120
8"	170
9"	230
10"	300
12"	500
14"	740
16"	1050
18"	1400
20"	1875

Note the difference in airflow/cfm between the two charts. Using the incorrect duct calculator will cause a dramatic difference in overall airflow. Further, the compression of a flex duct can also have a significant impact on potential airflow. For example, a flex duct at 30% compression may only deliver 75% of the airflow if it was installed *fully stretched*.

While filter sizing, coil selection, transitions, duct lengths, grille type and load calculations should all be considered in an overall design, if ducts are not properly sized and stretched, your common residential air handler will be unlikely to deliver necessary airflow.

It is important to keep in mind that the above charts are only being used to portray the difference between the two calculators and should not be used without understanding the actual design friction rate for the specific installation. However, we hope this will shed some clarity on a very common design issue.

Additional questions about HERS verification of airflow may be directed to CalCERTS support: support@calcerts.com or (916) 985-3400, ext.*